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البلدية و القروية
Ministry of Municipal & Rural Affairs

JEDDAH

City Profile



مستقبل المدن السعودية
FUTURE SAUDI CITIES



UN HABITAT
FOR A BETTER URBAN FUTURE

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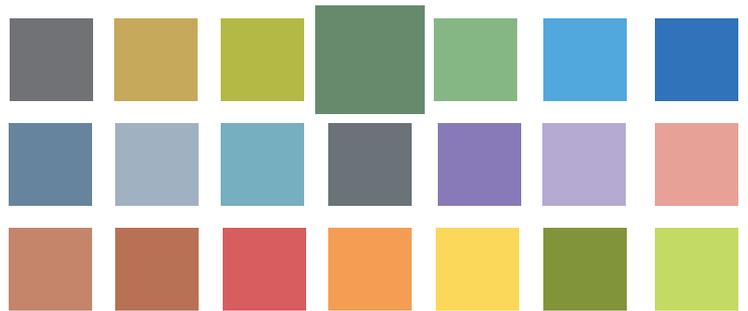
The Future Saudi Cities Programme is a jointly implemented project managed by the Deputyship of Town Planning of the Ministry of Municipality and Rural Affairs of the Government of the Kingdom of Saudi Arabia and the United Nations Human Settlements Programme (UN-Habitat).

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JEDDAH

جدة



FUTURE SAUDI CITIES PROGRAMME

CITY PROFILE



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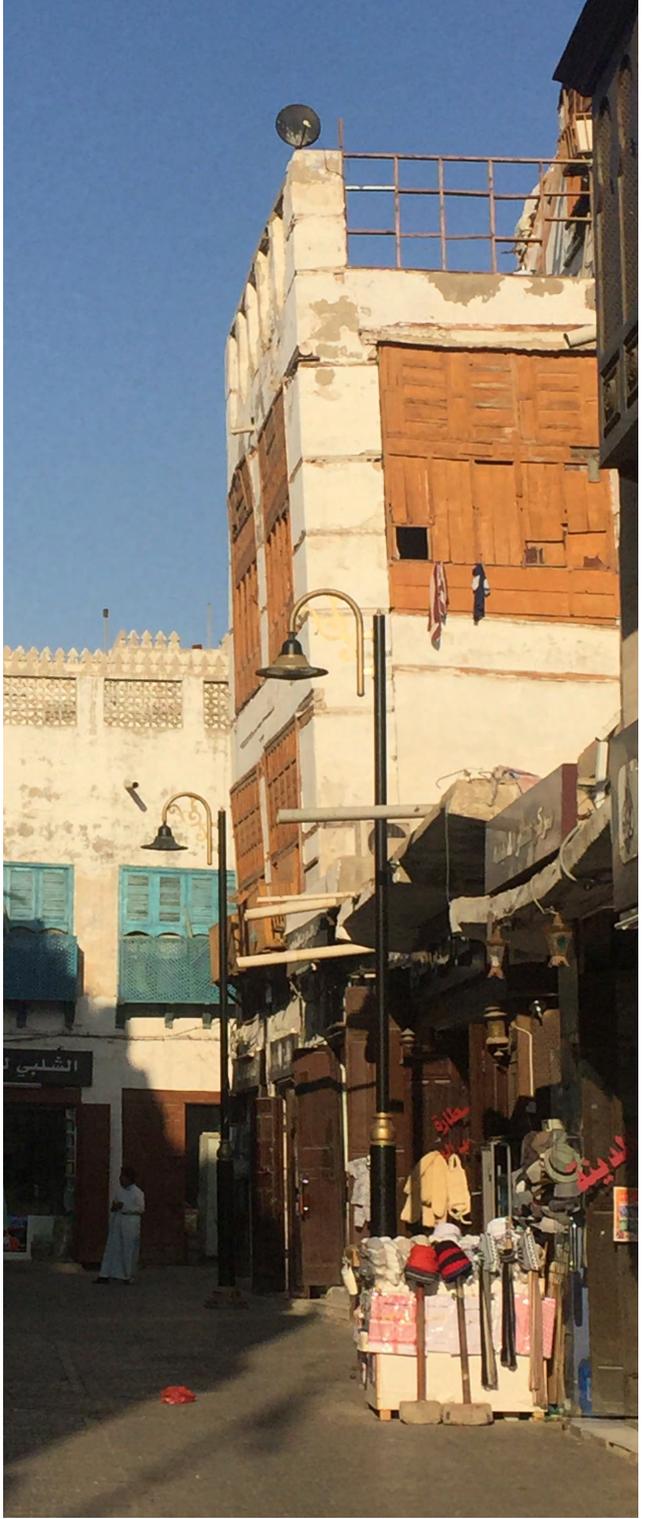
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INTRODUCTION



2.1 About the Future Saudi Cities Programme

The Future Saudi Cities Programme is a joint programme developed by the Saudi Ministry of Municipal and Rural Affairs (MoMRA) and UN-Habitat, implemented in close cooperation with the municipalities of 17 major Saudi cities. The cities have been selected based on their different population sizes, geographic distribution, and a range of criteria based on capacities and economic potential to create a more balanced regional development among the cities of Saudi Arabia. The chosen cities include Riyadh, Makkah, Jeddah, Taif, Madinah, Tabuk, Dammam, Qatif, Al-Ahsa, Abha, Najran, Jazan, Hael, Arar, Al Baha, Buraidah, and Skaka.

After undertaking city-level reviews in the 17 cities, five cities were chosen as a representative cross-section, for in-depth analysis. The city-level reviews considered the linkages between urban and territorial planning by examining the city within the relational context of its sub-region and exploring specific issues at the neighbourhood level. These reviews, when referenced with City Prosperity Index (CPI) reports and validation processes in the Rapid Planning Studio workshops, were used to extrapolate strong, evidence-based conclusions that relate to the planning system as a whole.

Applied research, with a strong focus on action-oriented conclusions, was used to collect evidence to diagnose the strengths and weaknesses of the planning system and local planning practices in each city. The methodology utilised design tests and demonstration projects as avenues to apply and analyse potential solutions, before concluding on policy recommendations.

UN-Habitat's three-pronged approach considers spatial planning in relation to legal and institutional frameworks, in addition to financial mechanisms. In this way, success criteria for the sustainable implementation of a spatial plan should include flexible but enforceable rules and regulations, in addition to a financing strategy and projections.

As a pragmatic explication of this approach, three local demonstration projects, representing essential elements of a strengthened and improved planning system, have been developed. These were elaborated to include schematic designs and feasibility studies, that can later be transformed into implementation plans. Such implementation plans are projected to be undertaken by MoMRA, in collaboration with other partners in the Kingdom.

