Accelerating the Implementation of the Paris Agreement by Building for Climate Resilience of the Urban Poor (RISE UP)

in Bolivia, Colombia, Ethiopia, Jordan, and Tunisia
AECID - Spanish Agency for International Development Cooperation



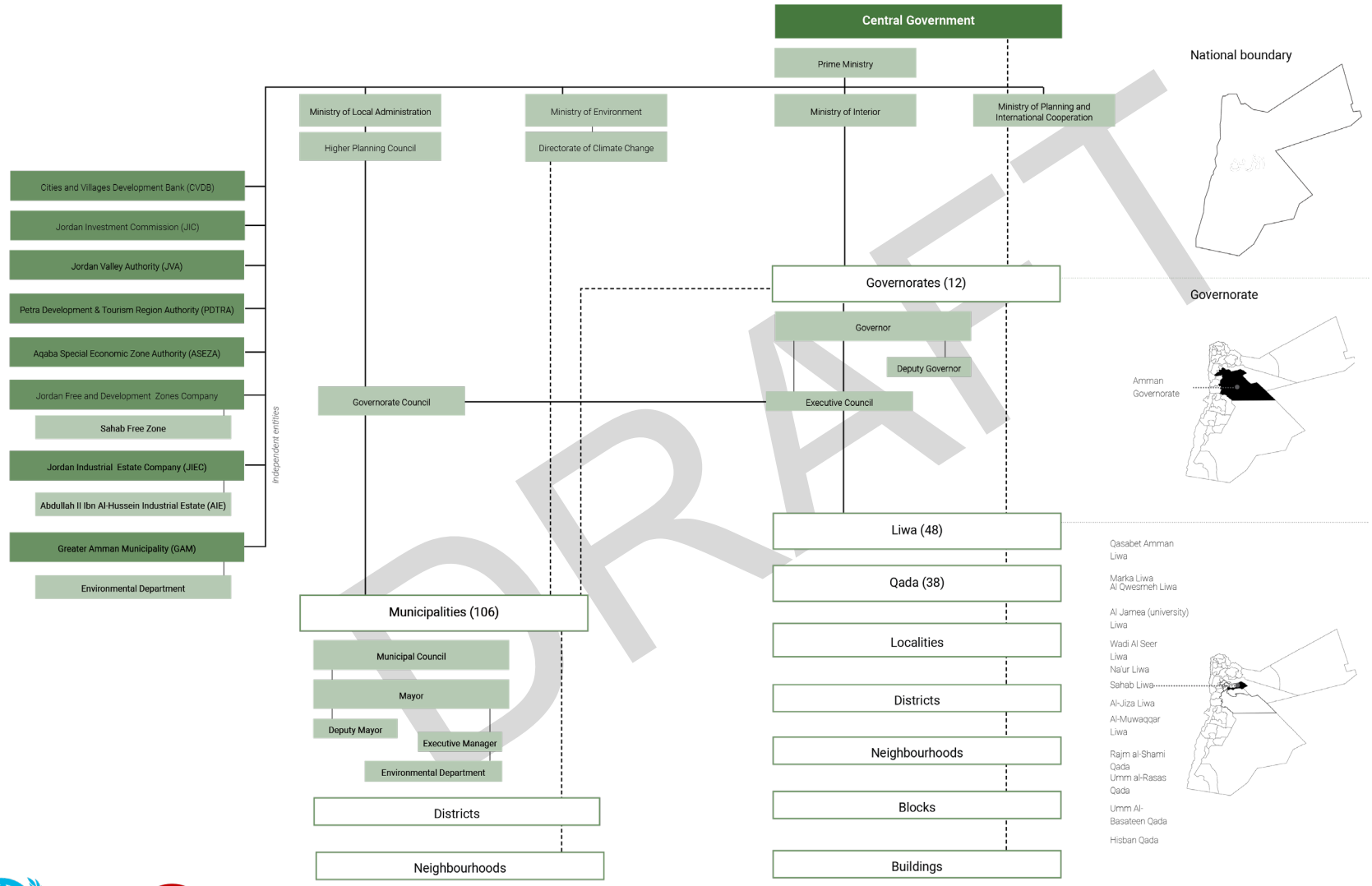
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City Context

The governance structure specialized in planning and measures for adaptation and mitigation of the effects of climate change in Jordan.



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Navigating Urban Growth and Interconnected Development

- **Historical Development and Administrative Changes:** Sahab has undergone multiple administrative shifts, alternating between inclusion in and separation from the Greater Amman Municipality. These changes have influenced its urban identity and complicated the management of urban growth.
- **Strategic Importance of Sahab Municipality:** Since 1986, Sahab Municipality has been a strategic part of Greater Amman's urban planning, playing a key role as a supporting urban center for the capital within comprehensive development plans.
- **Economic Contribution of Sahab Municipality:** Sahab is a major industrial hub in Jordan, contributing significantly to the national GDP and providing job opportunities, thereby supporting the national economy.
- **Impact on Agricultural Land and the Environment:** The rapid industrial growth in Sahab Municipality has led to a reduction in agricultural and rural areas, raising concerns about long-term environmental sustainability and food security.
- **Overlap with Greater Amman Municipality Policies:** The development of Sahab Municipality is closely tied to the regional planning policies of Greater Amman Municipality, leading to tensions between local and regional planning needs and challenges in delivering urban services.
- **Balancing Industrial Expansion with Residents' Needs:** Sahab Municipality faces the challenge of balancing its increasing industrial expansion with the needs of local residents in areas such as transportation, housing, and waste management, amidst limited resources.

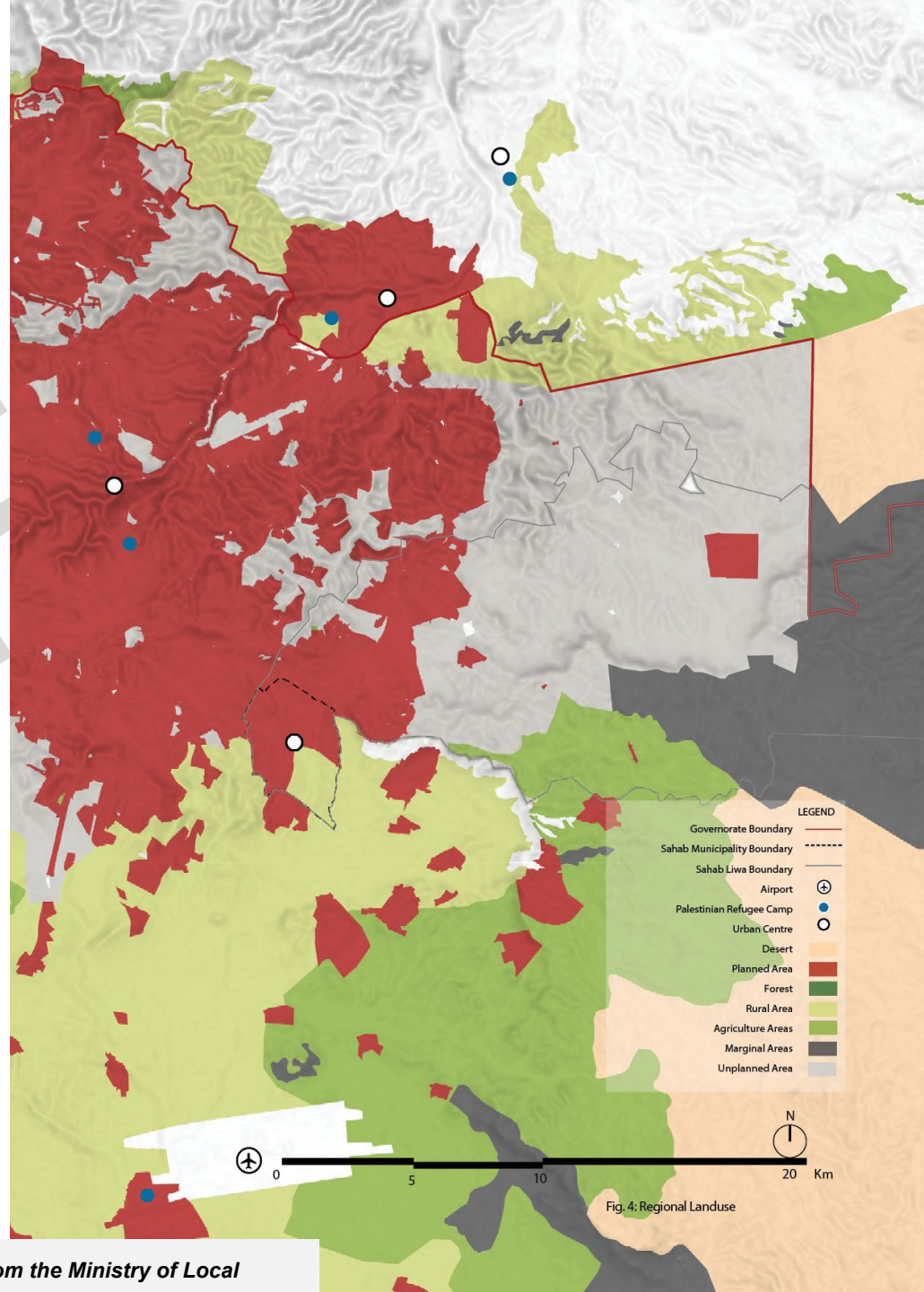


Fig. 4: Regional Landuse

According to the Land Use Plan 2007 from the Ministry of Local

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Location and Geography

- The city of Sahab is located 16 km southeast of Amman, within the Sahab Liwaa.
- It is part of the Capital Governorate, which consists of 9 Liwaa, 4 Qadaa, and 9 municipalities.
- Sahab Liwaa covers an area of 482.7 km², accounting for 6% of the total area of Amman Governorate.
- Sahab serves as the administrative center for the liwaa.
- It hosts numerous governmental and private institutions.
- Its strategic location near major highways has contributed to its development as an industrial area.
- Sahab's proximity to Amman (a 15-30 minute drive) leads to heavy daily traffic.

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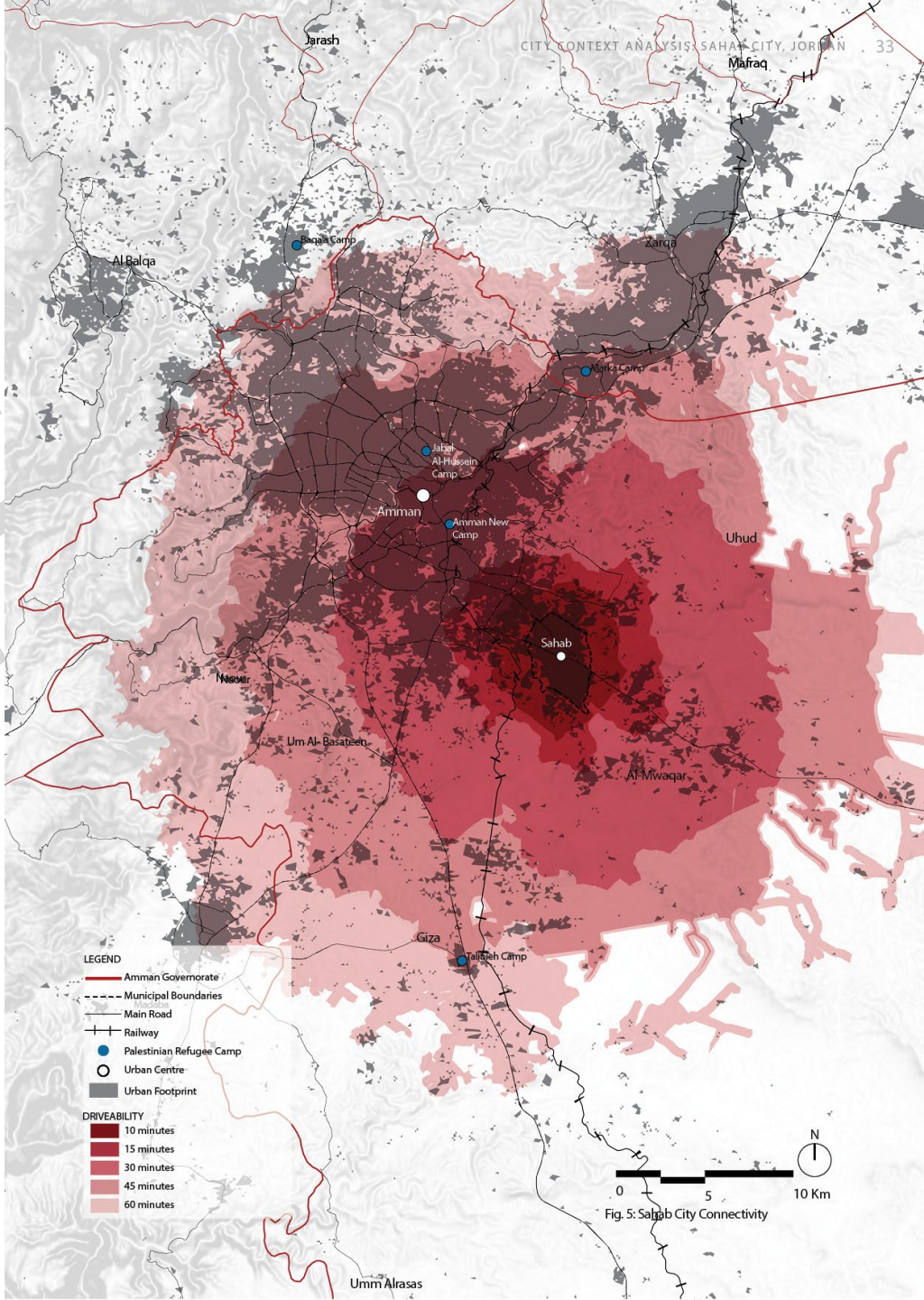


Fig. 5: Sahab City Connectivity

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Governance & Administration Structure

- Sahab constitutes approximately 2.8% of the total area of the liwaa, covering an area of 13.7 km² within the liwaa.
- It is classified as a "Category B" municipality.
- The municipality is divided into eight main neighborhoods: the Eastern neighborhood, Northern neighborhood, Western neighborhood, Southern neighborhood, Salbud neighborhood, Industrial neighborhood, Downtown, and the Hirafeyah Area.
- **The administrative boundaries of the municipality cover 13.7 km²**, which encompasses nearly the entire organized area.
- Sahab Municipality is bordered to the north by the Greater Amman Municipality and to the south by the Rajm Al-Shami and Muwaqqar municipalities.
- The city is an **important industrial hub**, with a blend of industrial, residential, and commercial areas.
- Fragmented Industrial Management: One of the major governance challenges is the regulatory separation of the Abdullah II Ibn Al-Hussein Industrial Zone, which is independently managed by the Jordan Industrial Estates Corporation. This creates challenges in urban planning and long-term development.
- The Sahab Municipal Council consists of 10 elected members, including two women. The council is headed by the mayor, and each member is elected for a four-year term.



Fig. 6: Administrative Boundaries in Sahab City
Source:

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Local Economic Activity

- Sahab Municipality is distinguished by a vibrant diversity of economic activities that play a crucial role in supporting both the local and national economy. The city's economic landscape includes direct and indirect economic centers, encompassing commercial areas, industrial zones, and various service facilities.
- **Abdullah II Ibn Al-Hussein Industrial City**: This is the largest industrial zone in Jordan, housing more than 435 factories and employing over 13,671 workers. The total investment in the industrial city amounts to 1,039 billion Jordanian dinars.
- **Industrial Clusters City**: A free zone that complements the industrial city by attracting both foreign and local investments. It specializes in the establishment and investment in artisanal buildings and warehouses, employing approximately 12,000 workers and technicians.

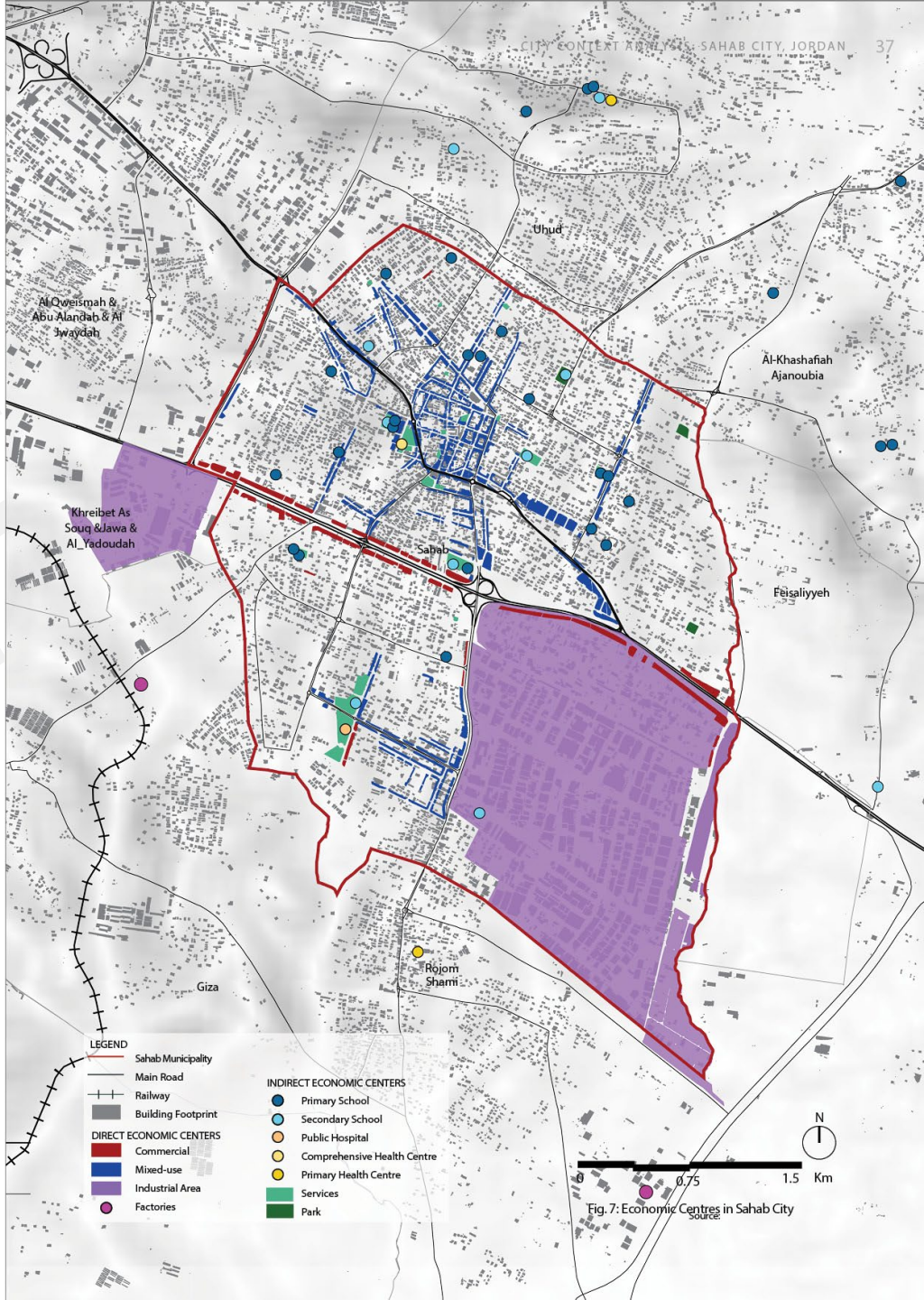


Fig. 7: Economic Centres in Sahab City
Source:

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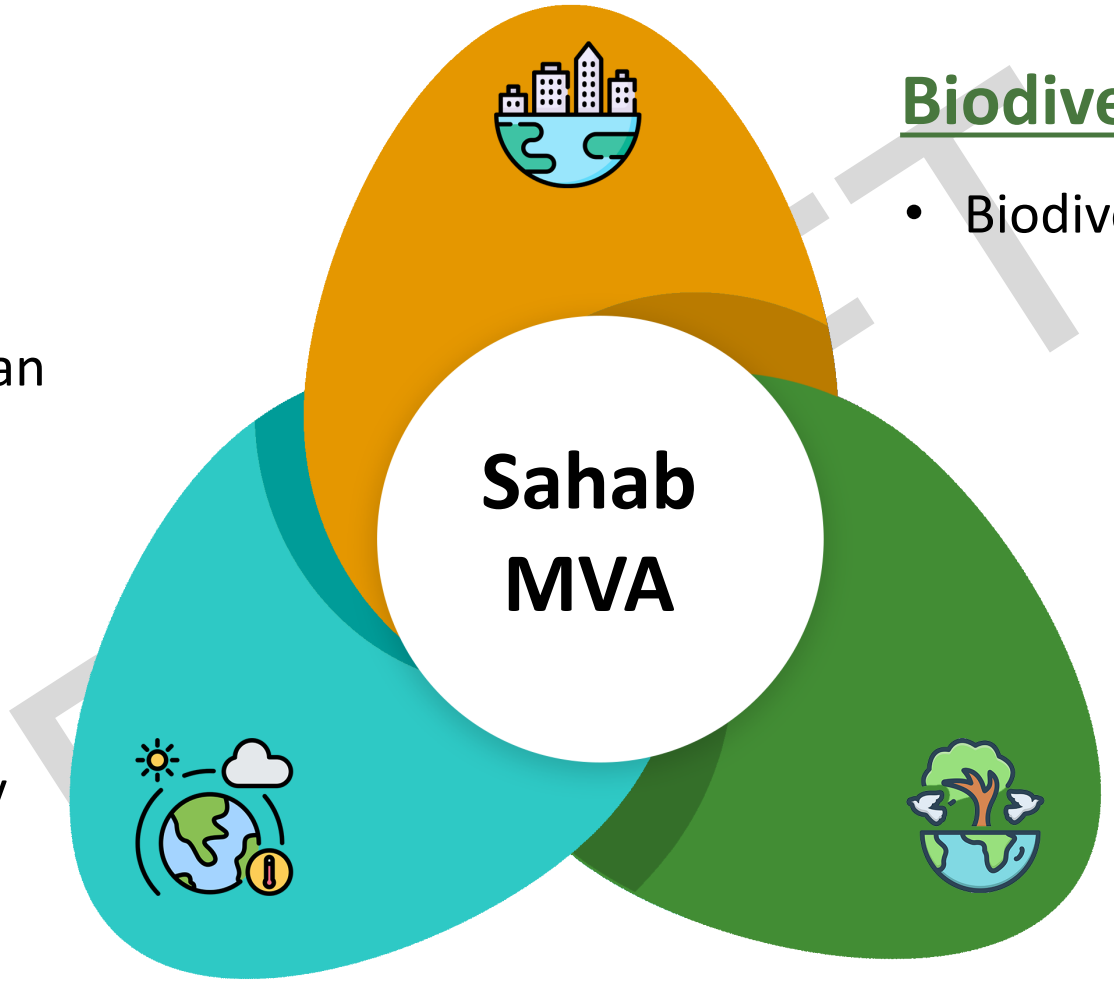
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Sahab Multilayered vulnerability assessment

Urban Dimension

- Population and Population Density
- Urbanization and Urban Growth
- Land Use
- Socioeconomic Vulnerability
- Access to Services
- Environmental Quality
- Urban Heat Islands



Biodiversity Dimension

- Biodiversity connectivity

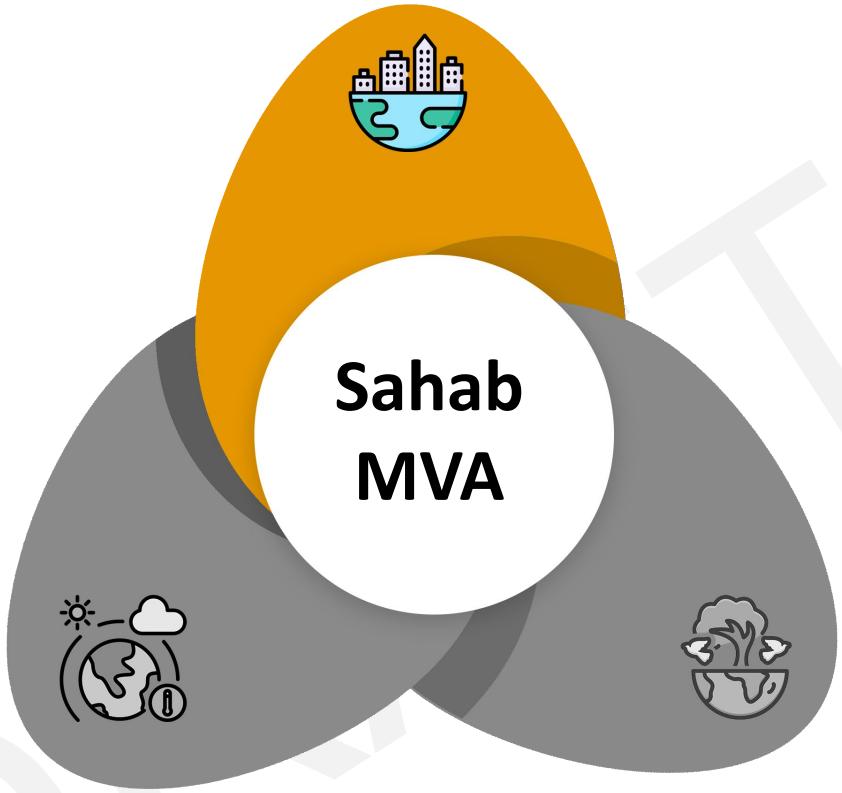
Climate change Dimension

- Heatwaves
- Floods
- Drought

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Urban Dimension



- Population & Population Density
- Urbanization & Urban Growth
- Land Use
- Socioeconomic Vulnerability
- Access to Services
- Environmental Quality
- Urban Heat Islands

Strategies and Policies Reviewed and Adopted in the Analysis

National



- Jordan Vision 2025



- Jordan Economic Modernization Vision



- Jordan National Urban Policy



- Local Administration Law.



- Waste management Law

Local



- Strategic and Local Development Plan for Sahab 2020-2022



- Sahab Needs Guide

Indicator 1 : Population & Population Density

The population of liwaa in 2015: 169,434 people.
Estimated to be in 2022: 204,400 people.

The estimated population of the municipality in 2015: 128,936 people.

Population density: 9,411.4 people/km²

Number of households: 25,787.2 households.

Average household size: 5 individuals

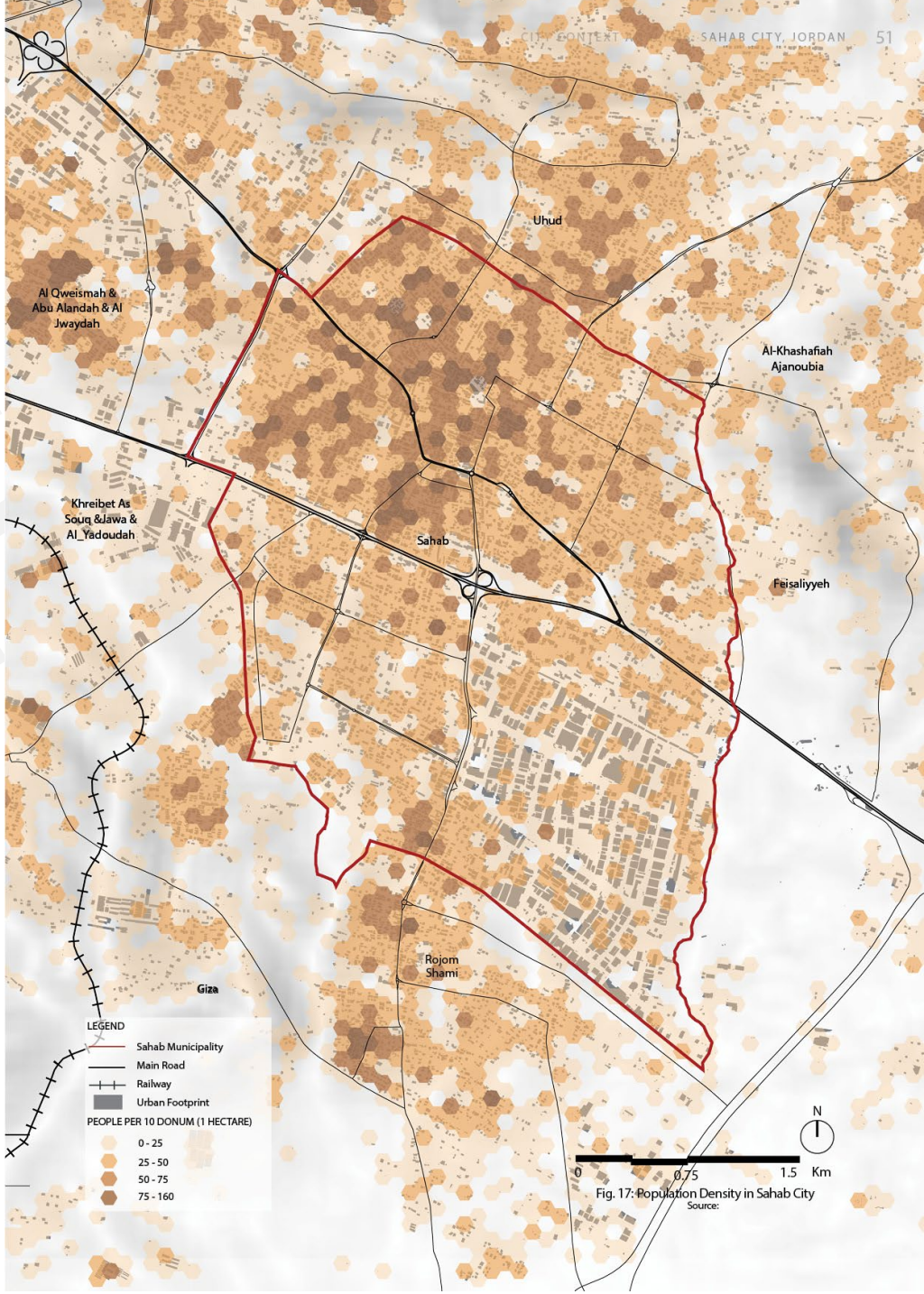


Fig. 17: Population Density in Sahab City
Source:

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Indicator 2 : Urbanization and Urban Growth

- The city of Sahab has undergone significant development since its establishment. It was initially a municipality in 1962, then incorporated into the Greater Amman Municipality in 2006, and returned as an independent city in 2013.
- The establishment of the King Abdullah II Industrial City in 1984 and the Industrial Clusters City in 1994 played a crucial role in transforming Sahab into an industrial hub.
- Approximately 90% of the population of Sahab Municipality lives in urban areas, and 91% of the urban areas are built up.
- Sahab has the second highest urbanization rate in Amman Governorate, after the Greater Amman Municipality.
- To cope with significant expansion, the city faces challenges in urban infrastructure, such as traffic congestion and a lack of recreational facilities and pedestrian spaces.

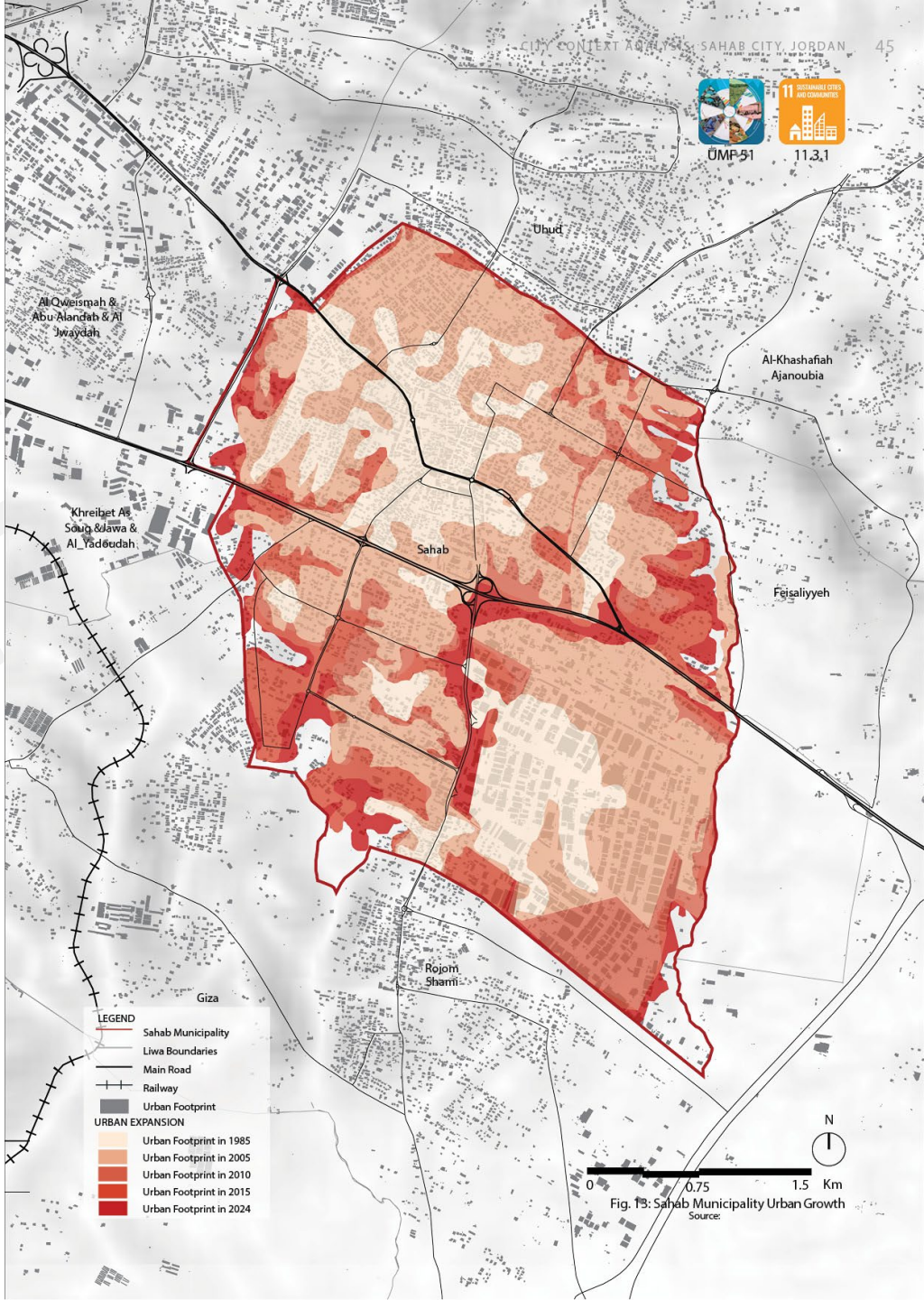


Fig. 13: Sahab Municipality Urban Growth
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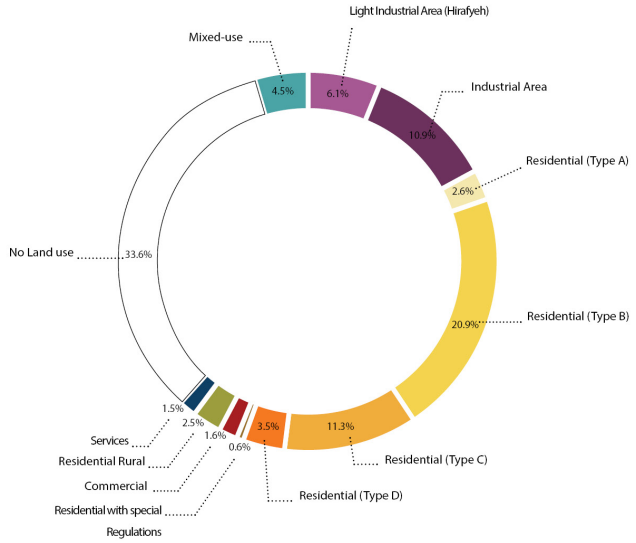
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Indicator 3 : Land Use

- The land use map of Sahab City does not accurately reflect the current reality on the ground.
- 34% of the city's land is unclassified under any use, indicating the inaccuracy of the land use plan.
- Industrial cities have been planned without consideration of global standards, and there are no local standards that account for the gradient of land uses between industrial and residential areas.
- Industrial and residential uses make up the largest percentage in Sahab City, increasing its sensitivity to changes and challenges.
- Classification B and C residential areas are the highest within residential use, which may indicate the income level of households in the area.
- The multiple uses in Sahab occur randomly.
- Sahab City has witnessed a transformation in land use, where agricultural land is being converted to industrial and residential uses.



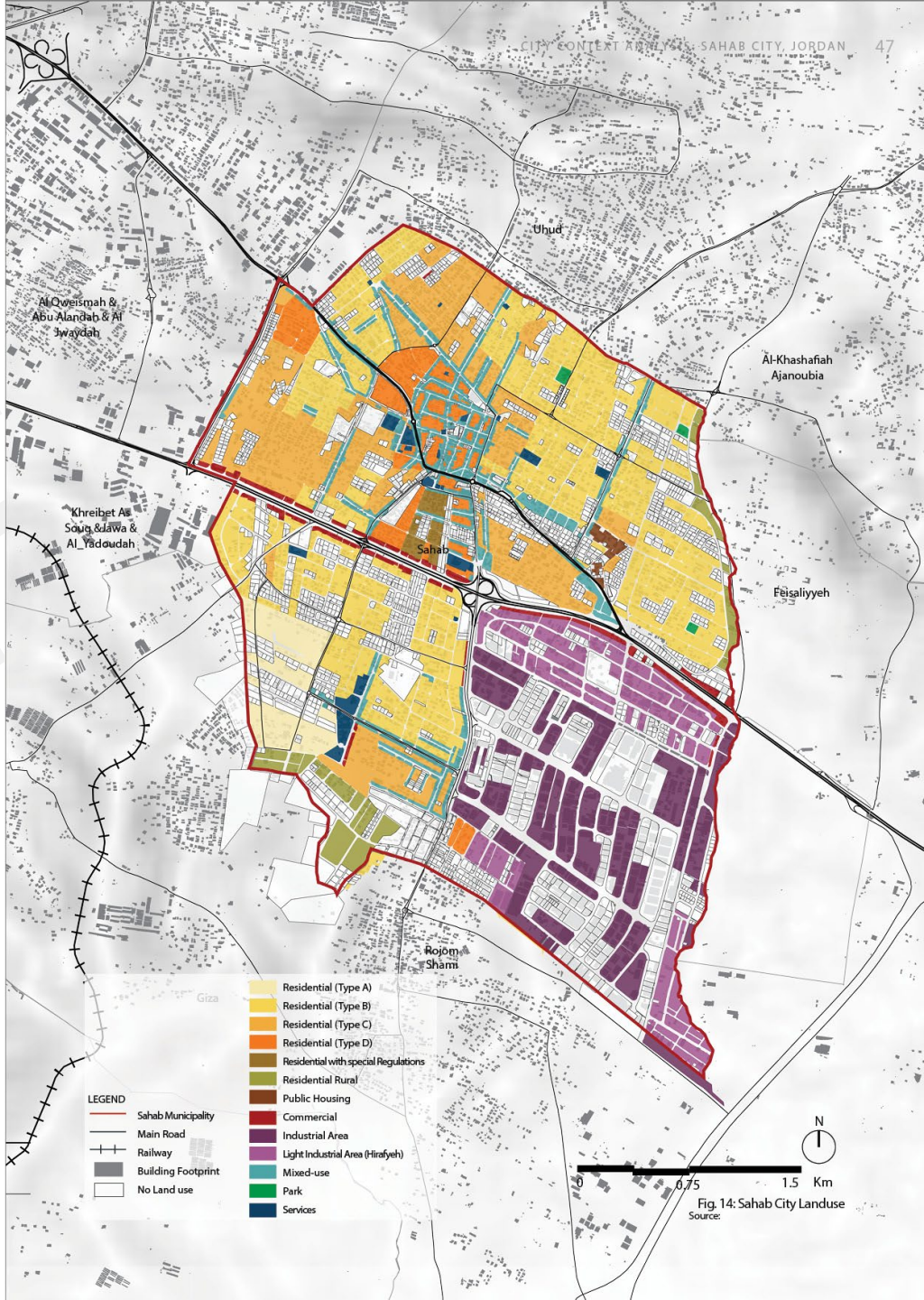


Fig. 14: Sahab City Landuse
Source:

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Indicator 4 : Socioeconomic Vulnerability

- The unemployment rate in Sahab Municipality was 22.2% in 2023, which is equal to the unemployment rate in Amman Governorate.
- There is a significant percentage of children under the age of 18 working in Sahab Municipality.
- Contributing factors to unemployment include some employers' lack of commitment to hiring local workers, the availability of qualified foreign labor in industries such as construction and manufacturing, low wages offered in some sectors, and an insufficient minimum wage.
- 75% of households in Sahab District own their households, while 25% reside in rented accommodations.
- According to the 2010 Food Security Status Report in Jordan, **Sahab is among the top ten areas in Jordan facing food insecurity**.
- Approximately 3.7% of households in Sahab are classified as food insecure, and 9.9% of households are at risk of food insecurity.