In order to facilitate this process, a joint "FSCP Urban Lab" was created as a vehicle to strengthen endogenous capacities and to develop tailored tools, and instruments. The Lab, composed of international expertise from the planning, legal and economy branches of UN-Habitat Nairobi office, has been working with Saudi-based staff in the UN-Habitat Riyadh office (selected by MoMRA), to enhance knowledge exchange and to apply a learning-by-doing method to the programme.

As such, all 17 cities have been simultaneously engaged in a capacity-building strategy that included foundational learning, and 'on the job' training, culminating in Saudi-specific advanced training. This training was based on the planning-system conclusions and recommendations, that the FSCP produced. Thus, the Urban Lab functions as a tool to generate evidence whilst additionally strengthening capacities through a process of learning-by-doing.

2.2 Saudi initiatives for sustainable urban development

The Saudi Government, along with the respective Ministries, and in line with a larger country-wide transformation process, has made several efforts aimed at the sustainable development of its growing cities. These contributions vary from plans at the national level, like the National Spatial Strategy (NSS), to strategies and plans at the regional level, cutting across various sectors towards realising Vision 2030. The FSCP recognises these efforts as positive, supporting Vision 2030 goals to realise a sustainable urban environment for the Kingdom of Saudi Arabia. The FSCP acknowledges and builds upon the current tools, plans, and strategies as part of a comprehensive assessment and suggests variations and improvements where appropriate.

2.3 Objectives of the City Profile Report

2.3.1 Scope of the city profile

The city-profile combines MoMRA's new strategy, with a review of existing studies, plans, and strategic documents, such as the review of the Kingdom of Saudi Arabia (KSA) National Spatial Strategy (NSS) to identify and address the root causes of problematic conditions outlined in the preliminary findings. The report acknowledged low uptake of the NSS by regions, utilities and ministries, as a key weakness. The issue of horizontal (sectors) and vertical (scales) integration is thus a key challenge that the FSCP aims to address going forward.

Policy recommendations for improving urban planning frameworks and practice shall be structured through a multi-scalar lens, considering the city as a continuum in the urban fabric, that should grow from the neighbourhood to the wider city-region, whilst influenced by dynamics and regulations at the national and supranational levels. This ensures that policy recommendations for these cities do not operate in isolation from the city's envisioned role in the administrative region and the national system of cities.

2.3.2 Objectives of the city profile

The City Profile Report brings together diagnostic urban analysis and aligns that analysis with the UN-Habitat sustainable development framework and the Saudi Vision 2030. It performs as a thinking tool that constitutes together



© FSCP

A narrow alley in Al-Balad, Jeddah's historic centre

an assessment tool and guidance for the current and future planning of the city, whilst defining a clear strategy for sustainable development.

The definition of an ad-hoc strategy is rooted in an evidence-based approach to the issues, building upon both primary and secondary data collection and analysis. The profile, as well as the Programme as a whole, uses the data collected by the City Prosperity Initiative (CPI), to identify significant trends and challenges at the city level. This evidence is then combined with reviews of existing planning documents, and cross-referenced with multi-scalar GIS spatial analysis, to define the above-mentioned ad-hoc strategy.

2.4 City Profile Methodology

2.4.1 Evidence-based input approach

The evidence-based planning approach creates a deeper understanding of the spatial dynamics of the urban area, by combining and comparing urban datasets such as demographics, density, land use, natural features, and accessibility analysis.

The evidence (data) is reflected in the form of indicators that can be compared with best practice standards and benchmarks for sustainable urban development. Not only does this provide

a clear perspective on the main developmental issues, but it also quantifies the projected effect of future development proposals on the indicators applied in the analysis.

The programme recognises that the methodology, on which policy recommendations guiding improvements and adjustments in the planning system are based, needs to be evidence-based. For this purpose, different methods were integrated to first provide the necessary body of evidence on which to build an understanding, and full assessment of issues before making recommendations for the respective cities.

The elements constituting the evidence-based approach are primarily constituted of the following:

- Reviews of existing policy documents and plans;
- CPI index;
- GIS spatial analysis.

All of these elements are utilised in a cross-scalar diagnostic methodology that incorporates quantitative and qualitative evidence. The method used to generate evidence-based policy recommendations, which develops capacities and engages stakeholders in all 17 cities, provides conclusions derived from both top-down and bottom-up approaches, cross-cutting all scales of planning.



A vibrant marketplace in Jeddah

By analysing how the structures of spatial, socio-environmental and economic issues interact at different scales of influence, the diagnostic methodology moves from the national to the neighbourhood scale, tracking the interdependencies within the city's physical development patterns, and seeking to decrypt the reasons behind them.

2.4.2 The reviews

Several reviews of existing policy documents and plans were undertaken with the purpose of a) extracting information useful to the understanding of the context, and the city itself, and b) assessing their contents based on three criteria: content relevance, process integration, and effectiveness. The reviews focused on assessing the:

- National Spatial Strategy;
- Makkah Regional Plan;
- Jeddah Strategic Plan;
- Jeddah Sub-regional;
- Jeddah Structural Plan;
- Jeddah Local Plan.

2.4.3 The City Prosperity Index assessment report

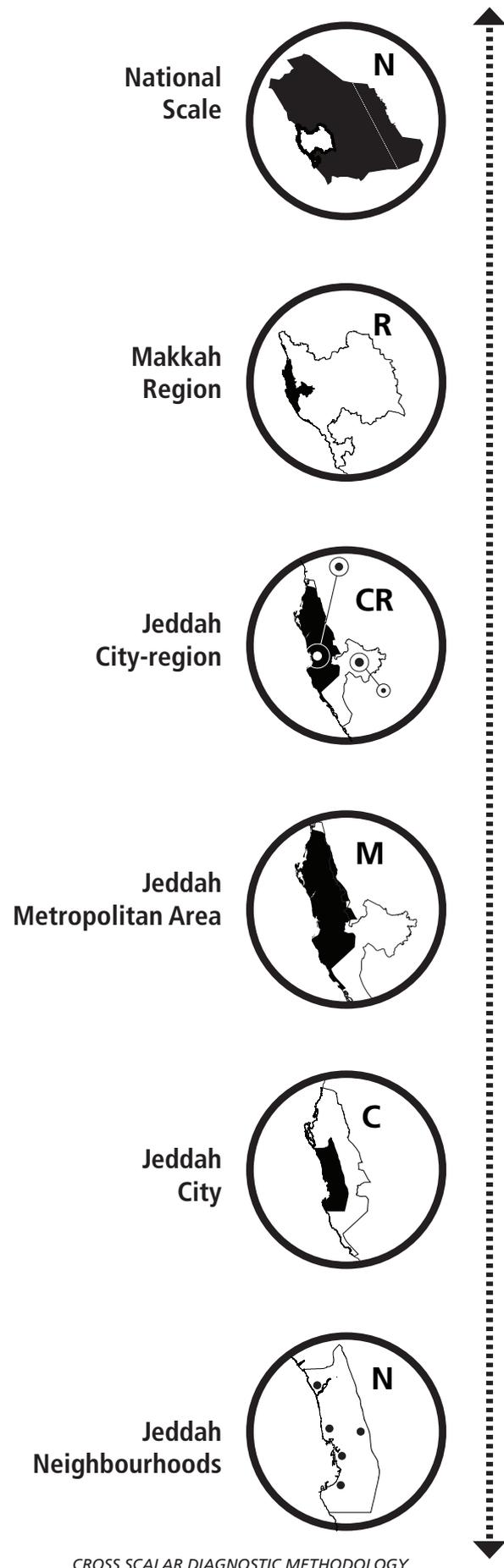
The City Prosperity Index is made up of six dimensions that serve to define targets and goals that can support the formulation of evidence-based policies. These include the definition of city-visions and long-term plans that are both ambitious and measurable. The six dimensions are:

- Productivity;
- Infrastructure;
- Quality of life;
- Equity and inclusion;
- Environmental sustainability;
- Governance and legislation.

These dimensions have been assumed as guiding principles in the spatial assessment of Jeddah. There are ten detailed spatial indicators at the FSCP city profile level that link into the 72 flexible indicators of the CPI assessment.

2.4.4 The GIS spatial analysis

The spatial reflection of the above indicators highlights detailed patterns of development and the interactions and dynamics associated with movement, densities, and land use within the urban system. This process enables a dynamic understanding of the physical expressions of weaknesses and strengths in the urban system and the main issues to be addressed. The effect of proposals for future development can also be assessed by use of the same indicators.



NATIONAL AND REGIONAL SPATIAL CONTEXT

2





3.1 The Region’s Role in the Kingdom of Saudi Arabia

3.1.1 Historical background

Historically, Makkah Region falls within the Hejaz Region. The Makkah Region is a key-region in the Kingdom due to several religious, strategic, spatial, and economic considerations. Spatially speaking, the geographical location of Holy Makkah has always played the role of mediator in the international trade between the South, in Yemen, and the North, in the Levant countries, prior to Islam. The region still enjoys the benefits of its intermediate location. Its extended coasts along the Red Sea enclose important commercial and urban centres, such as Jeddah and Taif cities, which form a connection between the Red Sea coast and the Kingdom’s interior.

3.1.2 Geography and location

Located in the centre of the Western part of Saudi Arabia, Makkah Region enjoys an extended coastline of the Red Sea. It has a particular importance, instilled by its capital city, Makkah, where the Holy Mosque and Kaaba are located, as the holy city of Islam. The region also includes the main port city of Jeddah. The Region covers a vast area that extends between the latitudes 19° and 24° North, and longitudes 39°

and 44° East. The area of Makkah Region is estimated at 140,100 square kilometres, or 6.22% of the total area of the Kingdom. It is divided administratively into the capital of the region - the city of Makkah - and eleven governorates: Jeddah, Taif, Al-Gonfedah, Allaiith, Rabigh, Al-Jamoum, Khulais, Al-Kamil, Khermah, Reniya, and Teriba.

3.1.3 Demographic background

The Makkah Region is the most populated region in Saudi Arabia, hosting more than a quarter of the population of the Kingdom. It has a population of 6,915,006, (according to the 2010 census). Jeddah governorate has the most significant share of the total population of the region at 50.3%, followed by Makkah with 24.2%, and by the third largest city, Taif, with 14.1%. The number of Saudi population in the region is estimated to be 4.55 million against 3.34 thousand non-Saudis, which is one of the highest ratios in the Kingdom. ¹

In 1970, Jeddah’s population was about 381,000 people, by 1993, it grew to over 2,000,000 and by 2007, the population was recorded to be about 3,250,000. Today the

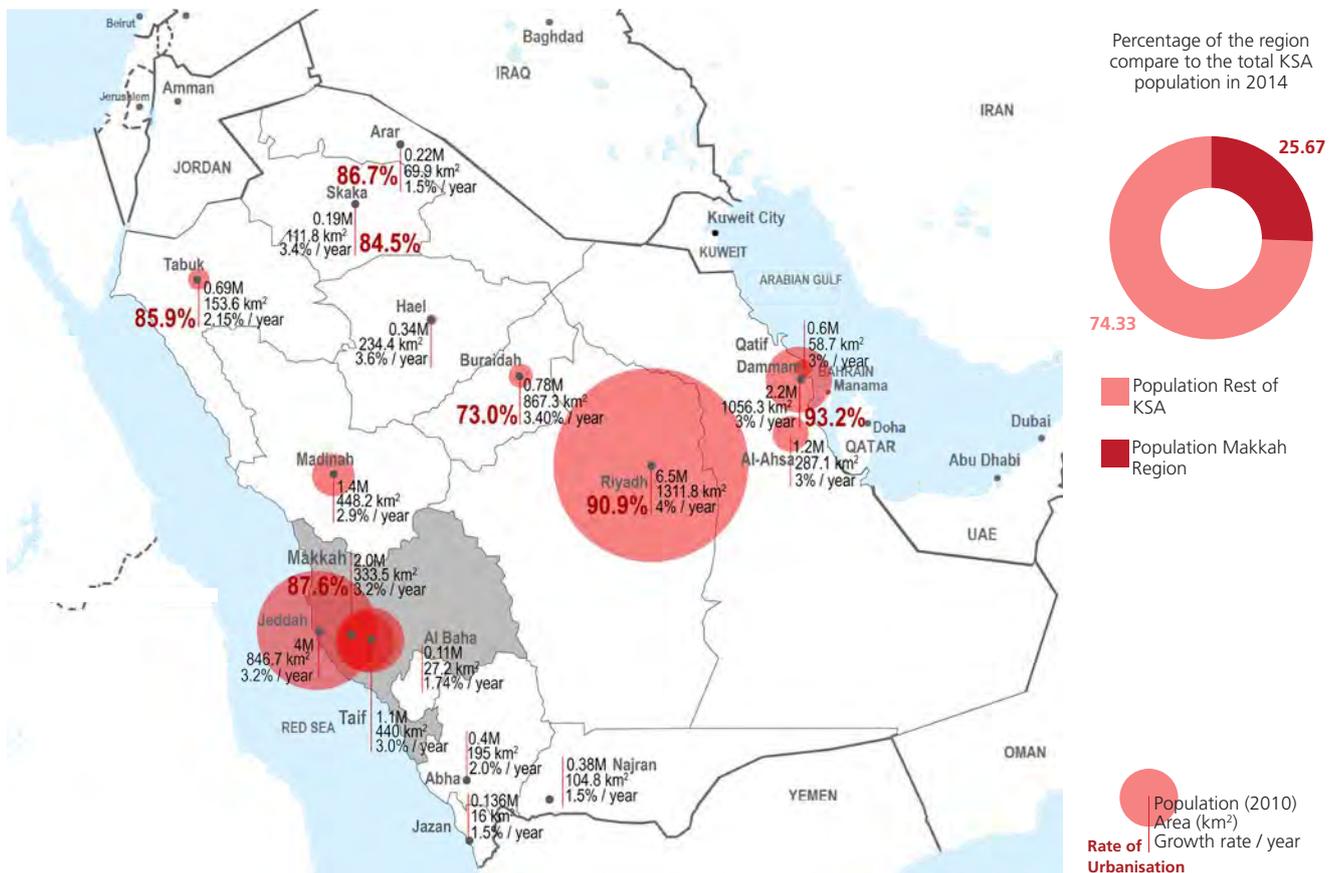


Fig. 1. Population distribution, growth rate and urban areas within the Kingdom of Saudi Arabia



city's population stands at over four million people, with a growth rate of 3.2% per annum. Approximately 41% of the population is under 24 years of age. It's the second largest city in the Kingdom and has a population density of 48 p/ha.