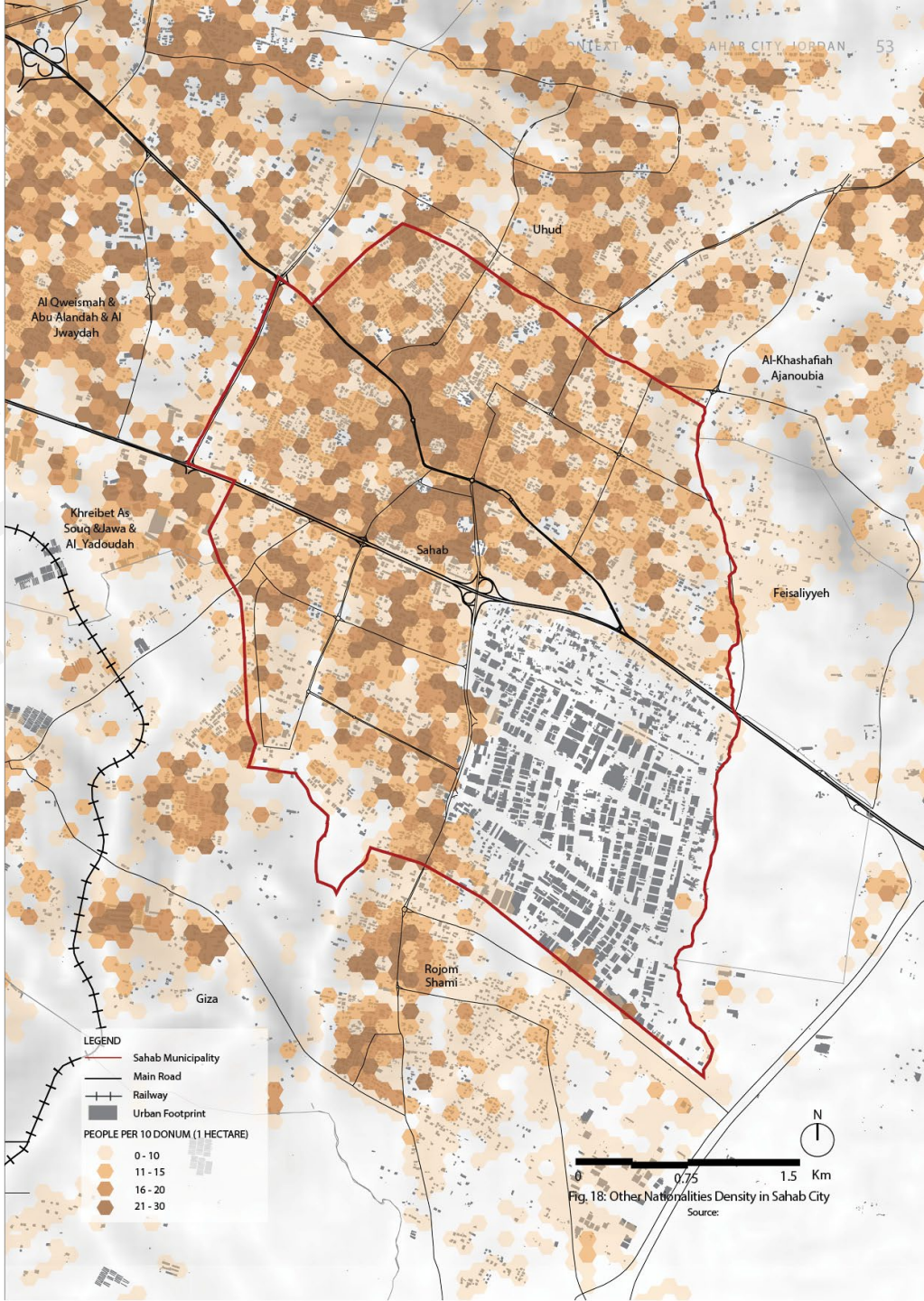


Fig. 18: Other Nationalities Density in Sahab City
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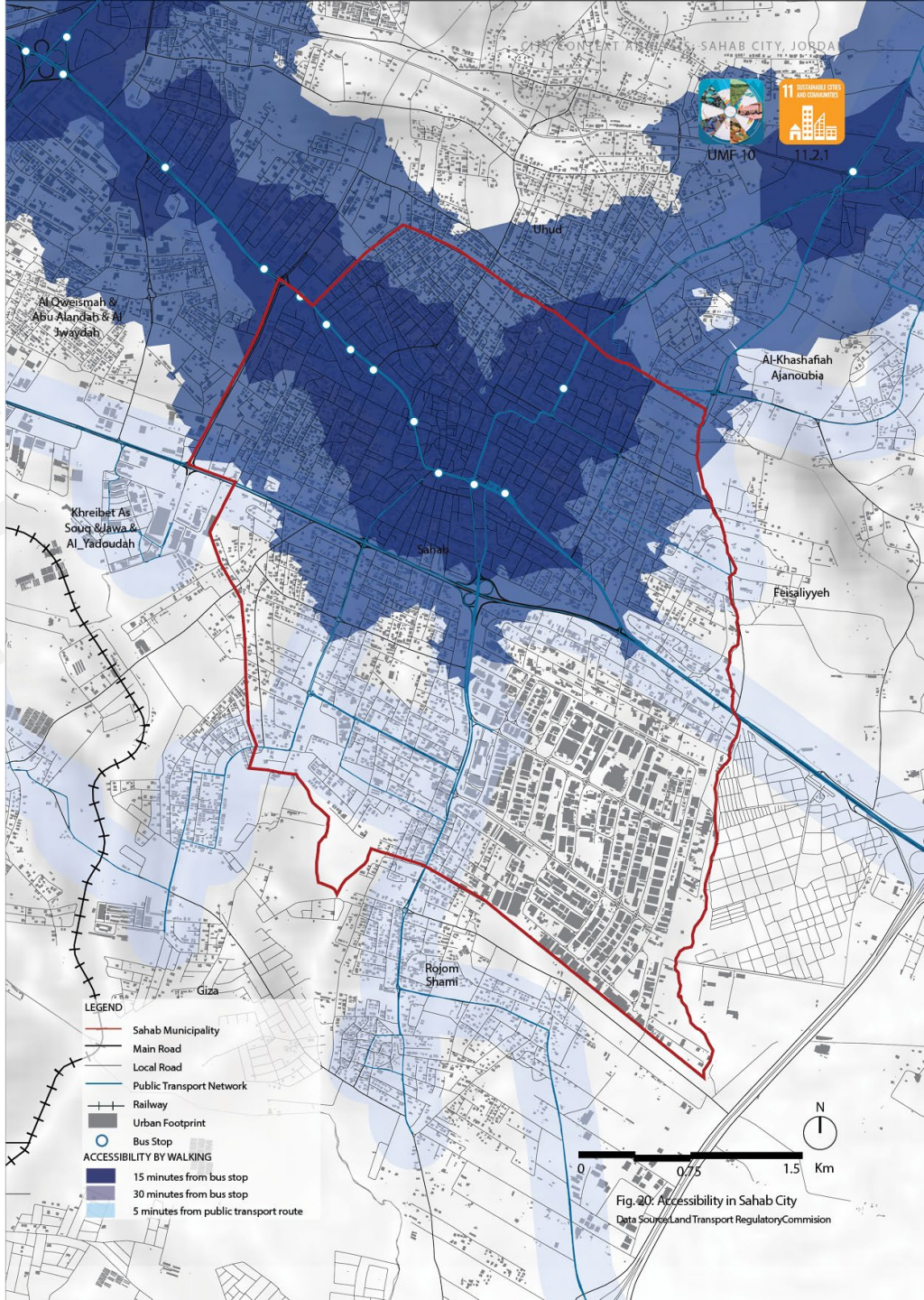
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Indicator 5 : Access to services - Public transportation and transport

- The road network in Sahab liwaa includes main roads (418 km), secondary roads (178 km), and rural roads (314 km).
- The road network faces challenges such as frequent excavations due to sewer works, encroachments on sidewalks and roads, deterioration of pavement conditions, and poorly planned road designs.
- Sahab Municipality accommodates about 60,000 workers daily, impacting infrastructure and traffic flow, and requiring effective transportation solutions.
- The bus station plays an important role in the transportation network, serving 47,720 passengers daily through 65 trips using 106 vehicles.
- The lack of a reliable public transport system within the city limits has forced residents to heavily rely on private vehicles.
- 7.64% of the population can access a public transport route within a 5-minute walk.
- 40.3% and 64.5% of Sahab Municipality residents can reach bus stops within 15 and 30 minutes, respectively.



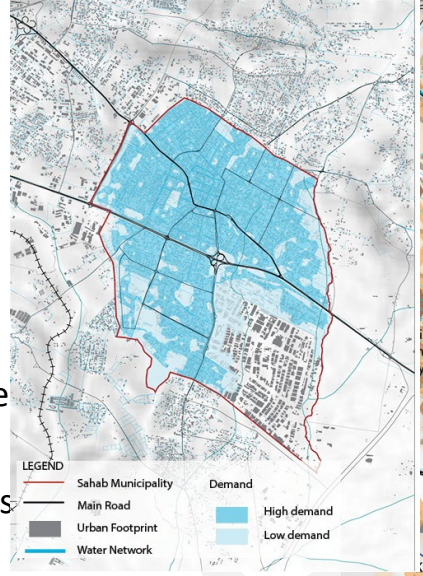
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Indicator 5 : Access to services – Energy and Water

- Approximately 95% of the population in Sahab liwaa and 98% of the Sahab Municipality are connected to the electricity network.
- Residents of Sahab Municipality experience frequent power outages due to increased pressure on electricity generators.
- The largest solar power station, "Baynoona," was established through a power purchase agreement with "Masdar" and the National Electric Power Company.
- The station produces more than 560 gigawatt-hours of energy annually, sufficient to power 160,000 homes, and prevents the emission of 360,000 tons of carbon dioxide each year.
- The percentage of the population served by the public drinking water network is 81.27% of the total population.
- The average daily water consumption ranges from 47 to 70 liters per person (approximately 17 to 26 m^3 annually).
- Non-revenue water represents 19% of the water supplied to Sahab Municipality, which is a major barrier to water supply and financial pressure on Jordan as a whole.
- An assessment of the current network capacity showed high water demand in most areas, particularly in the northern and western parts of the city, at a rate of 56.52%.



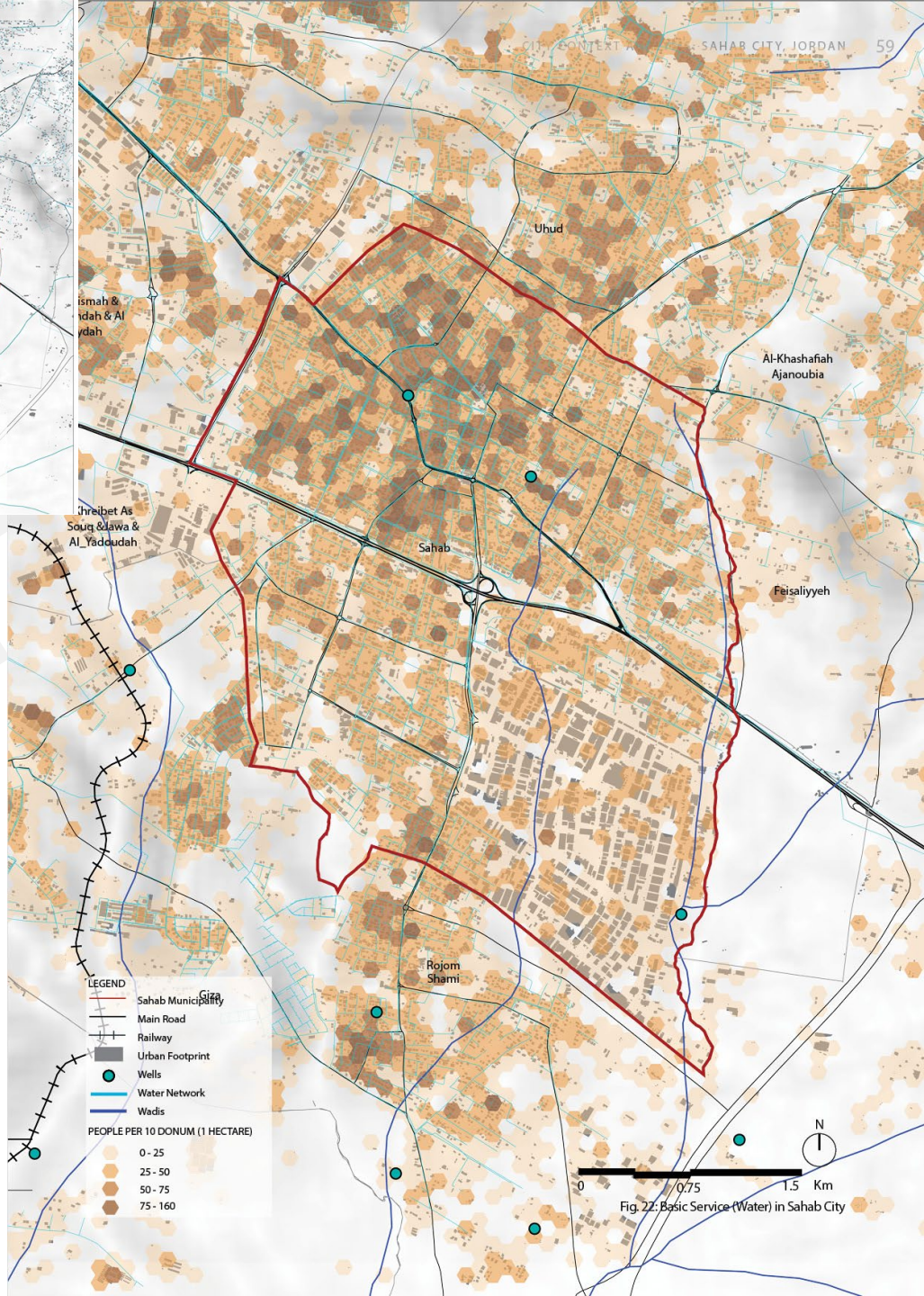


Fig. 22: Basic Service (Water) in Sahab City

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Indicator 5 : Access to services – Sewerage

- The percentage of households connected to the sewage network is 72.8% of the total housing.
- However, there are areas with inadequate wastewater management, such as the old town, where residents resort to disposing of waste in caves.
- The wastewater generated by Sahab Municipality is transported to two sewage treatment plants located outside its boundaries.
- There is no stormwater drainage network in the municipality, although there are some culverts.
- Within the King Abdullah II Ibn Al-Hussein Industrial City, there is a wastewater treatment plant, along with another plant located in the Industrial Clusters area.
- These two plants pose significant environmental risks due to the incomplete treatment of wastewater, which prevents safe reuse.

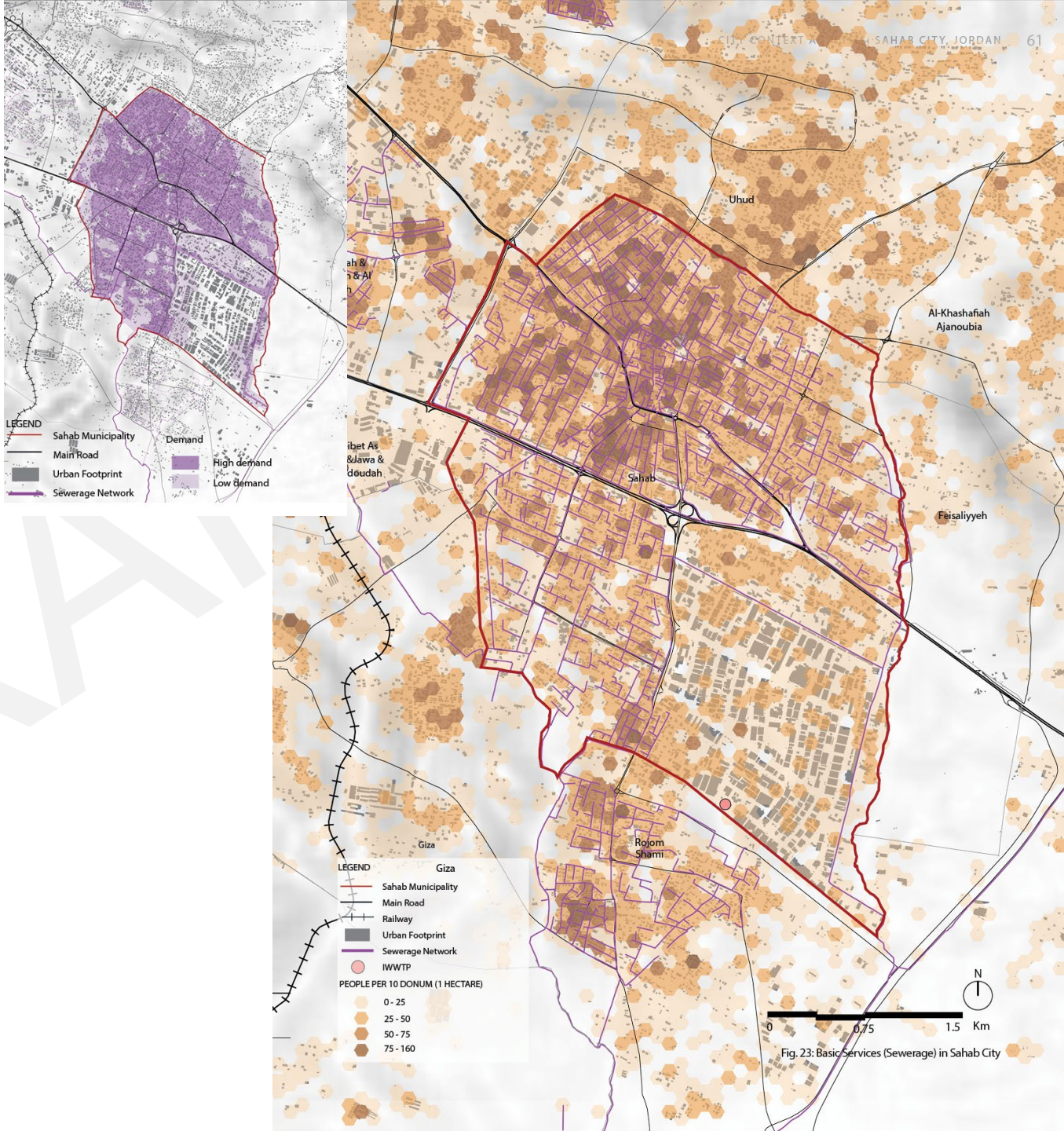


Fig. 23: Basic Services (Sewerage) in Sahab City

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Indicator 5 : Access to Public Facilities – Commercial Activities

- The commercial sector covers 6.11% of the organized area.
- There are several clusters of commercial activities along the main roads, forming commercial corridors that serve local neighborhoods and the industrial sector.
- 90.7% of Sahab Municipality residents can access commercial activities within a 15-minute walk, and 96.6% within 30 minutes.
- Prince Hassan Road is considered a major commercial corridor that plays a vital role in supporting the city's economic vitality.
- Commercial activities in mixed-use areas face challenges, such as unregulated dominance of commercial activities, leading to noise and visual pollution.