3.1.4 Socio-economic background

With more than a quarter of the Kingdom's population concentrated in the Makkah Region, this provides a sizeable population base to provide the human resources necessary for future development. On the economic front, Makkah Region enjoys natural coastal resources, as well as other mining, human resources and commercial service activities, besides the existence of the Grand Mosque, a major hub for multiple business, touristic, and industrial activities. First and foremost, the religious tourism in the Makkah Region is considered to be one of the most important sources of national income in the Kingdom, second only to mining activity. The Kingdom receives millions of pilgrims and Umrah performers each year, which peak during the seasons of Hajj and Umrah of Ramadan, creating an increased need for more accommodation units and facilities.

The transformational industries sector in the region ranks first in terms of revenue, given its large number of existing plants. The Makkah Region includes two industrial cities, Jeddah and the Holy Makkah. Real estate development and construction are increasingly vital to the economy of the region, due to the rising quality of, and demand for construction projects around the Holy Mosque. Currently, Jeddah is witnessing a rise in the production of coastal resorts, and major buildings including skyscrapers, both inside the city and on the seafront.

The gross domestic product (GDP) of the Makkah Region (2012) was 288 billion Riyals, representing 10.9% of the GDP of the Kingdom, and 20.8% of the GDP of the Kingdom excluding crude oil and gas. The average annual growth rate of GDP for the region was 30% during the 2009-2012 triennium. The real estate and financial services sector ranked first in terms of contribution to the region's GDP with 18%, followed by industry with 16.9%, trade with 16.7%, transport and communications with 9.5%, building and construction with 6.7%, and personal and community services sector with 3.3%.²

3.1.5 National connectivity

Air Transport

The region has two airports: one major international airport servicing the Kingdom - King Abdulaziz Airport in Jeddah - and a regional airport in the city of Taif. The number of passengers

using the two airports in 2012 was 13.7 million. The air traffic movement in the region represents about 35.5% of total air traffic of passengers through the Kingdom. The quantities of goods transported through these airports amounts to about 44.4% of total air cargo in Saudi Arabia. King Abdulaziz Airport in Jeddah is witnessing a substantial redevelopment to improve the level of services, in accordance with the highest international standards. The redevelopment also aims at intensifying the region's infrastructure and enhancing the capabilities of the airport by increasing its capacity to 30 million passengers in the first phase, and 80 million passengers in the following ones. In addition to the two mentioned airports, there is a runway for small agricultural planes in Qunfudah Region, as well as a private airstrip in Rabigh Region, belonging to ARAMCO.

Plans for a new international airport in Taif to serve pilgrims heading to Makkah was first revealed in 2014, and the works started in February 2017, aiming at meeting its scheduled completion by the beginning of 2020. Once completed, the new airport in Taif will have the capacity to handle five million passengers per year.

Sea Transport

As for maritime transport, there are small marinas in three of the four coastal regions that are used exclusively by Border Guards and small fishing boats. However, the region hosts the Jeddah Islamic Port - the largest port in the Kingdom. Jeddah Islamic Port contributes to approximately 31% of the total shipping movement in the Kingdom. The number of passengers (arrivals and departures), traveling via the port accounted for around 24% of the total number of travelers using the Saudi ports. The new King Abdullah Economic City Port, currently under construction, is expected to be among the top ten ports worldwide once completed.

Railways Transport

The region is investing in significant development of its railways transport system, with the Al Haremain High-speed Railway Project already operational. The total length of the new passenger railway project is 480 kilometres. The first phase of the project included construction of five passengers stations, one in Makkah, two in Jeddah city - one in King Abdulaziz International Airport and the other one in the downtown - another station in Madinah, and the fifth station in King Abdullah Economic City in Rabigh. The railway line serves mainly pilgrims coming for Hajj or Umrah, with an annual transport capacity expected to reach three million passengers. The new line reduces the travel time between the Jeddah and Makkah to less than half an hour, while the distance between Holy Makkah and Madinah, which is 410 kilometres, will now take about two and a half hours. It also reduces traffic

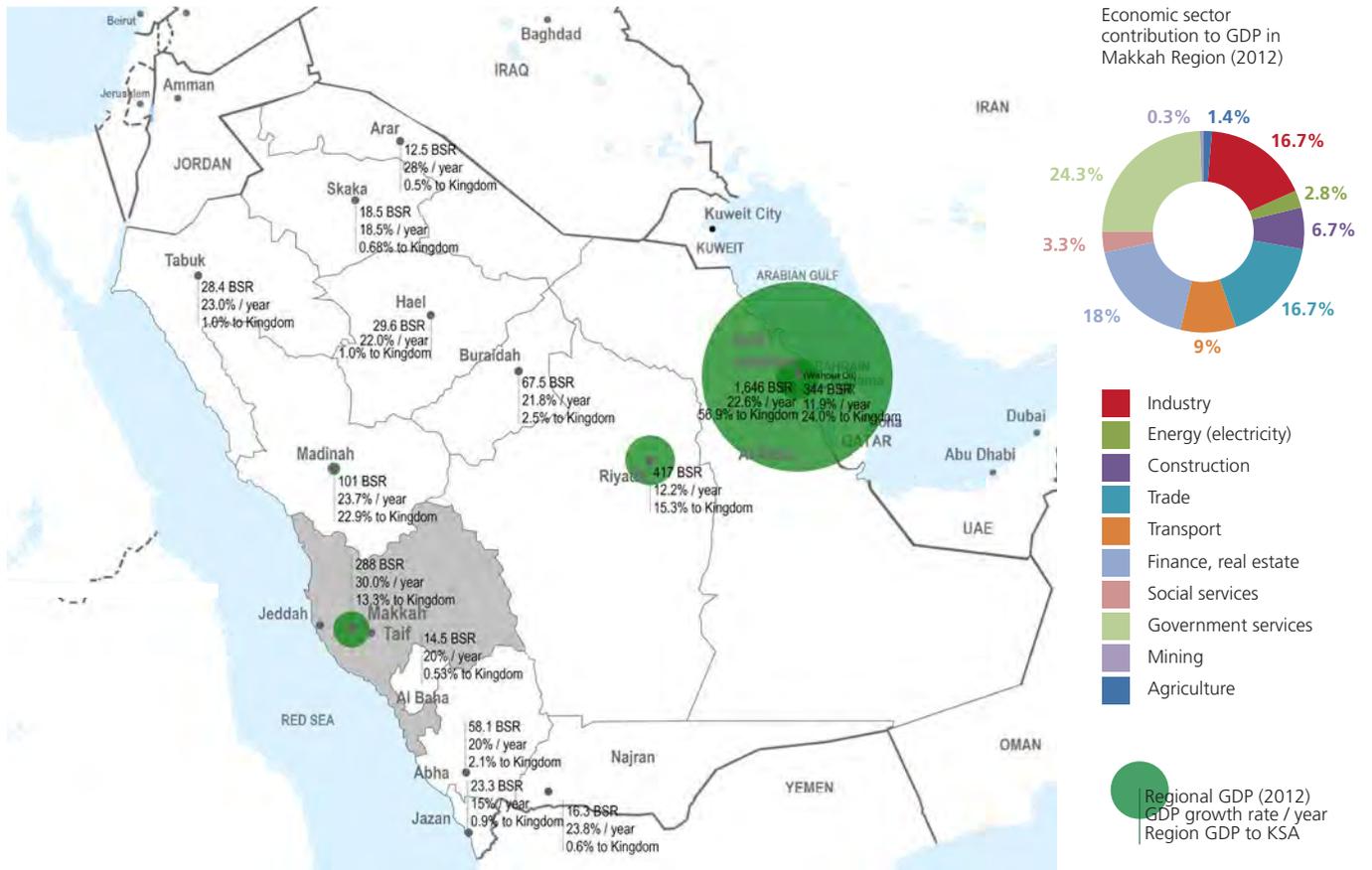


Fig. 2. Regional Gross Domestic Product and economic sector contribution

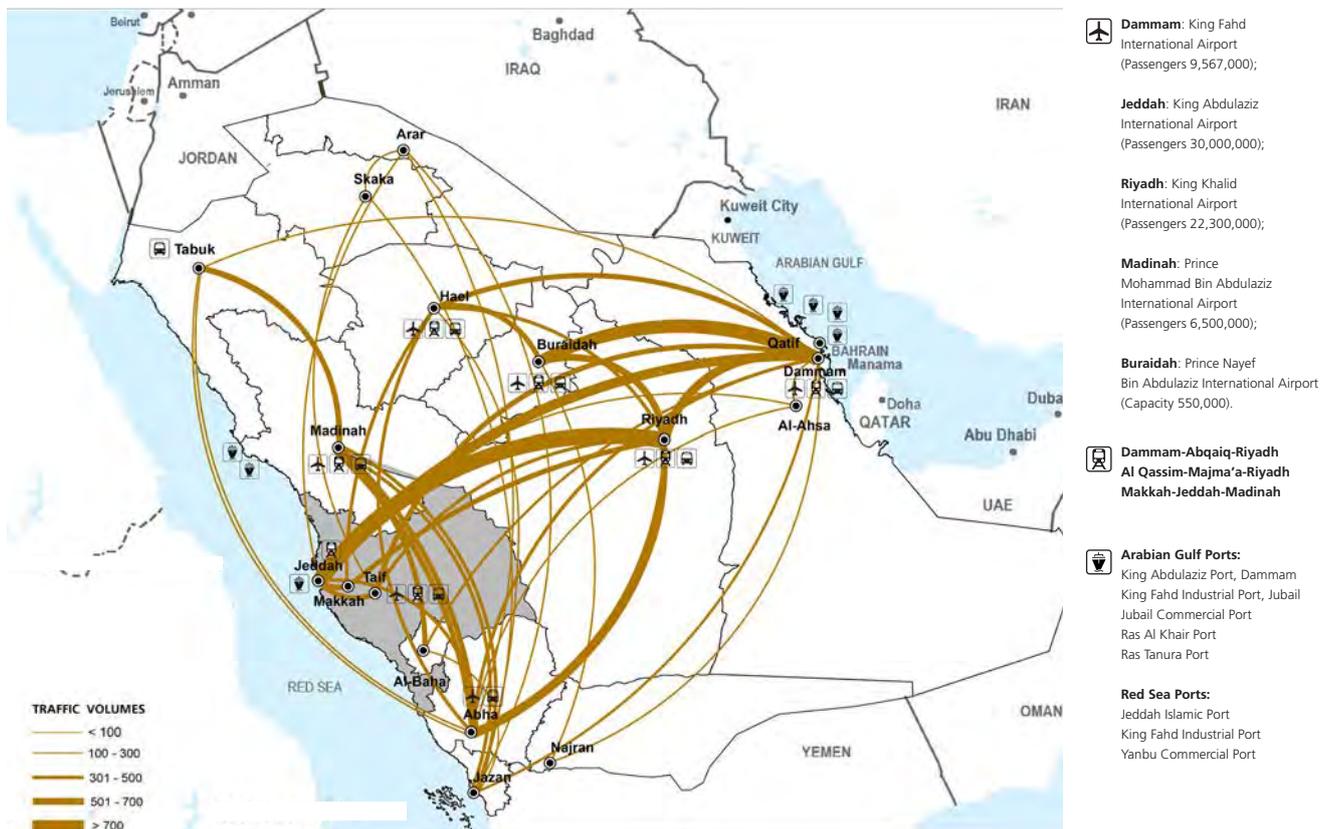


Fig. 3. Transportation connectivity between Saudi cities

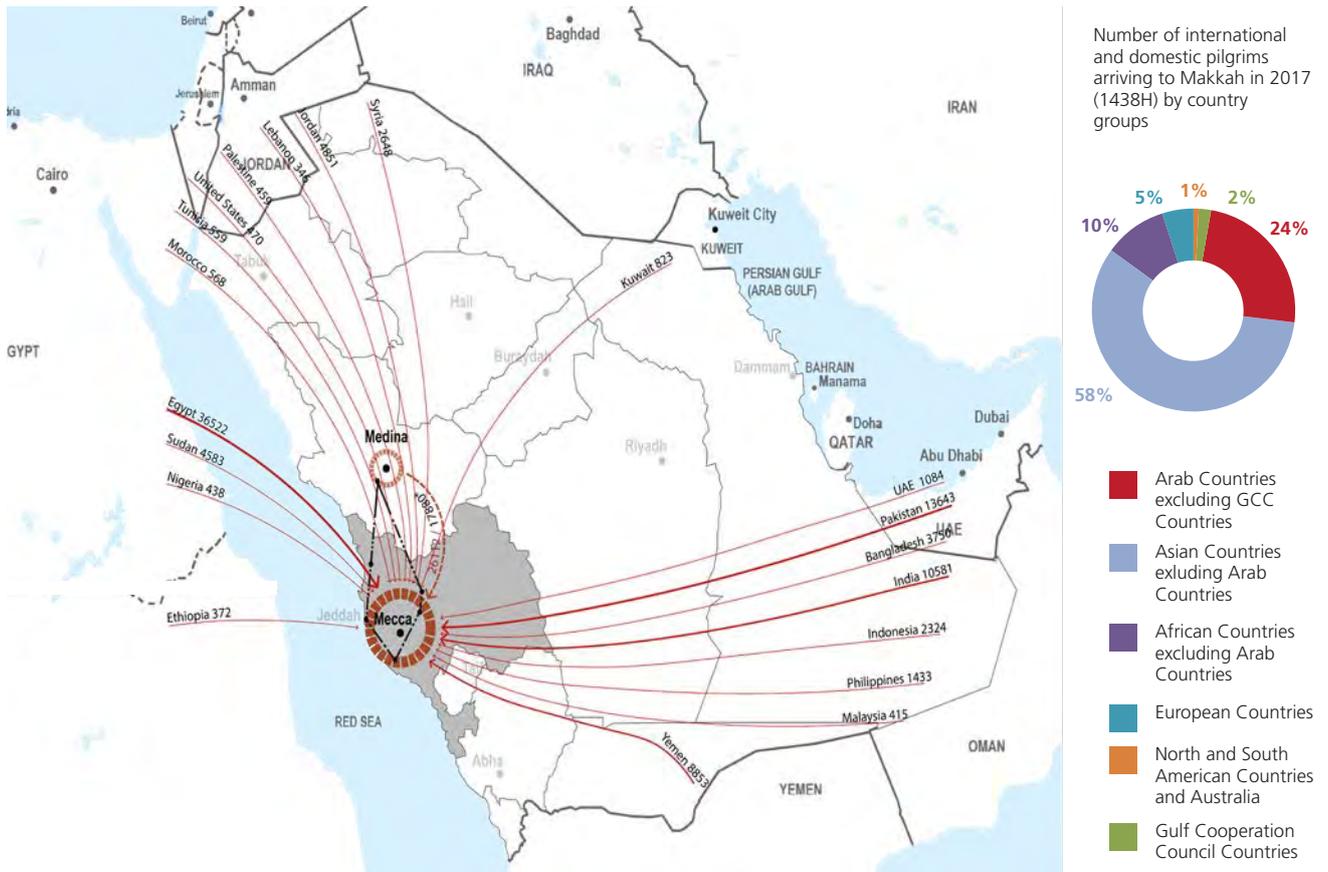


Fig. 4. Non-saudi domestic pilgrims in 2017

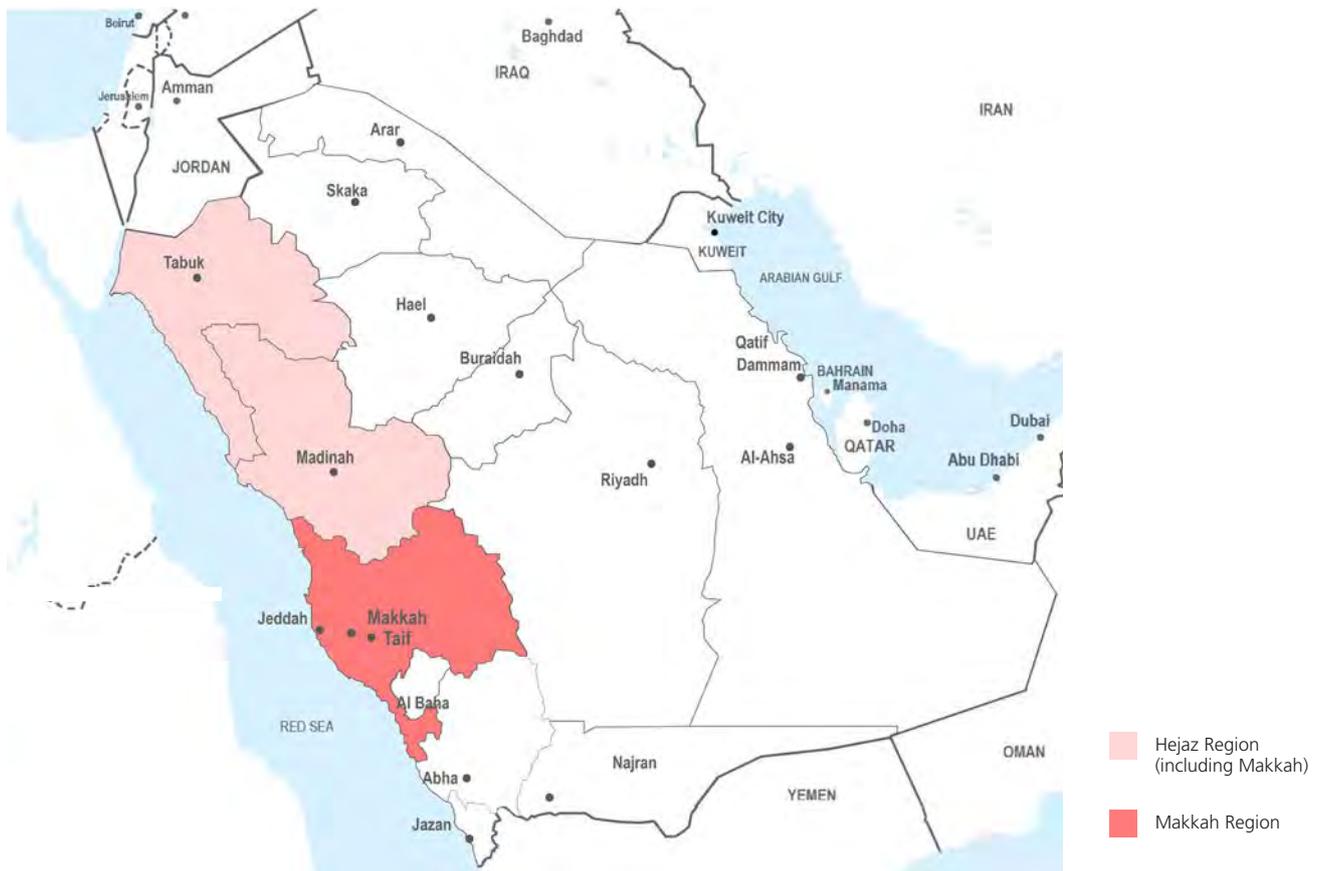


Fig. 5. Makkah and its relationship with other regions in the Kingdom of Saudi Arabia



congestion dramatically. A further line is planned to connect the region with Riyadh, which is part of the Land Bridge Project. This line will serve transport of passengers, and cargo between the region and those in the middle and eastern parts of the Kingdom.