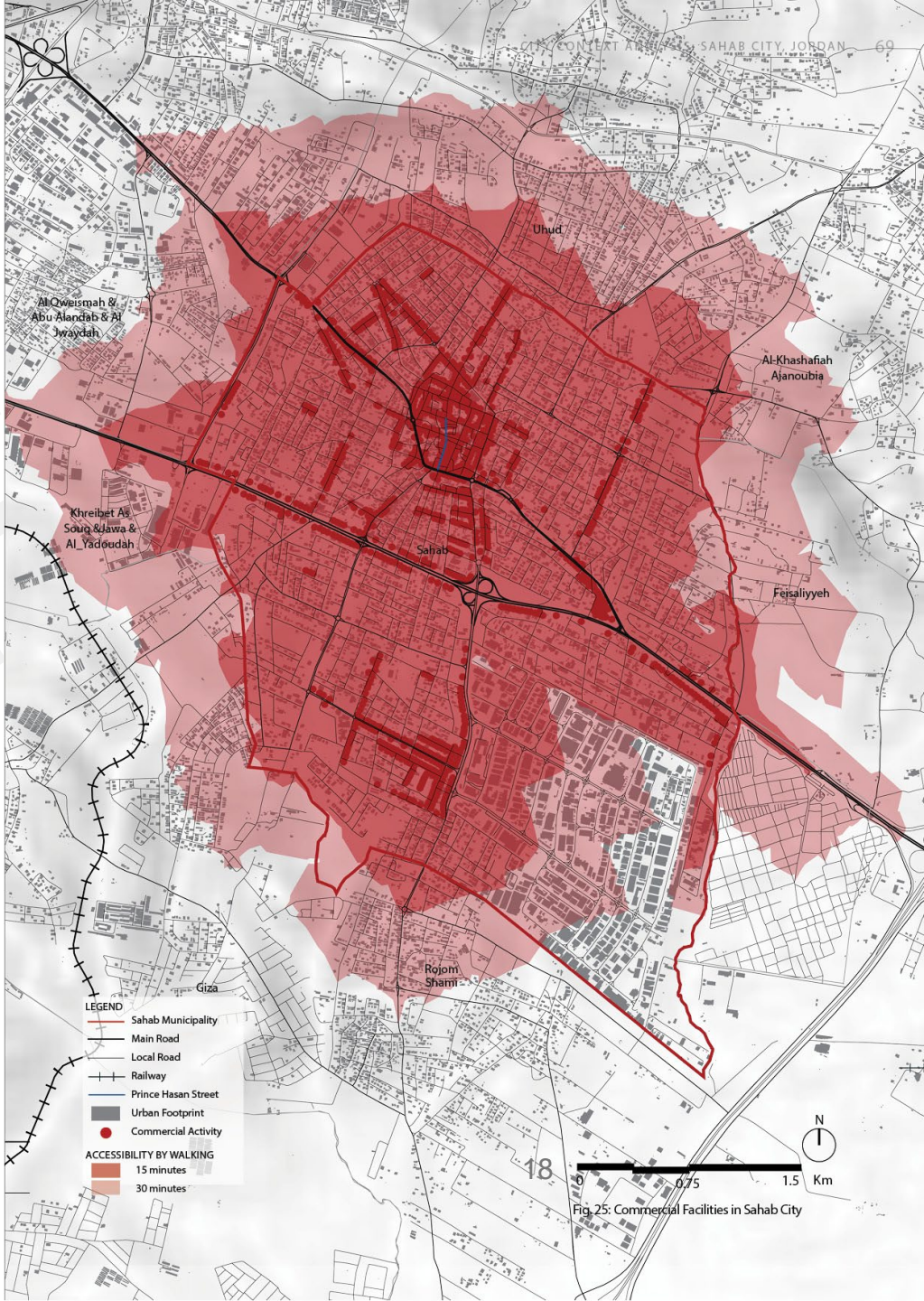


Fig. 25: Commercial Facilities in Sahab City

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Indicator 5 : Access to Public Facilities – Healthcare Facilities

- Sahab Municipality has one general hospital and one health center, in addition to three other health centers outside the municipality that residents use.
- Sahab has a low number of hospital beds per 10,000 citizens (8 beds) compared to the governorate average (15) and the national average (14).
- Sahab Municipality contains 14 dental clinics and 14 pharmacies, while Sahab District has 18 dental clinics and 30 pharmacies.
- There are 6 centers for women and children in Sahab Municipality and 8 in Sahab liwaa.
- The map shows the spatial distribution of the hospital and health centers in Sahab Municipality, revealing a clear variation between neighborhoods regarding access to health centers, with only 18.76% of Sahab Municipality residents located within a 15-minute walk and 64.02% within a 30-minute walk.

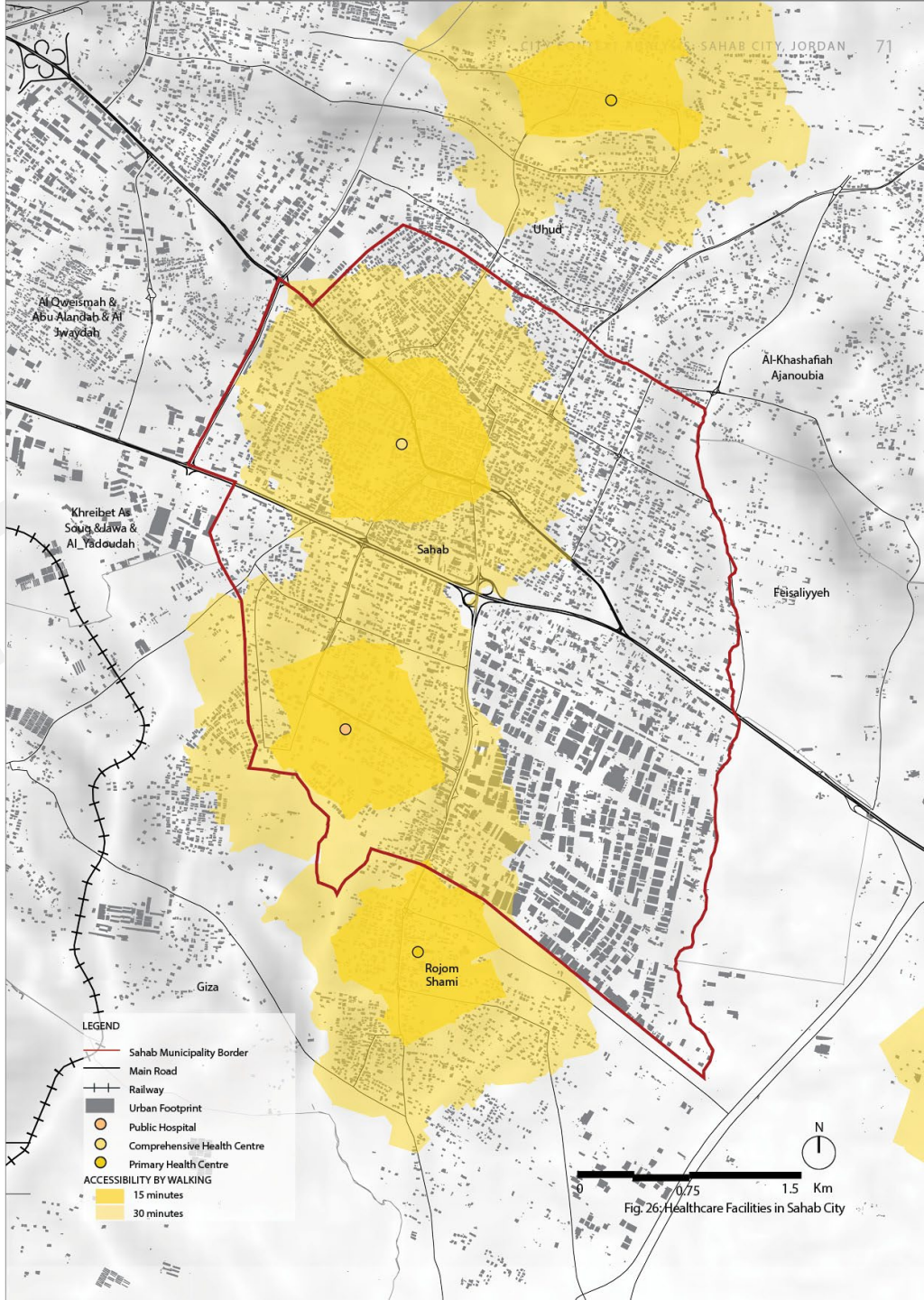


Fig. 26; Healthcare Facilities in Sahab City

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Indicator 5 : Access to Public Facilities – Educational Facilities

- The total number of schools in Sahab liwaa is 87, including 45 public schools (32 elementary schools and 13 secondary schools), 42 private schools, 62 mixed schools, 18 boys' schools, and only 7 girls' schools.
- 76.8% of the population can access public schools within a 15-minute walk, while 94.7% can access them within a 30-minute walk.
- Spatially, educational facilities are concentrated in neighborhoods located in the northern part of the city.
- There is a high student-to-teacher ratio of 50:1, compared to 20:1 at the governorate level and approximately 15.7:1 at the national level.
- According to local standards, the service range for public elementary and secondary schools, which is 3 and 5 km respectively, is well-served within the urban areas of Sahab Municipality.

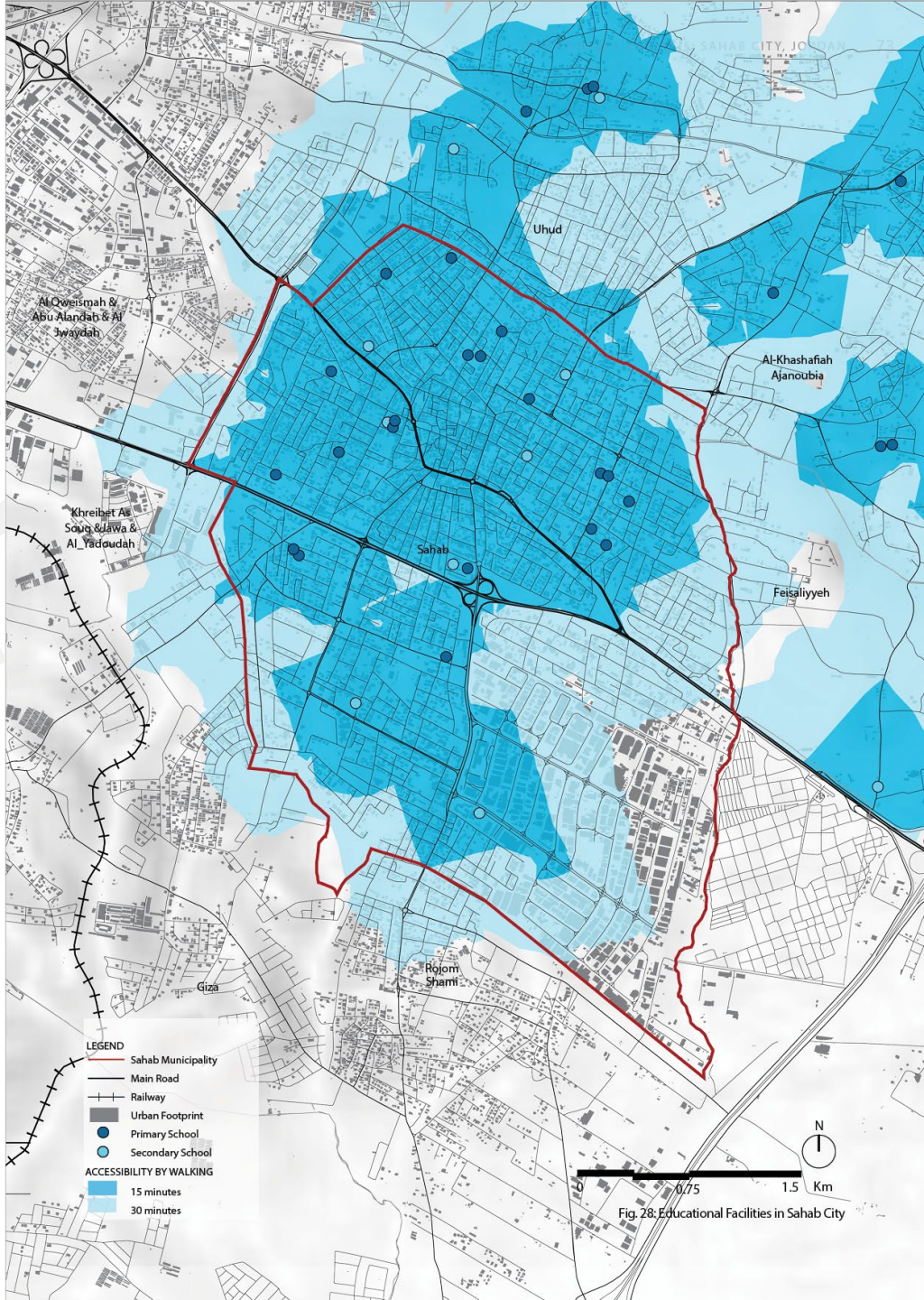


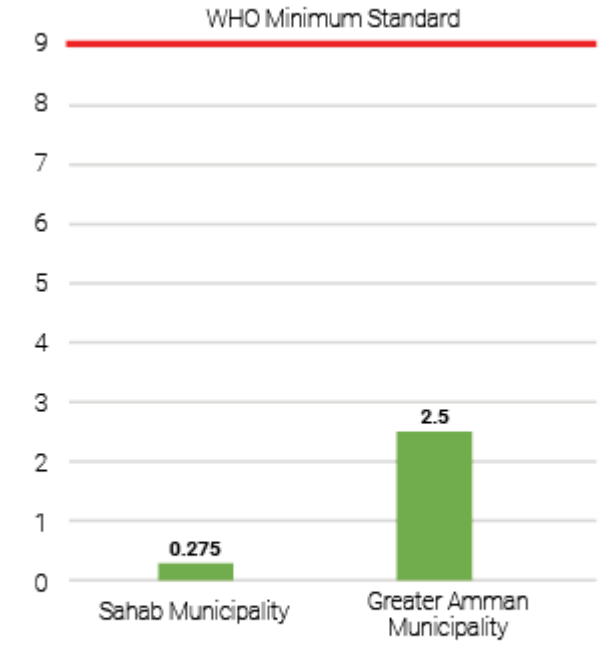
Fig. 28: Educational Facilities in Sahab City

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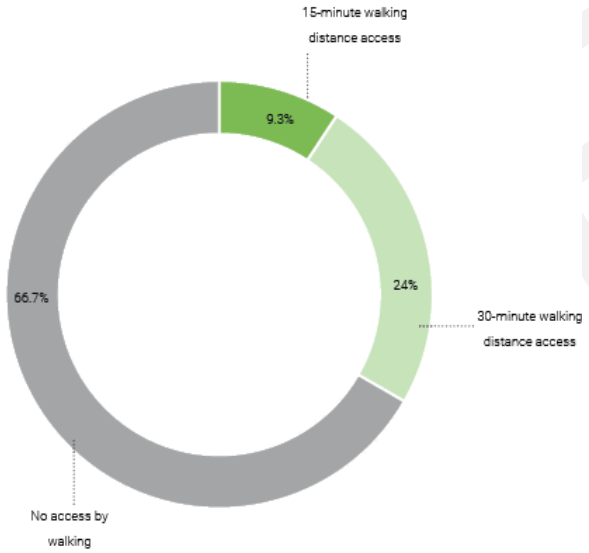
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Indicator 5 : Access to Public Facilities – Recreational Facilities



Green Area Per Capita in Sahab City (SQM/Capita)



Access to Recreational Facilities by Walking in Sahab City

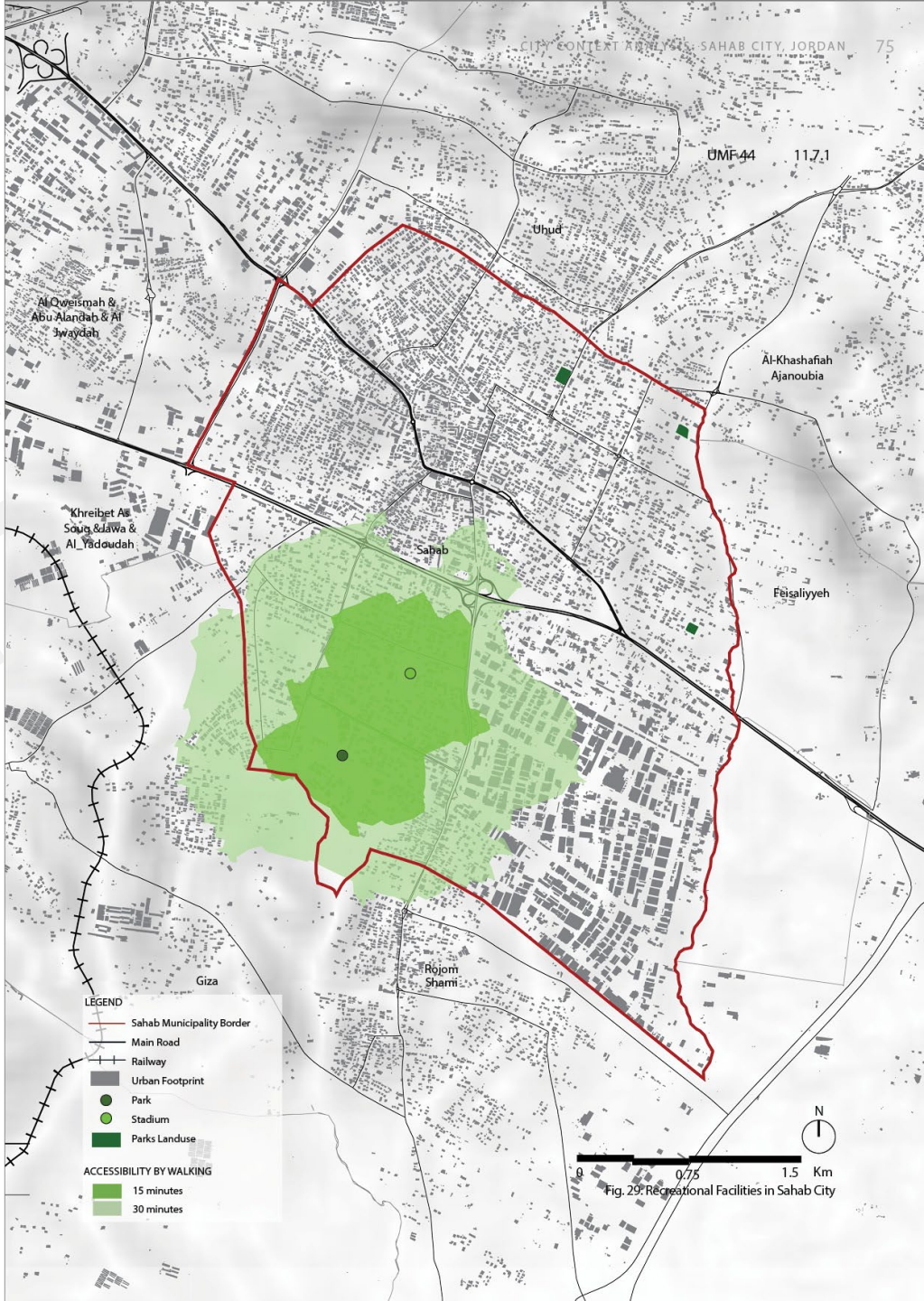


Fig. 29: Recreational Facilities in Sahab City

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Indicator 5 : Access to Public Facilities – Socio-Cultural Facilities

- Only 21.35% of the population can access these facilities within a 15-minute walk, and 59.
- 61% can access them within a 30-minute walk.
- Leaving about 40% of the population relying on private transportation.
- The analysis indicates a risk of the available cultural and social facilities being burdened by a large number of residents, which may lead to a decrease in the quality of services.