Of important note is that the city of Jeddah has plans for a Regional Commuter Railway. The extensive network contributes a critical piece of a plan to reduce severe traffic congestion in this commercial capital, and is expected to begin operation in 2020. In all, it will comprise about 150 kilometres of track. The network will connect to the Haramain high-speed rail station for travel outside the city, and will also form a key connection to the King Abdullah Economic City to the north of Jeddah.

3.2 Regional Development Patterns and Dynamics

3.2.1 Regional organisation

Administrative boundaries

The external boundaries of the Makkah Region were revised in 2016, when the number of governorates increased from 12 to 17. The 17 governorates, ordered by population from largest to smallest, are: Jeddah, Makkah, Taif, Qunfudah, Bahra, Al Jamoom, Rabigh, Laith, Al Ardhiyat, Maysan, Khulais, Adhaam, Raniyah, Tarabah, Khurmah, Al Muwayh, and Al Kamil.

The Regional Plan of Makkah Region

The plan of the Makkah Region for the year 1460H, divides the region into the main development planning sectors and development corridors, as the maps display. The first sector is the Northwestern coastal development corridor. The main economic activities include industrial, mining, and offshore activities, as minerals are abundant in the region. The second development sector features the pillars of the current economic activities in the Makkah Region (including Makkah, Jeddah, and parts of Al Jamoom area), having the highest population density in the region. The third development sector is the South-Western coastal corridor, primarily represented by maritime and related activities. The fourth development sector, represented by the Western and Southwestern parts of the Taif area, is considered to be the main agricultural source in the region because of its mild climate and fertile valleys. It is also one of the most important traditional summer destinations in the Kingdom, hosting many recreational locations, particularly in the Al Hada and Shafa areas. This sector also enjoys a large coverage of basic services, such as sewerage, water supply networks, highway, and regional road infrastructure.

Agricultural and industrial activities are the primary economic engine of the region, in addition to a tourism industry largely servicing domestic tourists. The fifth development sector contains some promising mining sites; however, it also includes one of the most impoverished areas of the region