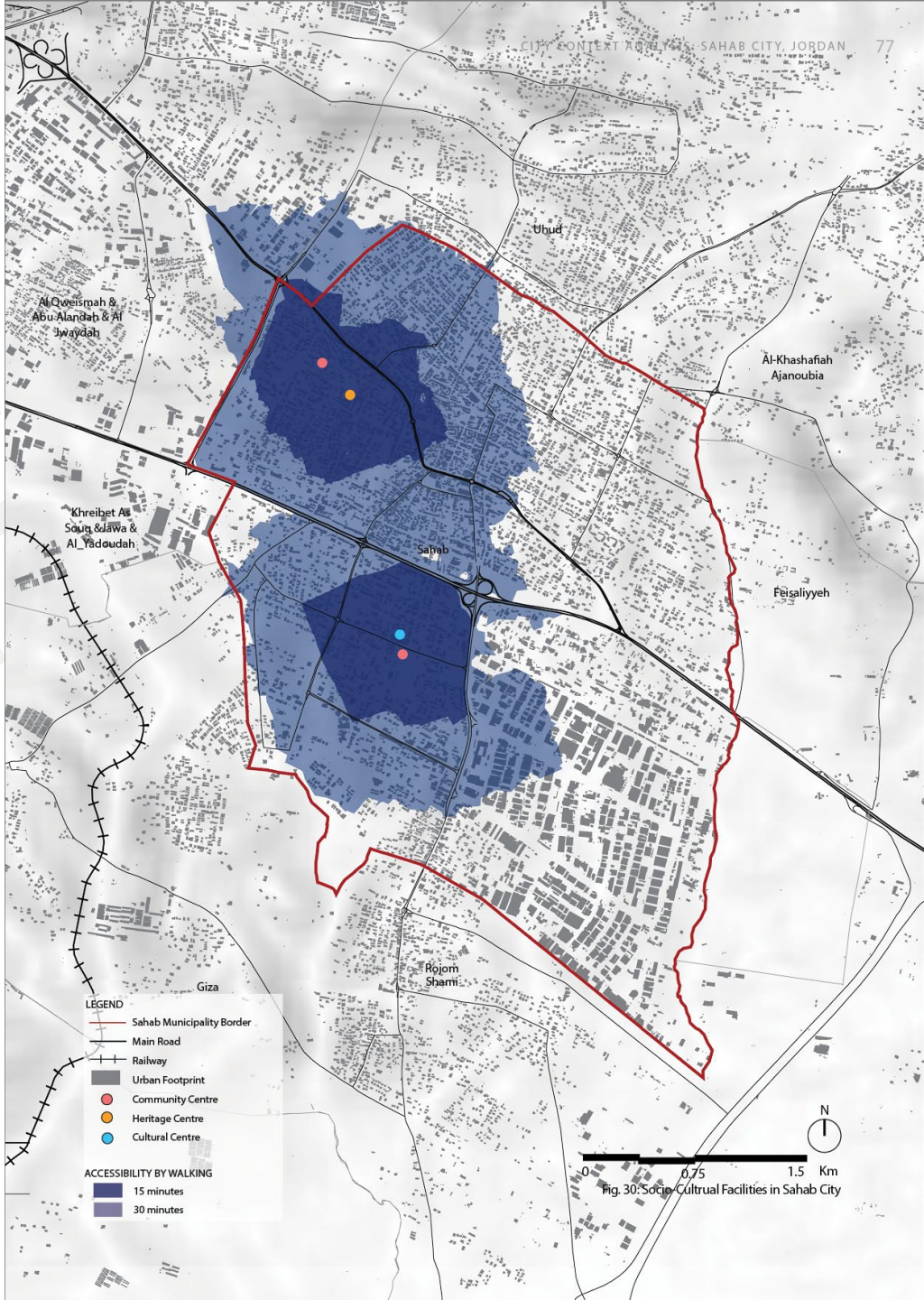


Fig. 30: Socio-Cultrual Facilities in Sahab City

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Indicator 6 : Environmental Quality – Environmental Hazards Sources

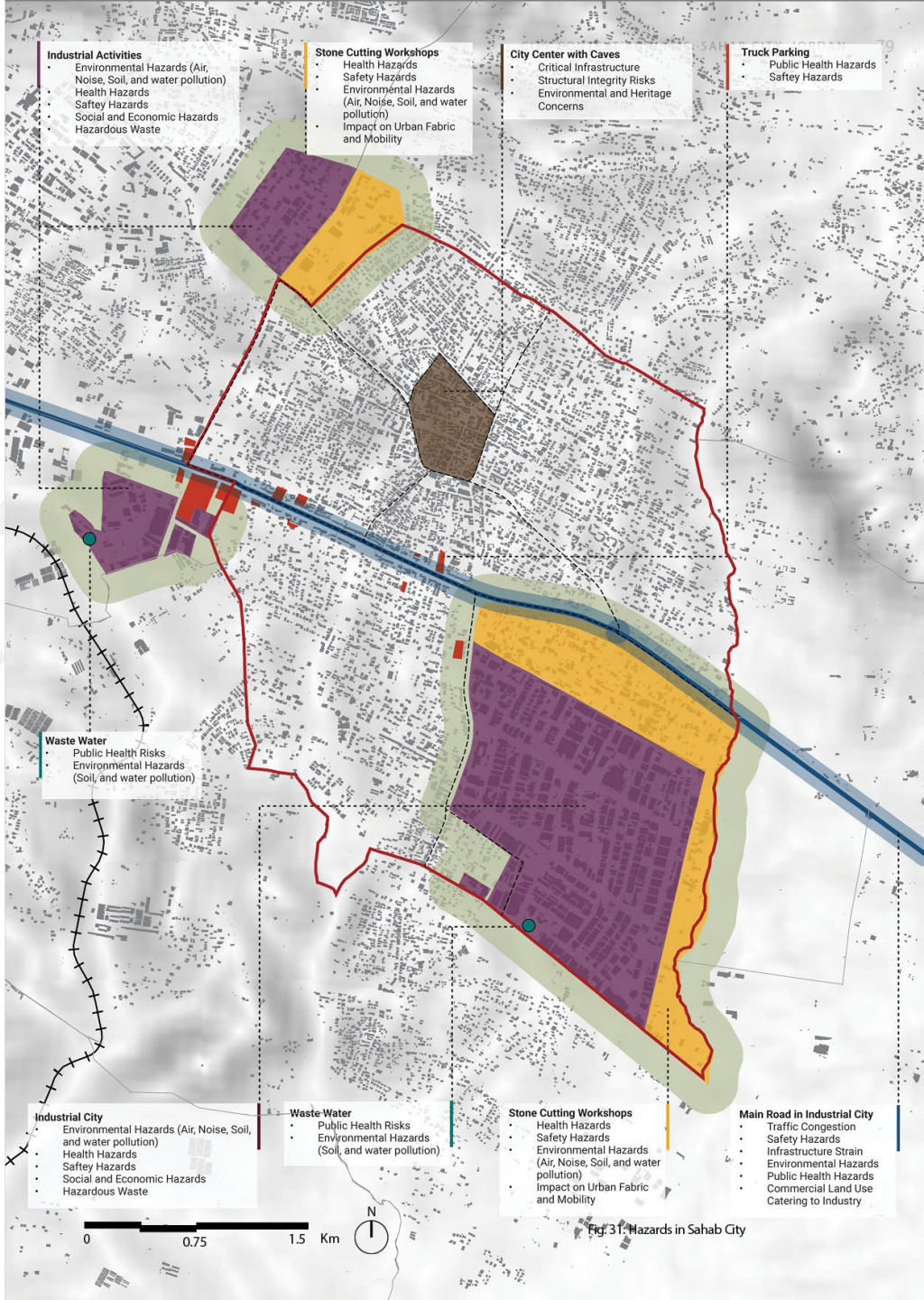


Fig. 31. Hazards in Sahab City

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Indicator 6 : Environmental Quality – Air Quality

According to the nitrogen dioxide concentration study:

- The map shows high concentrations of nitrogen oxide (in red and orange) in the central urban areas of Amman and the surrounding neighborhoods, including Sahab Municipality. These areas include those with high population density, heavy traffic, and industrial activities.
- There is a clear gradient in nitrogen dioxide levels from the urban center (red/orange) to the rural suburbs (green). This highlights the significant impact of urbanization and industry on air quality within and around the Greater Amman Municipality.

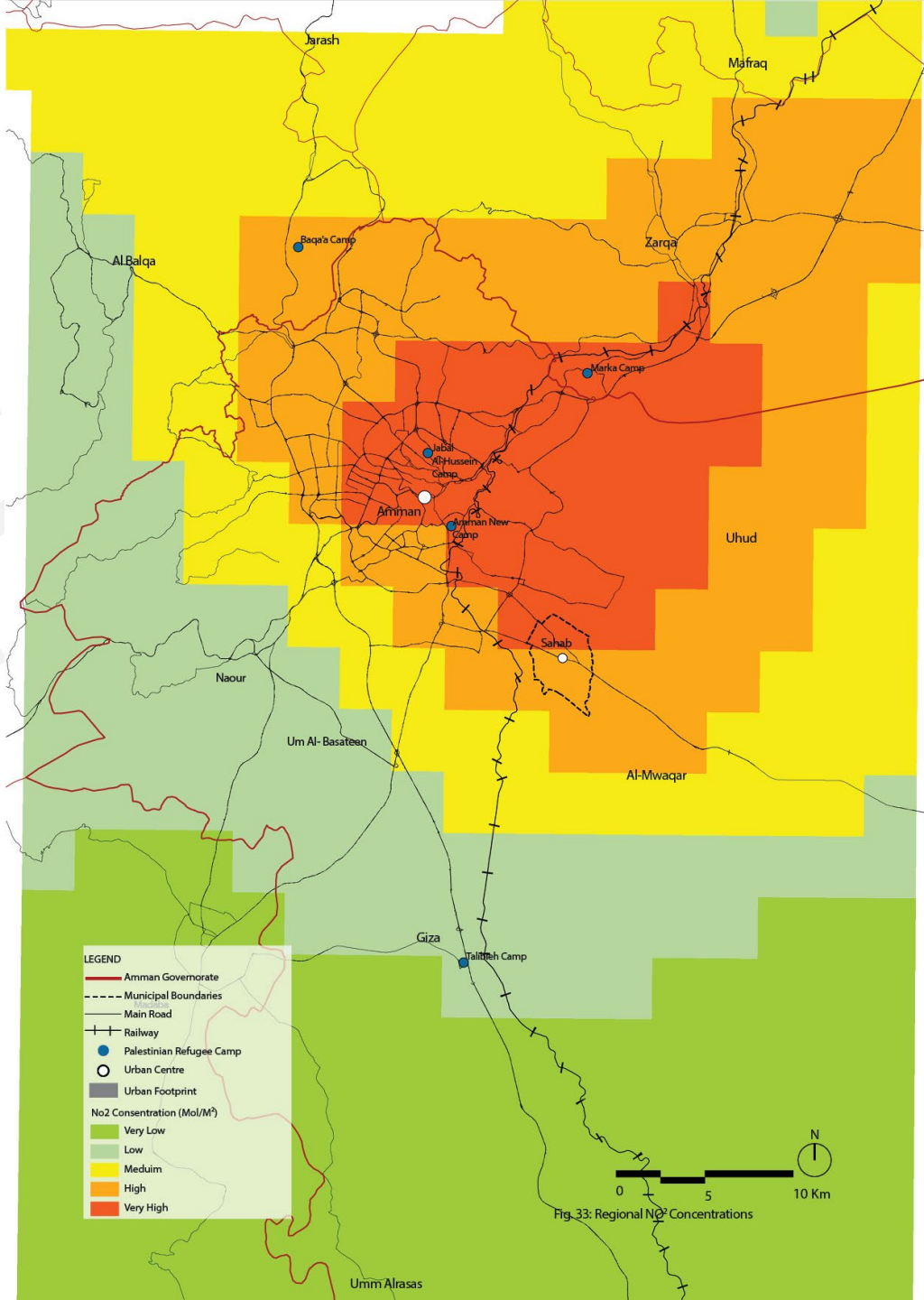


Fig. 33: Regional NO^2 Concentrations

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Indicator 6 : Environmental Quality – Air Quality

According to data from 2023 from the monitoring stations in King Abdullah II Ibn Al-Hussein Industrial City (Sahab):

- The level of nitrogen dioxide exceeds the World Health Organization guidelines by more than two times.
- The level of PM2.5 exceeds the World Health Organization guidelines by more than seven times.
- The level of PM10 exceeds the World Health Organization guidelines by more than three times.

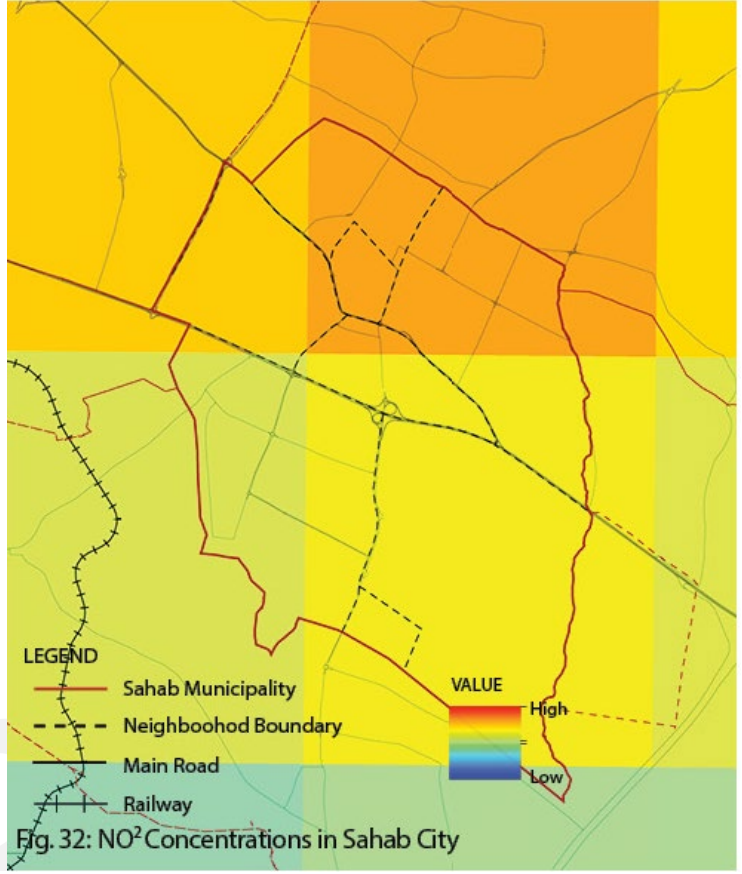


Fig. 32: NO^2 Concentrations in Sahab City

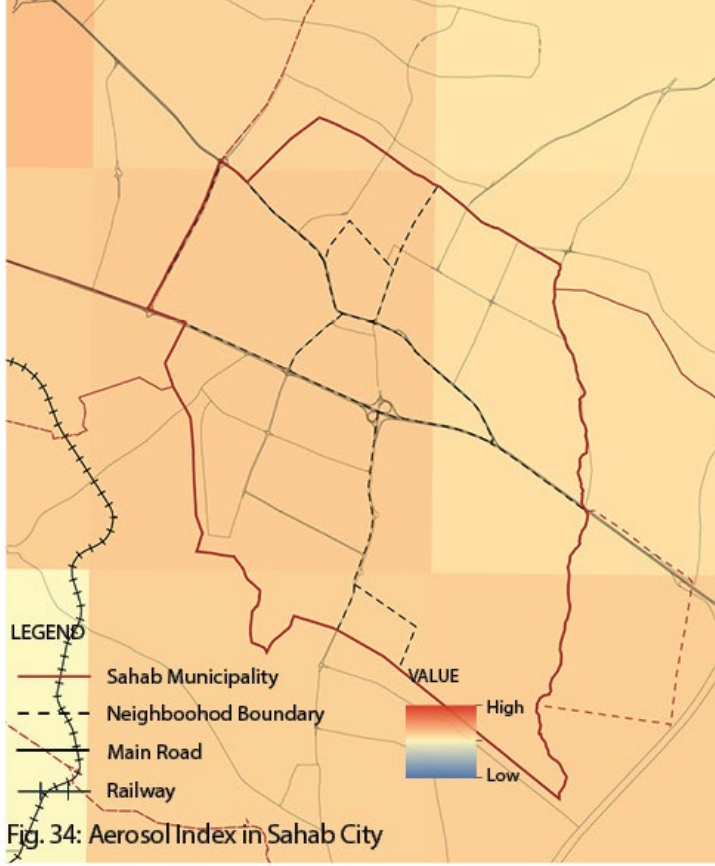


Fig. 34: Aerosol Index in Sahab City

Pollutant	Sahab 2022 Values	Sahab 2023 Values	JS 1140	WHO Stan-dard
PM10	48.80 µg/m³	-	70 µg/m³	15 µg/m³
PM2.5	30.1 µg/m³	35.00 µg/m³	40 µg/m³	5 µg/m³
NO_2	17.5 ppb	11.70 ppb	50 ppb	5 ppb

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Indicator 7 : Urban Heat Island Effect

- The correlation between the air dust index and land surface temperature plays a significant role in understanding climatic effects such as urban heat islands. When the concentration of airborne dust increases, there is greater scattering of ultraviolet rays, leading to a reduction in the amount of solar energy reaching the Earth's surface. This shows an apparent effect manifested in lower surface temperatures in areas with high concentrations of dust or fine particles in the atmosphere.
- The map displays estimates of urban heat islands and may not fully reflect the actual situation in areas experiencing high concentrations of airborne dust. In this case, surface temperatures may be lower, but the reality in the surrounding atmosphere could indicate an increase in heat trapped in the atmosphere due to the scattering of ultraviolet rays.
- The impact of urban heat islands in Sahab is significant, especially during the summer months when heat waves and rising temperatures are intense.
- Residents face higher energy costs due to increased use of air conditioning, and there are potential health risks, particularly for vulnerable populations such as the elderly and those with pre-existing health conditions.
- Additionally, the lack of sufficient green and open spaces, such as parks or shaded areas, limits the city's natural ability to cool itself through shading and evaporation (the cooling effect of plants that release moisture).

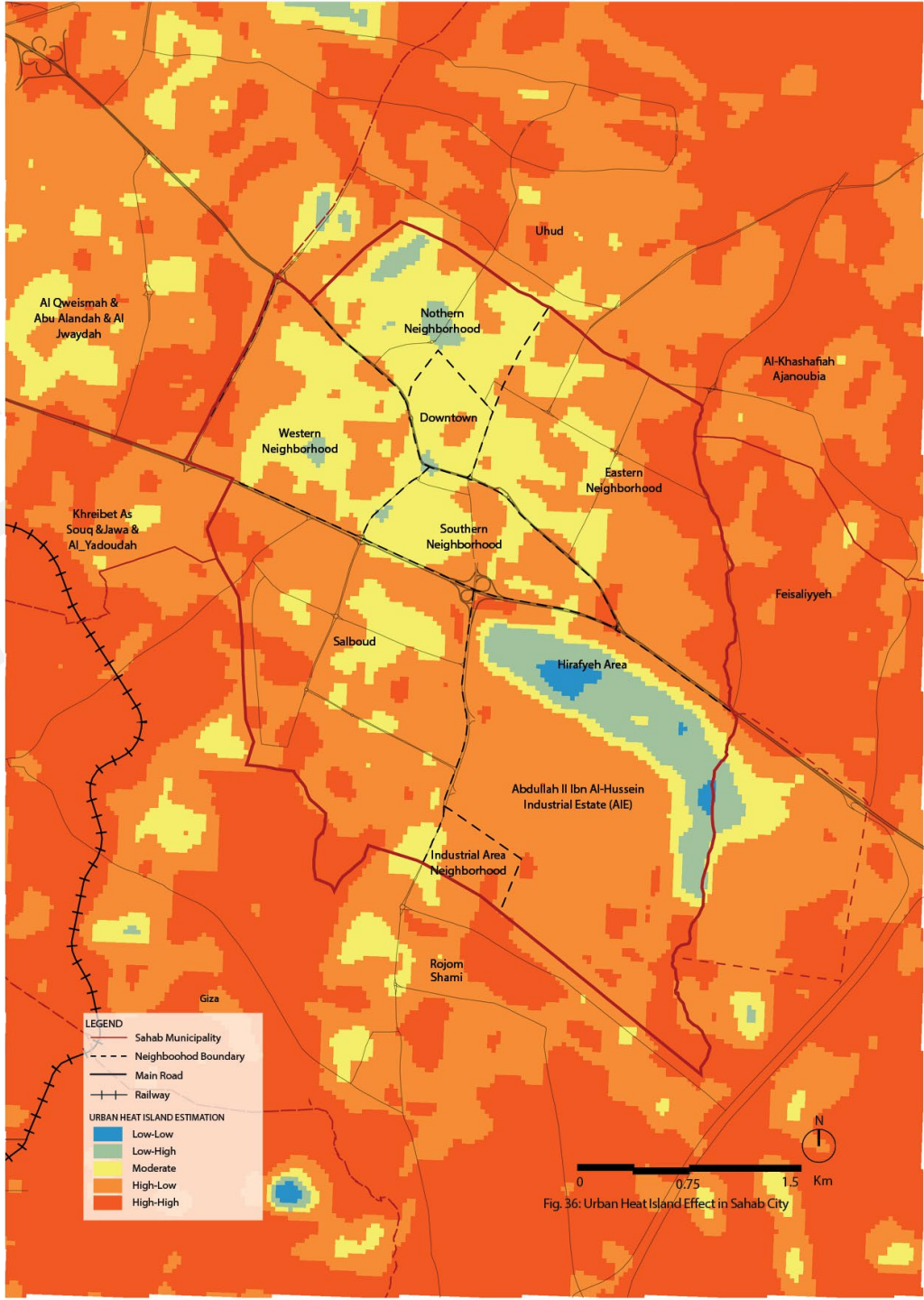


Fig. 36: Urban Heat Island Effect in Sahab City

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Studying Urban Current Vulnerabilities Hotspots

The layers included in the analysis in Geographic Information Systems (GIS) with equal weights are:

- Population density
- Building density
- Access to infrastructure services
- Access to public facilities
- Access to transportation
- Air pollution
- Urban heat island effect
- Infrastructure network efficiency
- Environmental risks

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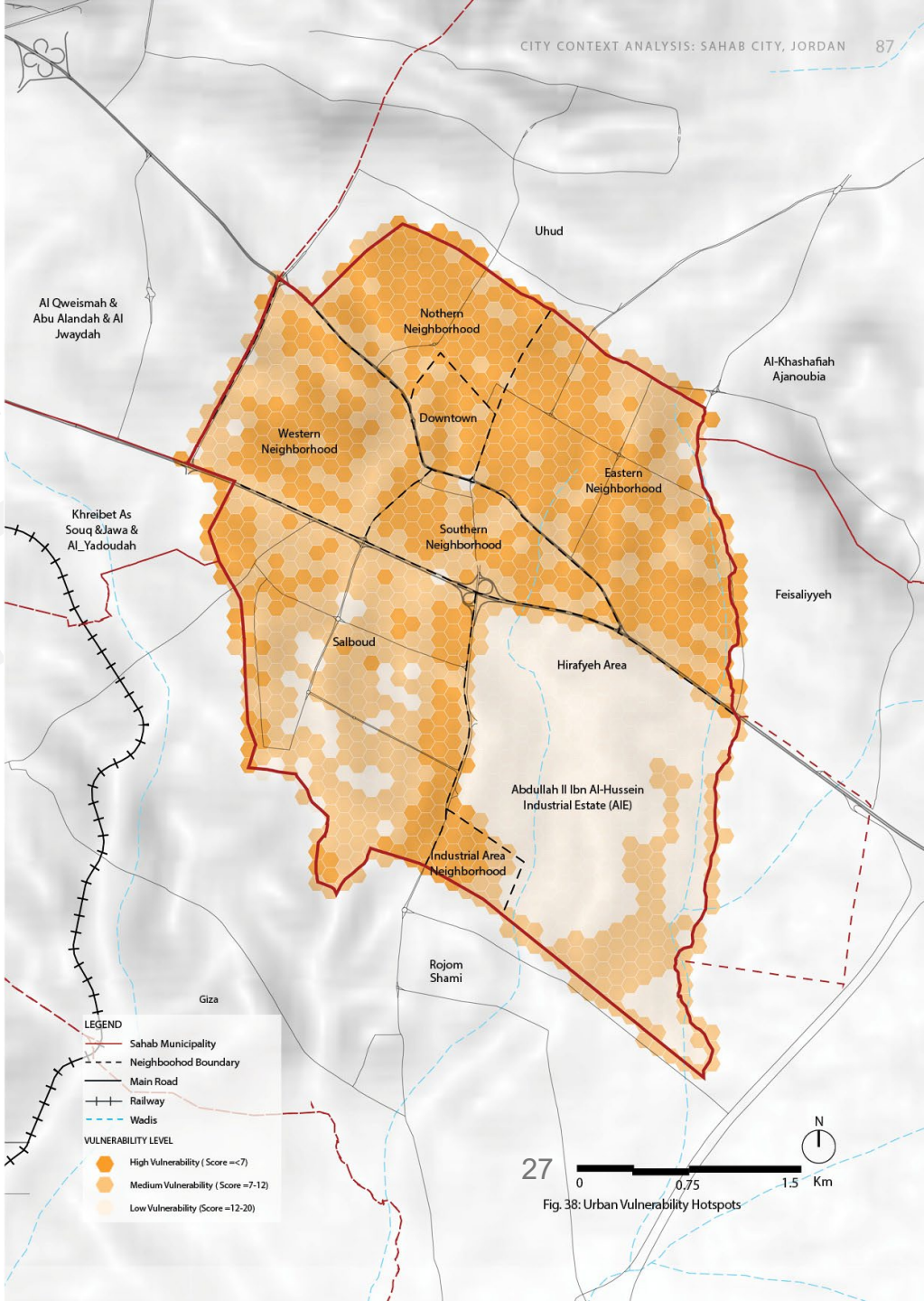
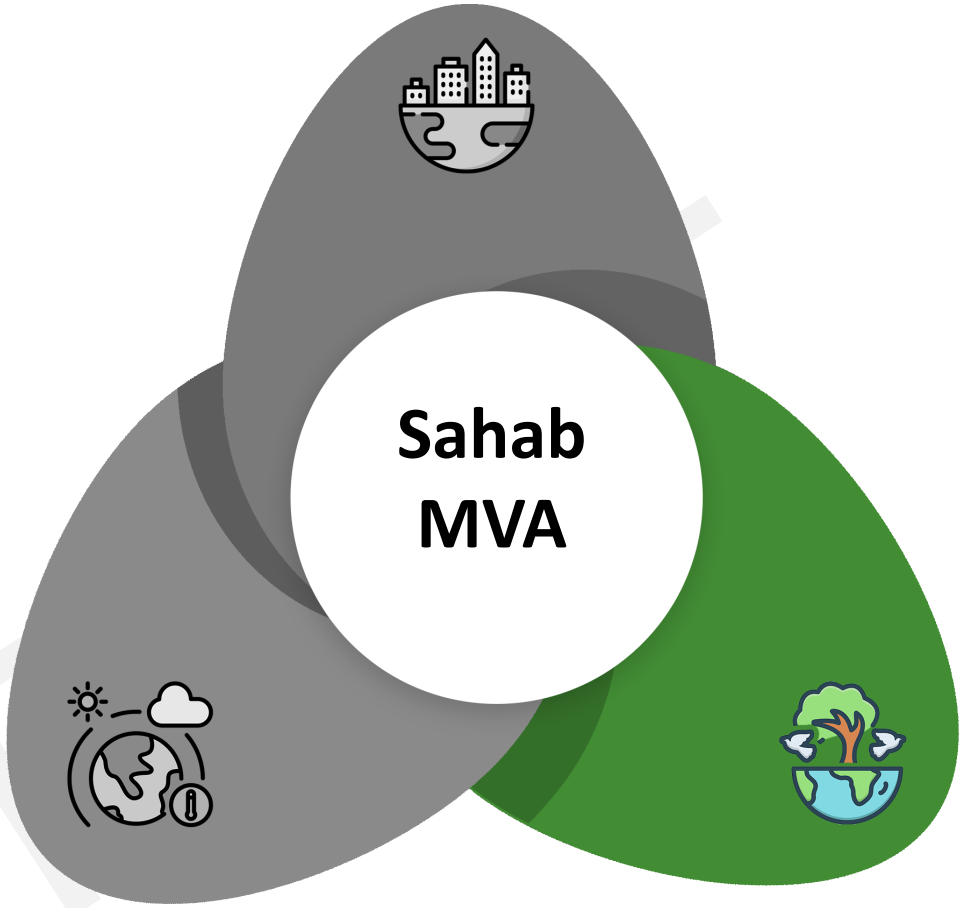


Fig. 38: Urban Vulnerability Hotspots

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Biodiversity Dimension



Biodiversity
Connectivity

Strategies and Policies Reviewed and Adopted in the Analysis

International

- UN Agreement on Biodiversity
- UN Agreement on Fighting desertification

National



- Jordan National Biodiversity Strategy and Action Plan (NBSAP)



- Environmental Law 2017



- Soil Protection By-Laws



- Natural Reserves and National Parks By-Laws



- Air Protection By-Laws



- Strategy of Environmental Education for Sustainability



- Agriculture Law



- New Plant Varieties Protection Law



- Guidelines for Environmental Impact Assessments of Wastewater Treatment Plants

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Indicator 1: Biodiversity Connectivity

- The dominance of built-up areas, including urban zones and industrial complexes, has significantly reduced the amount of land available for biodiversity.
- These urban areas act as barriers to the movement of various species of plants and animals, leading to sharp fragmentation of natural habitats.
- This urban expansion has consumed much of the available land within the municipality, resulting in the creation of isolated patches of vegetation that are no longer connected.
- These areas, which were once part of a larger ecological network, have become fragmented, making it difficult for plant and animal species to navigate between them in search of food, shelter, and breeding grounds.
- The limited space for flora and fauna within the municipality of Sahab severely constrains biodiversity richness and reduces the ecosystems' capacity to withstand environmental changes.
- Tree cover and shrubs are the most important natural habitats, but they need greater connectivity between them to restore and support biodiversity.

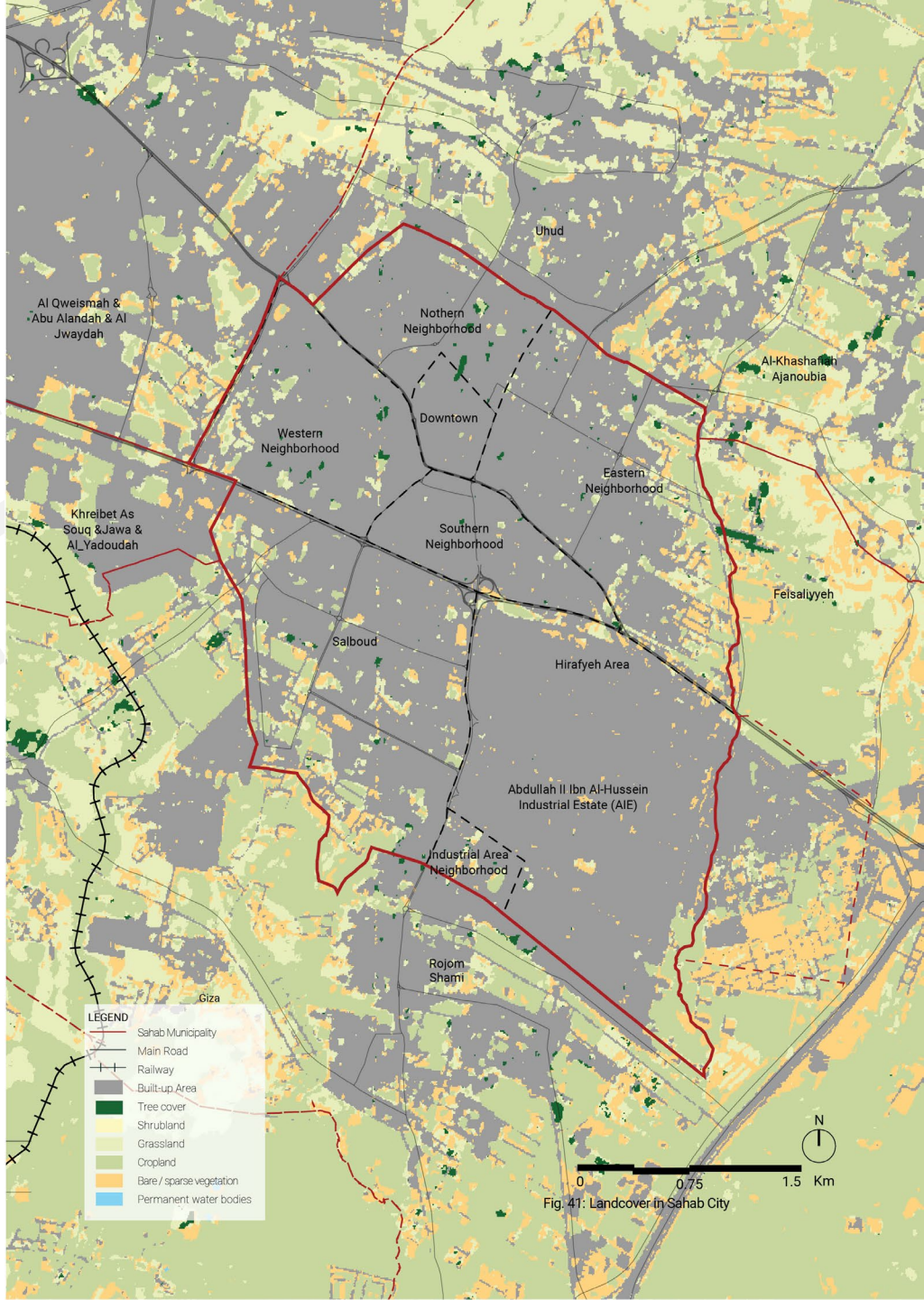


Fig. 41: Landcover in Sahab City

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Biodiversity Vulnerability in Sahab

The layer included in the analysis in Geographic Information Systems (GIS) with equal weights is:

- Vegetation cover

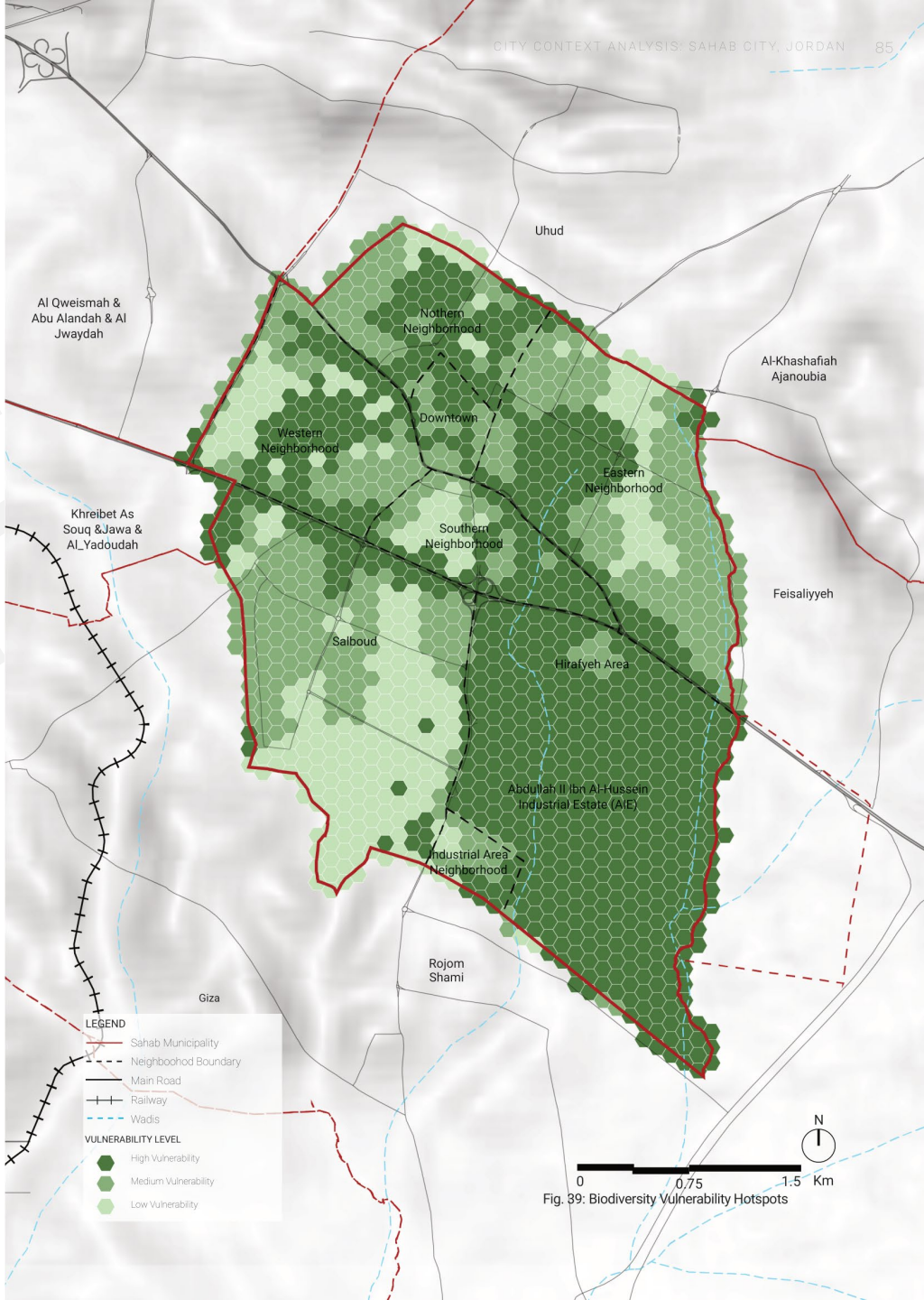


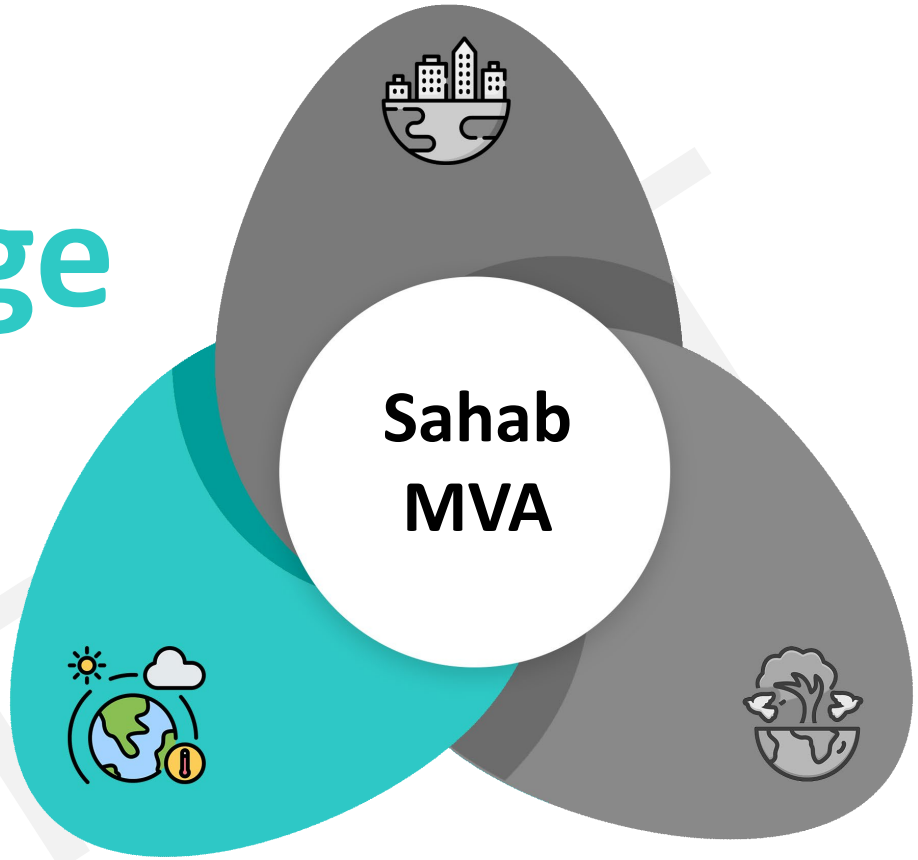
Fig. 39: Biodiversity Vulnerability Hotspots

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Climate Change Dimension



Floods

Drought

Heatwaves

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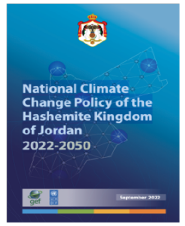
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Strategies and Policies Reviewed and Adopted in the Analysis

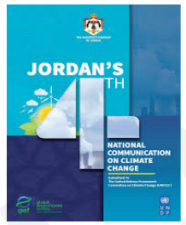
International

- Paris Agreement on Climate Change

National



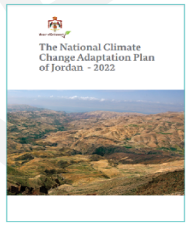
- Jordan National Climate Change Policy (2022-2050)



- Fourth National Communication Report to the UNFCCC



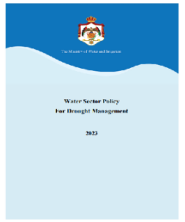
- Second Biennial Report to the UNFCCC



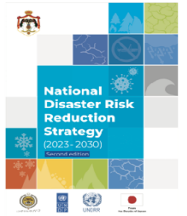
- The National Climate Change Adaptation Plan of Jordan - 2022



- Climate Change By-Law.



- Water Sector Policy for Drought Management 2023



- Natural Disaster Risk Reduction Strategy 2023-2030

Local

- Sahab Municipality Climate Action Initiatives

Fig. 39: Climate Change Policies, Plans , and Strategies

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Floods Hazards in Sahab

- The terrain of Jordan is characterized by its diversity, ranging from mountains to valleys, which increases the risks of flooding in general, especially flash floods, particularly in low-lying areas that are more susceptible to these phenomena.
- Inadequate infrastructure and rapid urbanization amplify the vulnerability of urban areas to flooding.
- Previous floods in Jordan, such as the Dead Sea floods in 2018 and the floods in Amman in 2019, revealed weaknesses in infrastructure and risk management.
- The low nature of Sahab and its valleys increase its exposure to flash floods during heavy rainfall.
- Sahab Municipality has installed culverts along the valley path in the Sleboud neighborhood, which is the most affected by flooding, to mitigate negative impacts and enhance resilience.

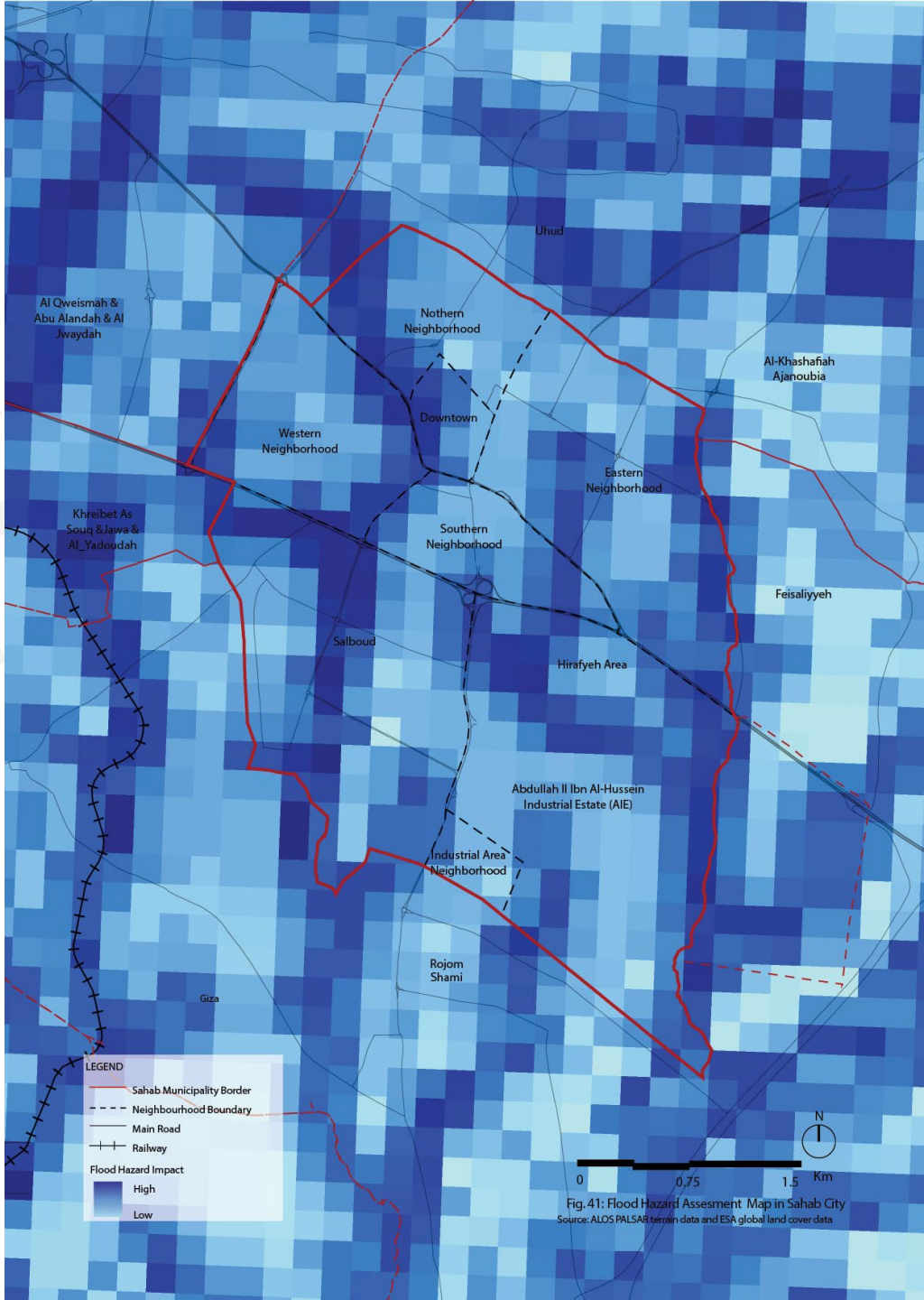


Fig. 41: Flood Hazard Assesment Map in Sahab City
Source: ALOS PALSAR terrain data and ESA global land cover data

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Rising Heat Waves in Jordan

- A heat wave is defined as a **period during which temperatures rise by 5 degrees Celsius or more above the long-term average, lasting for at least three consecutive days.**
- Jordan has experienced an increase in the frequency and intensity of heat waves due to climate change, particularly in urban areas where this effect is exacerbated by the Urban Heat Island phenomenon, which makes urban areas warmer compared to surrounding rural areas due to urban expansion and the use of building materials that retain heat.
- Heat waves impact public health, especially vulnerable groups, and put pressure on energy and water systems.
- Heat waves are expected to increase by 120% under moderate climate change scenarios (RCP 4.5), and the increase could reach up to 800% under more severe climate conditions (RCP 8.5), indicating greater risks in the future.
- **To develop the plan**, records of daily maximum temperatures from the Jordan Meteorological Department were analyzed using Geographic Information Systems (GIS).

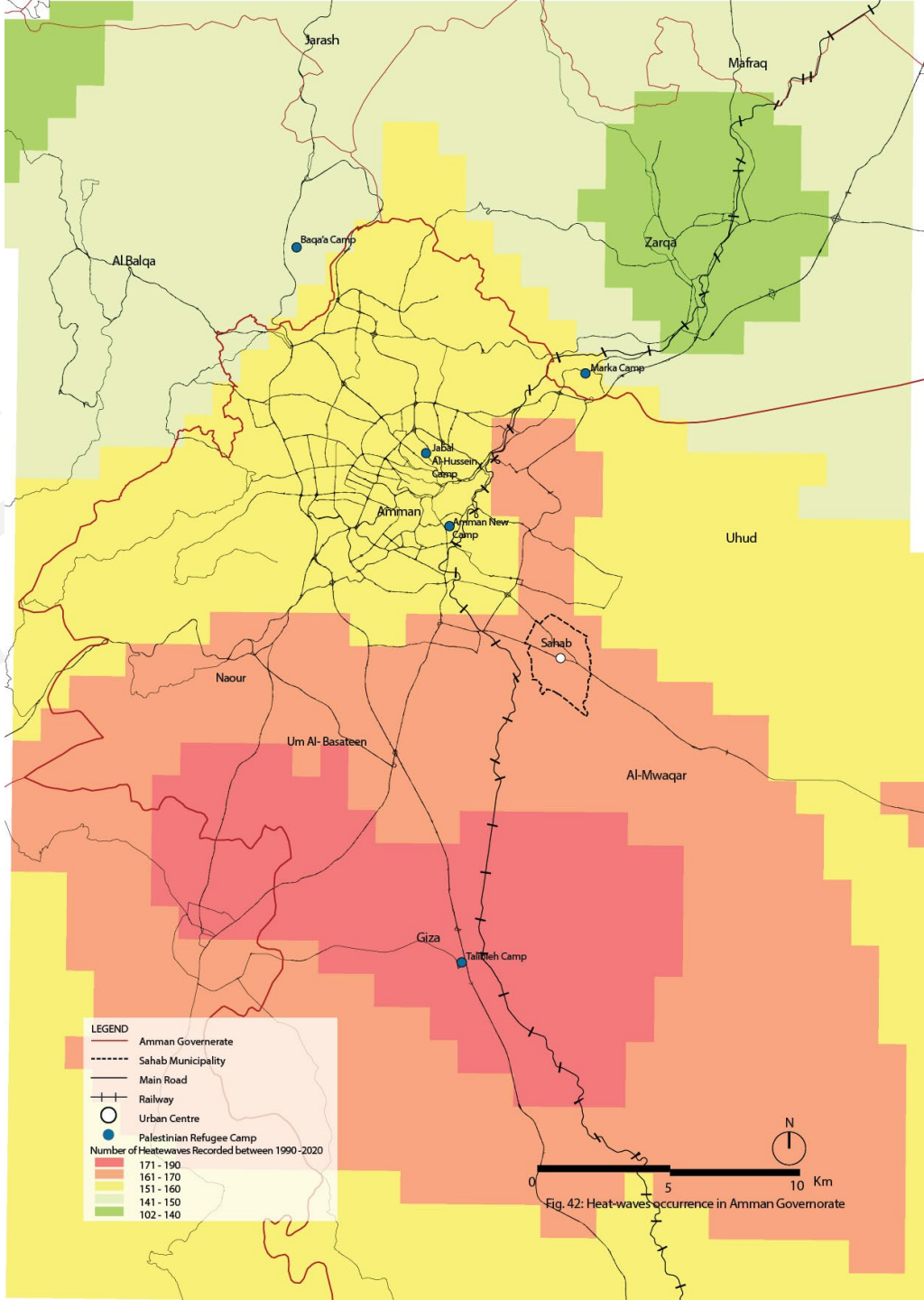


Fig. 42: Heat-waves occurrence in Amman Governorate

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Heat Waves in Sahab

- The presence of industrial areas and the lack of green spaces in the city of Sahab enhance the Urban Heat Island (UHI) effect, significantly contributing to rising temperatures and increasing pressure on residents and infrastructure, especially during heat waves.
- Residents of Sahab, particularly those with low incomes, lack adequate cooling systems, increasing their exposure to heat-related illnesses. Heat waves lead to higher electricity consumption, contributing to frequent power outages, and exacerbate water shortages due to increased evaporation rates. Additionally, livestock productivity deteriorates due to heat stress, negatively impacting the income of those working in agriculture and rural households.
- Sahab experienced between 161 and 170 heat wave events from 1990 to 2020, highlighting the area's frequent exposure to high temperatures.
- Sahab needs to adopt strategies to enhance urban resilience, including the introduction of green infrastructure and improved urban planning that considers environmental factors and climate changes. Furthermore, community awareness campaigns should be implemented, along with emergency response plans to protect the most vulnerable populations from the effects of high temperatures and other climate-related risks.

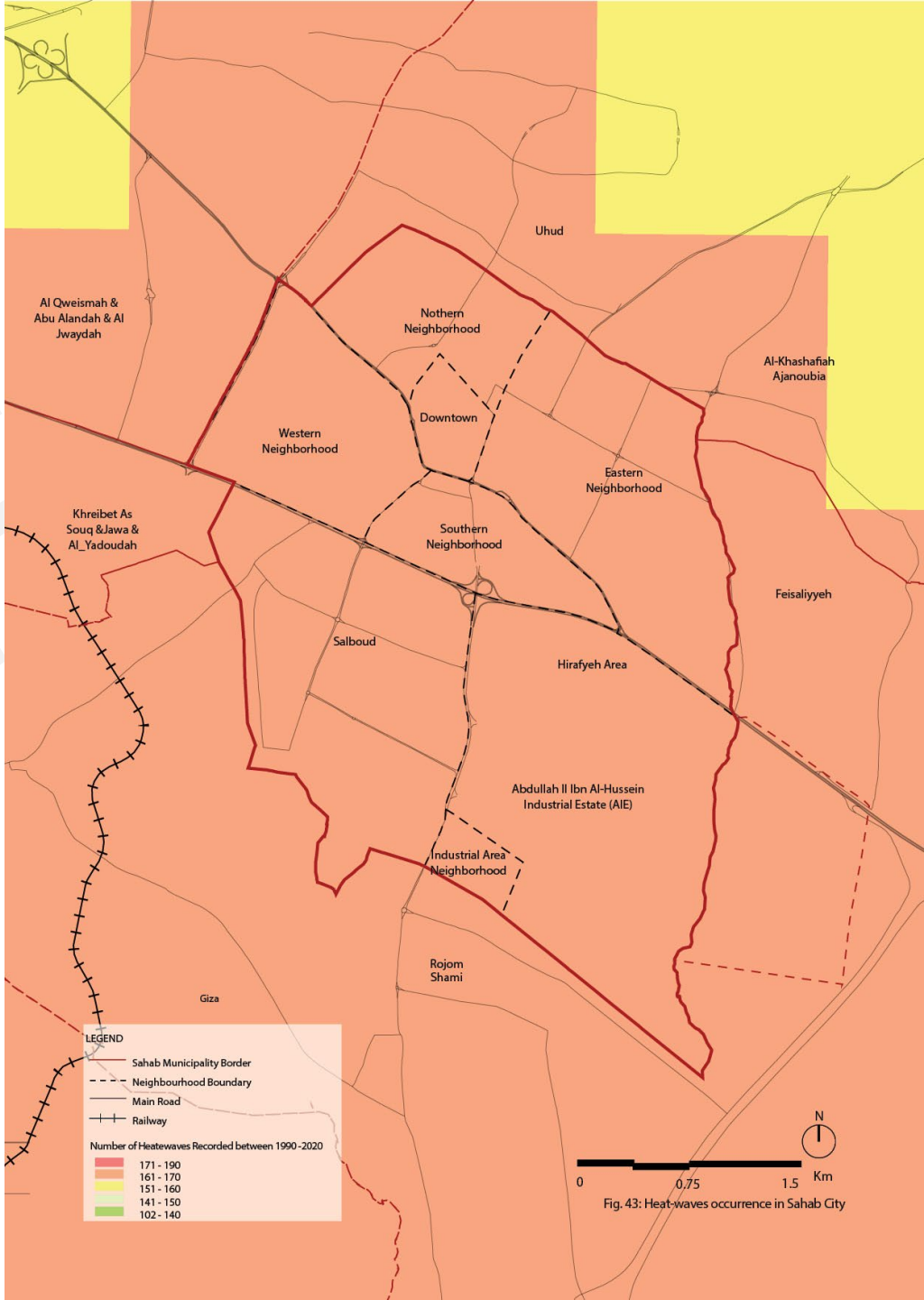


Fig. 43: Heat-waves occurrence in Sahab City

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Drought in Jordan: Implications of Historical Patterns

- Jordan is one of **the most water-scarce countries in the world, exacerbating the effects of drought** and increasing pressure on the already fragile water systems that struggle to meet the needs of the population and various sectors.
- There are different types of drought, including atmospheric, agricultural, and hydrological droughts.
- Jordan has experienced recurrent drought periods since 1777, with annual droughts occurring approximately every 9.3 years, while two-year droughts extend every 51.3 years. Notable major drought periods that significantly affected food security and agricultural production occurred in 2001 and 2009, leading to sharp declines in livestock and crop production, which increased Jordan's challenges in addressing water scarcity and achieving food security.
- The Drought Management Policy for 2023 includes key objectives to reduce the impacts of drought. These objectives include improving water resource management, enhancing water use efficiency, developing strategies to mitigate drought effects, raising community awareness about the importance of water conservation, and improving water infrastructure to ensure sustainability amid increasing climate change impacts.
- Additionally, the national climate change policy focuses on enhancing water management, cultivating drought-resistant crops, and improving early warning systems.

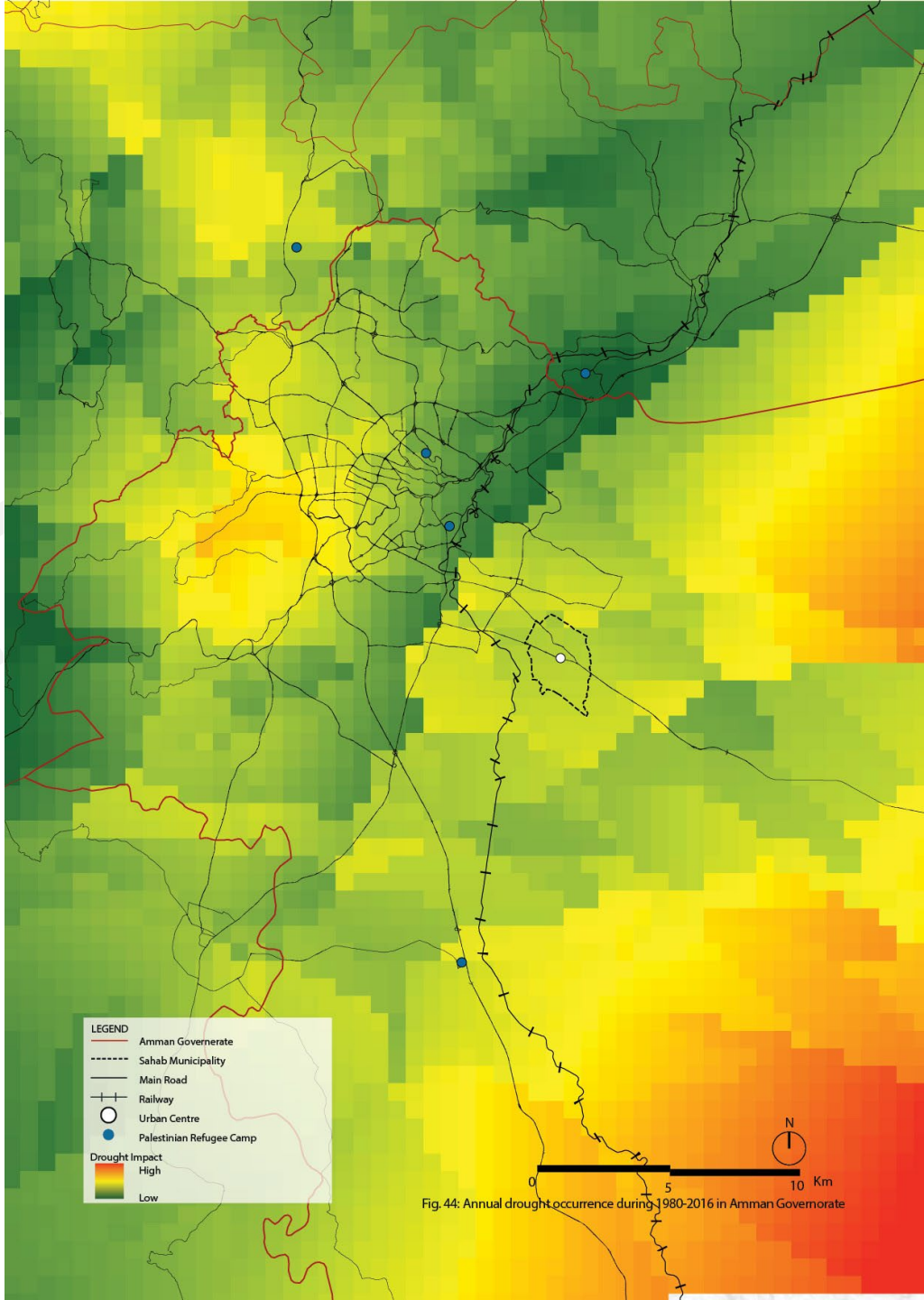


Fig. 44: Annual drought occurrence during 1980-2016 in Amman Governorate

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Effects of Drought in Sahab

- The residents of Sahab heavily rely on rain-fed agricultural systems, making them sensitive to fluctuations in rainfall.
- Agricultural communities in Sahab face significant challenges during drought periods, including **reduced crop yields and increased reliance on irrigation, leading to the depletion of groundwater.**
- The interaction between the impacts of drought and socio-economic factors **affects migration and changes in livelihoods in rural areas.**
- Although drought may not be directly linked to an increase in diseases, its effects on temperatures and water availability contribute to the deterioration of public health for the most vulnerable populations.
- **Water scarcity increases competition for limited resources between agriculture and domestic and industrial uses, resulting in lower crop production and higher living costs.**
- The impacts of drought in Sahab **require urgent management strategies to enhance adaptive capacity and resilience.**

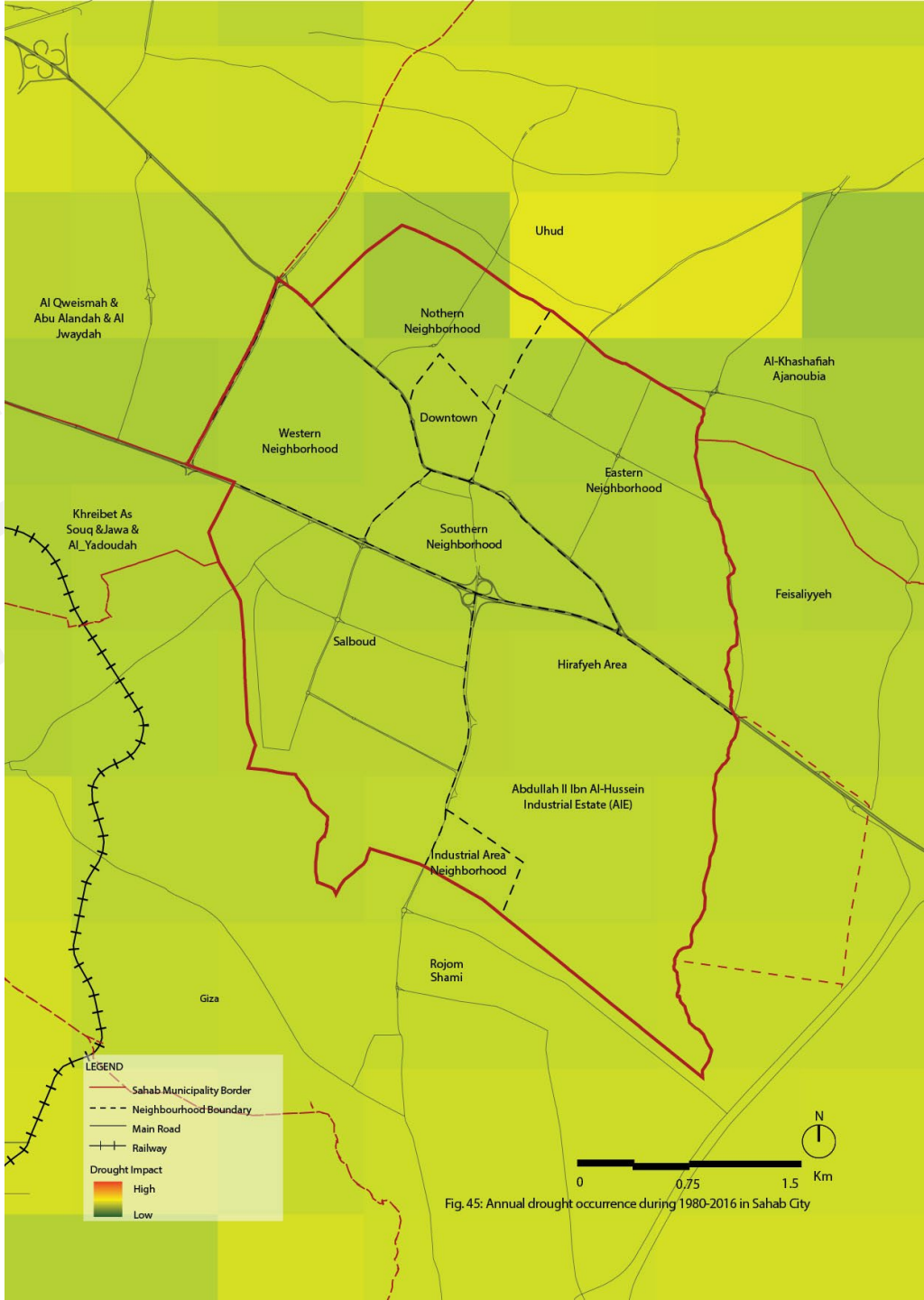


Fig. 45: Annual drought occurrence during 1980-2016 in Sahab City

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Climate Change Hazards in Sahab

The layer included in the analysis in Geographic Information Systems (GIS) with equal weights is:

- Drought
- Heatwaves
- Floods

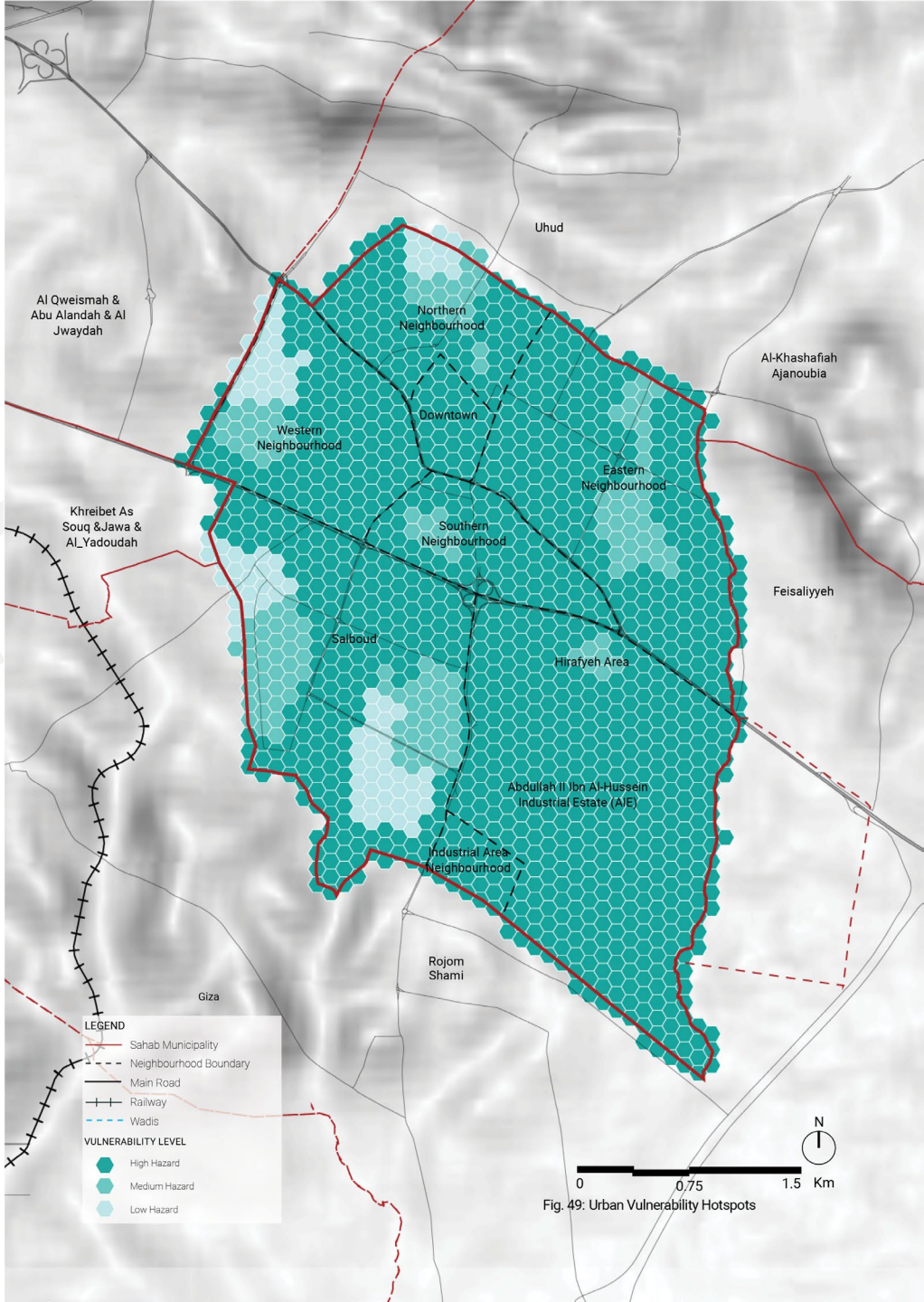


Fig. 49: Urban Vulnerability Hotspots

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Validation Workshop

Stakeholders Validation Workshop

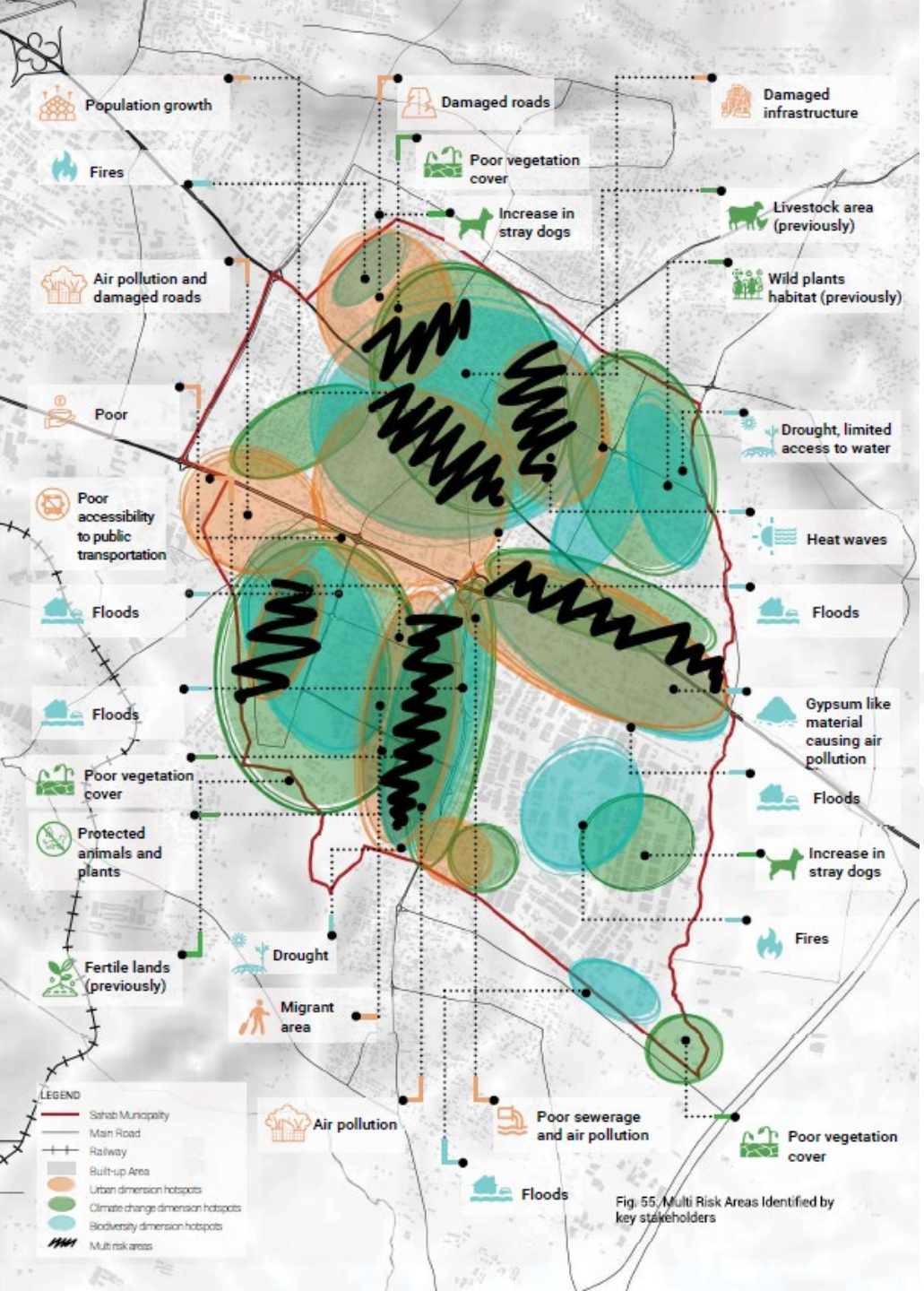


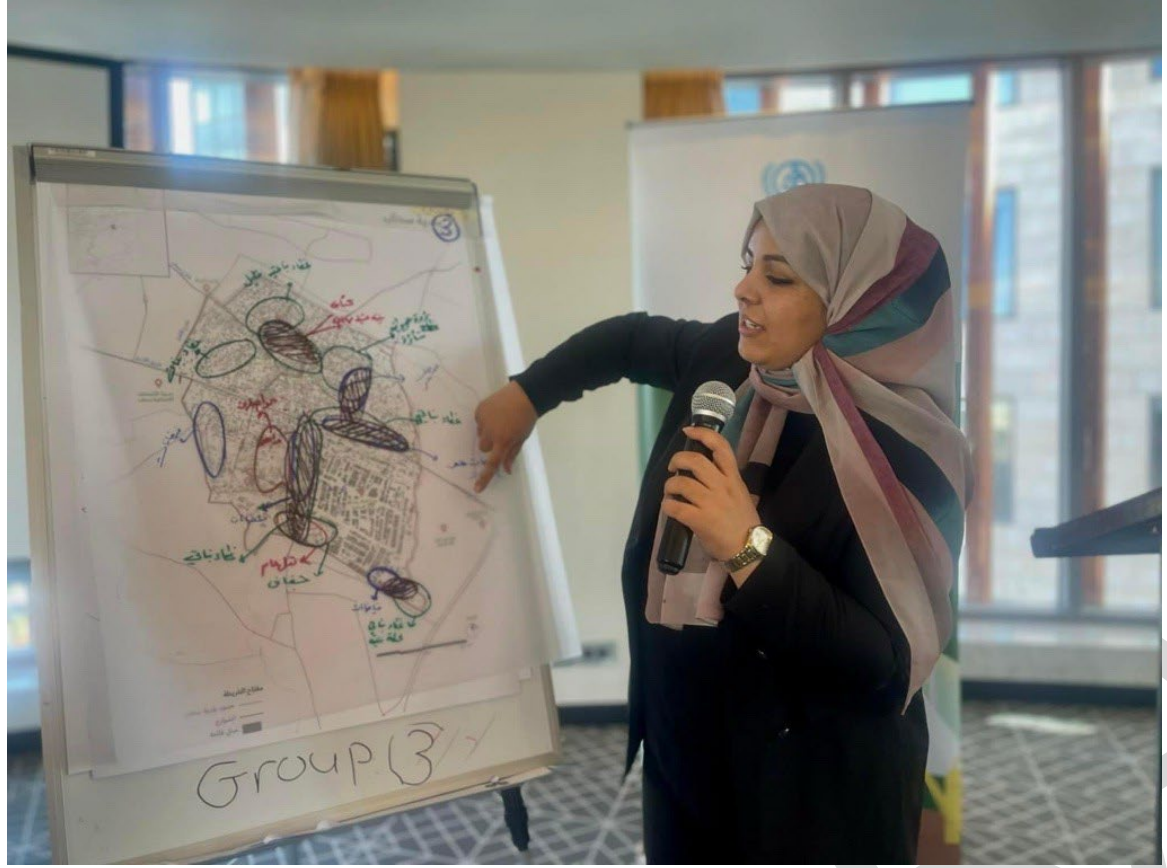
Fig. 55: Multi Risk Areas Identified by key stakeholders







Fig. 54: Images from the validation workshop





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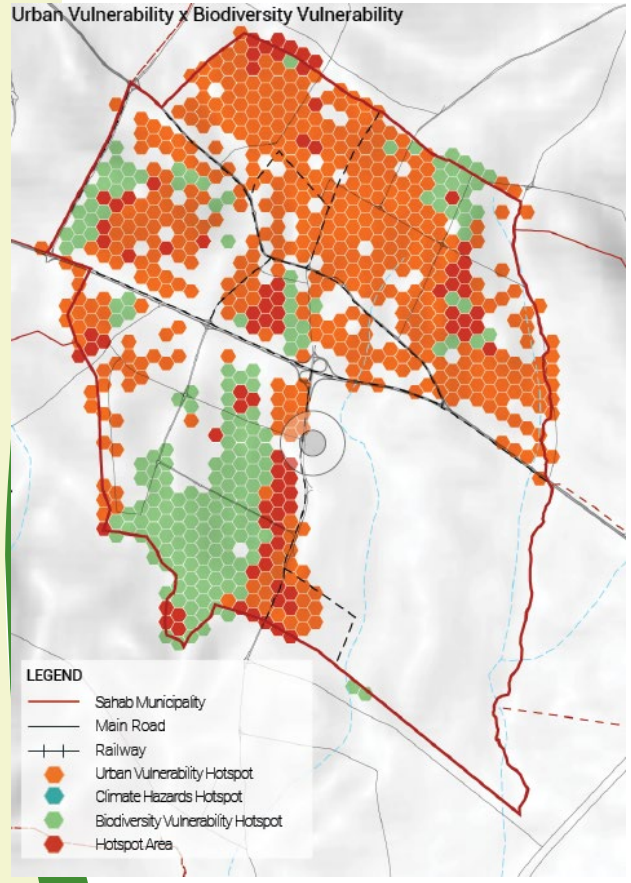
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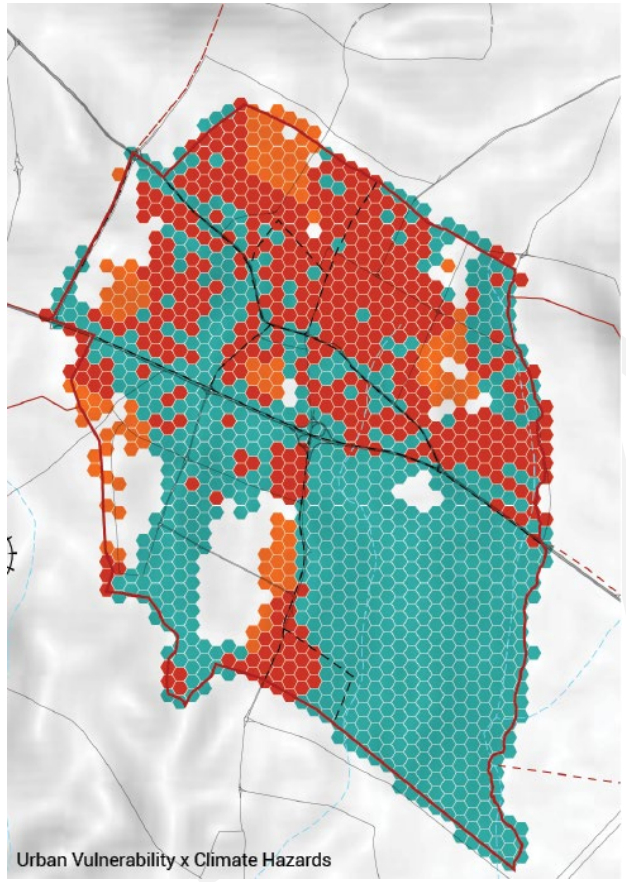
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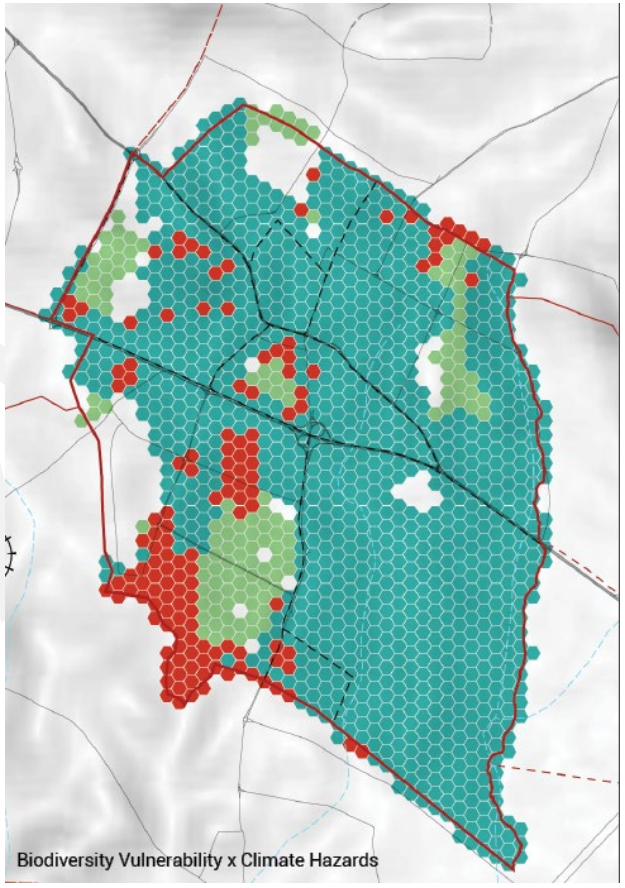


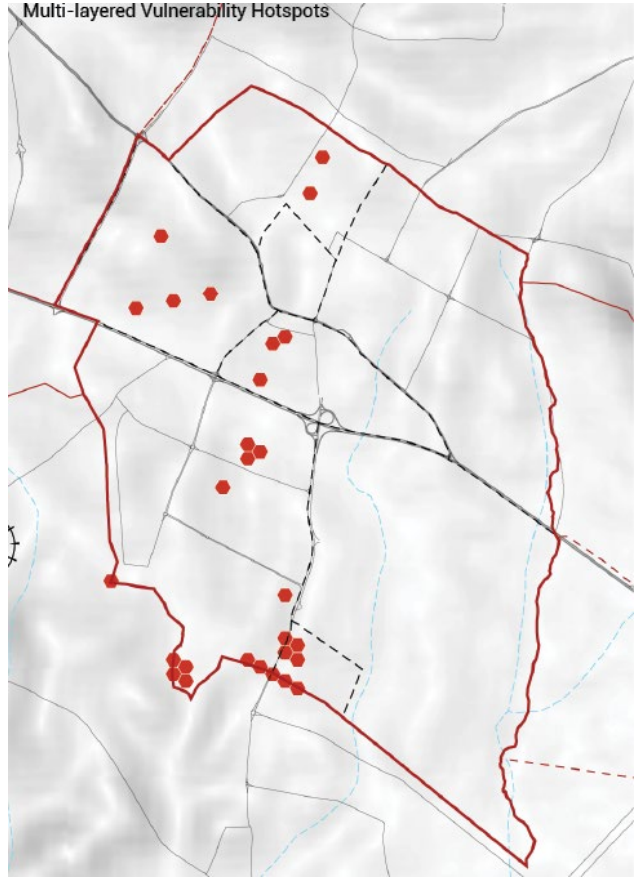
Multi-layered Vulnerability Assessment

Multilayered Vulnerability Assessment









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Thank You

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IMPLEMENTING THE NEW URBAN AGENDA

11 SUSTAINABLE CITIES AND COMMUNITIES

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