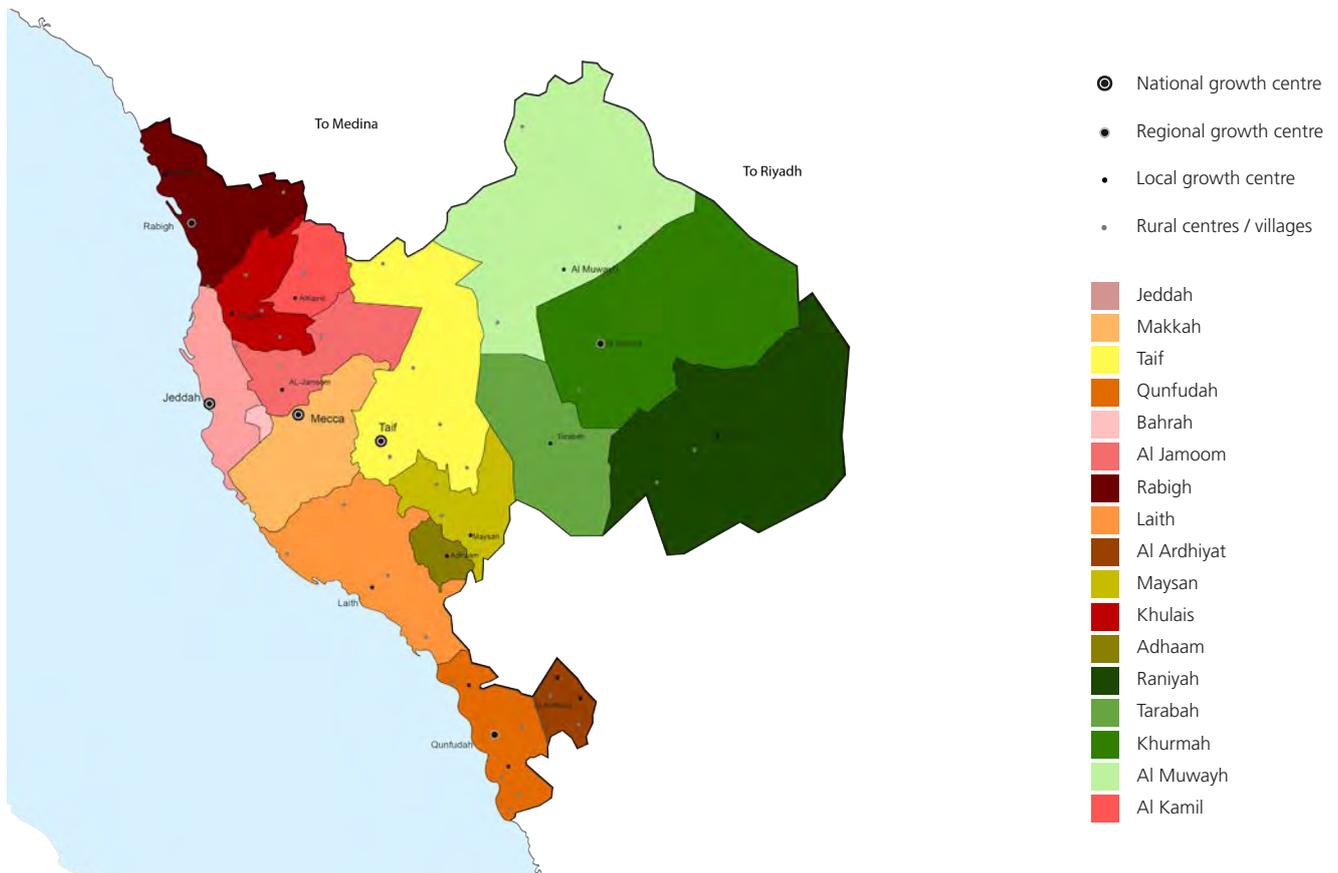


Fig. 6. Administrative boundaries

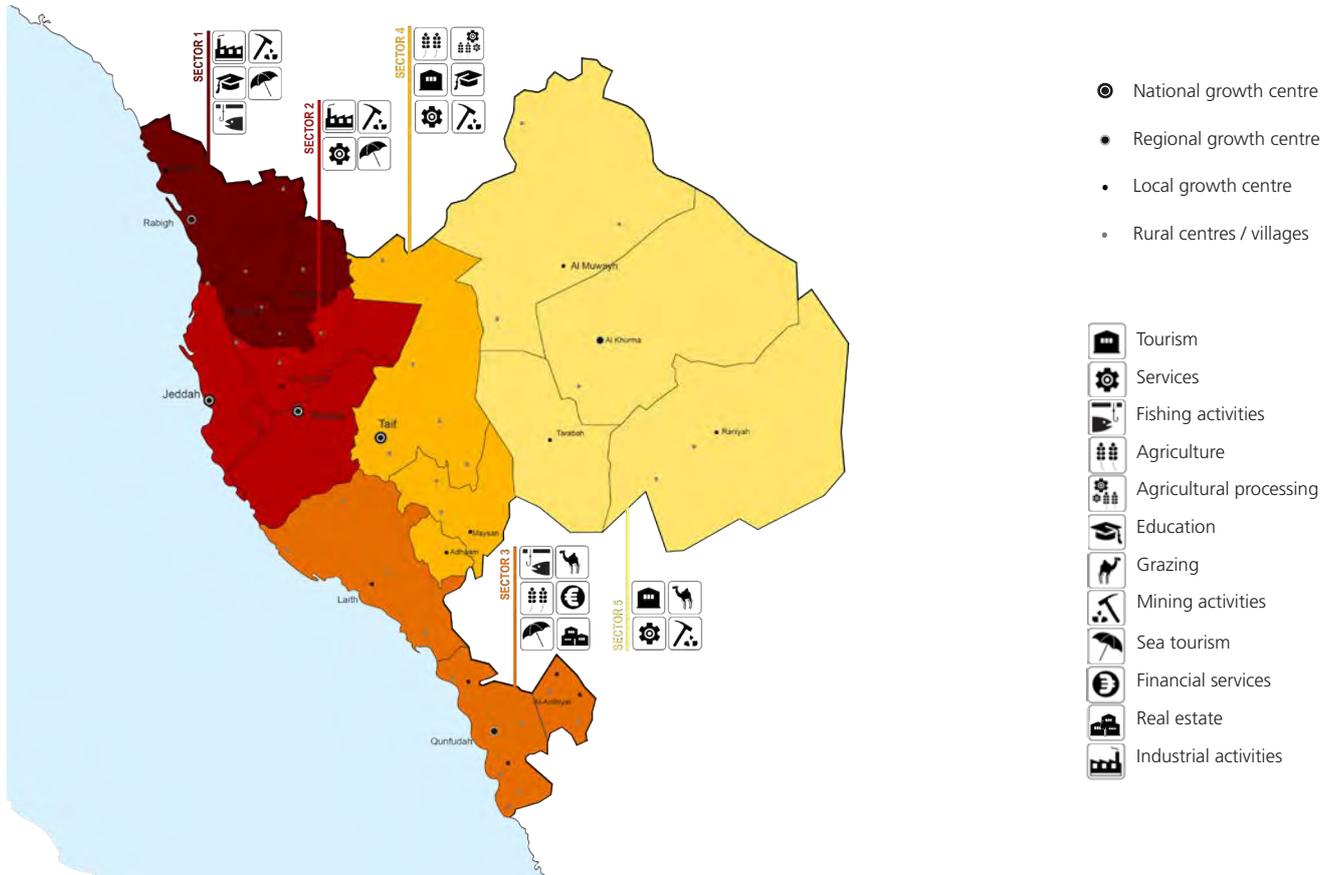


Fig. 7. Development sectors according to the Regional Plan for Makkah Region (1460H)

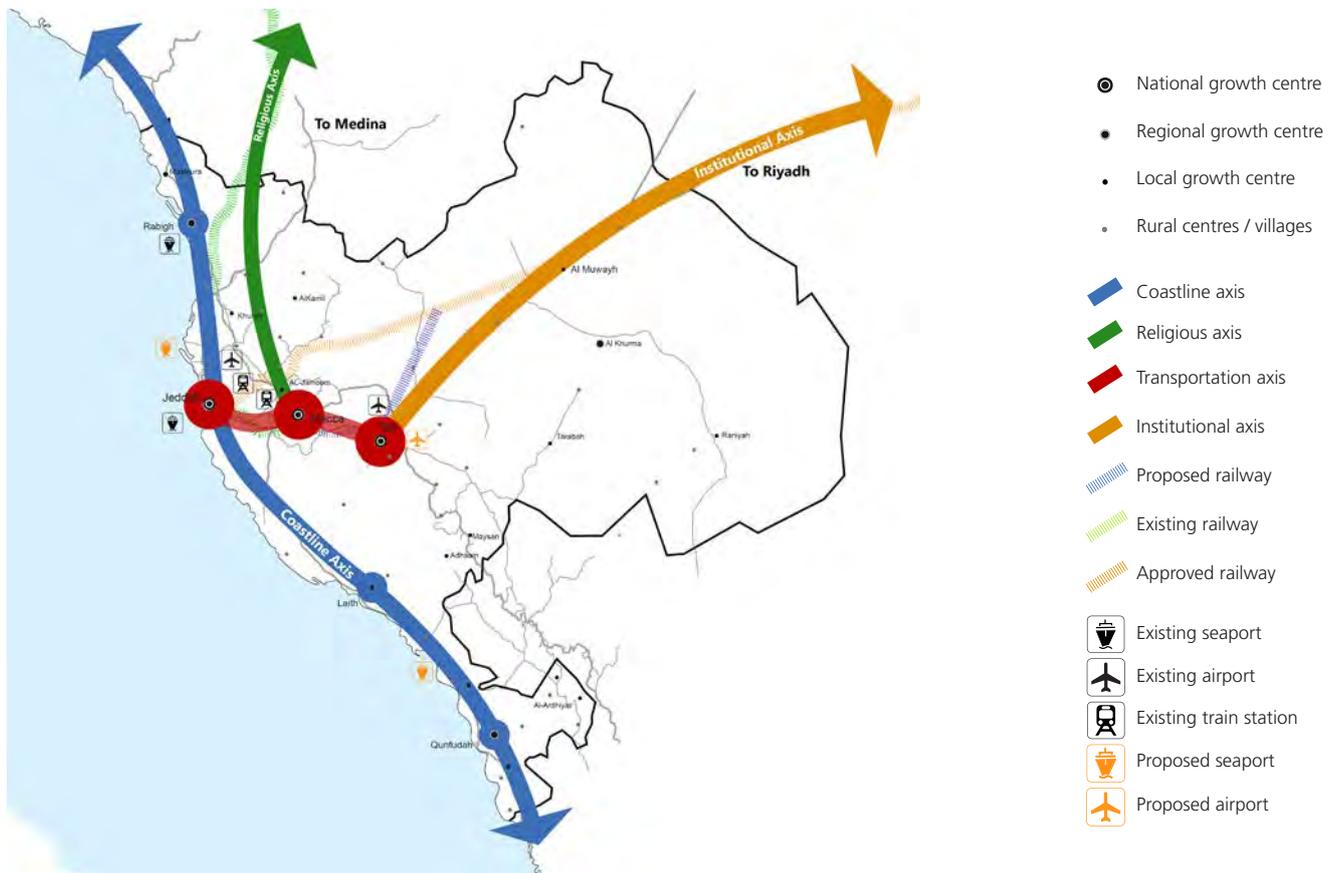


Fig. 8. Development corridors according to the Regional Plan for Makkah Region (1460H)

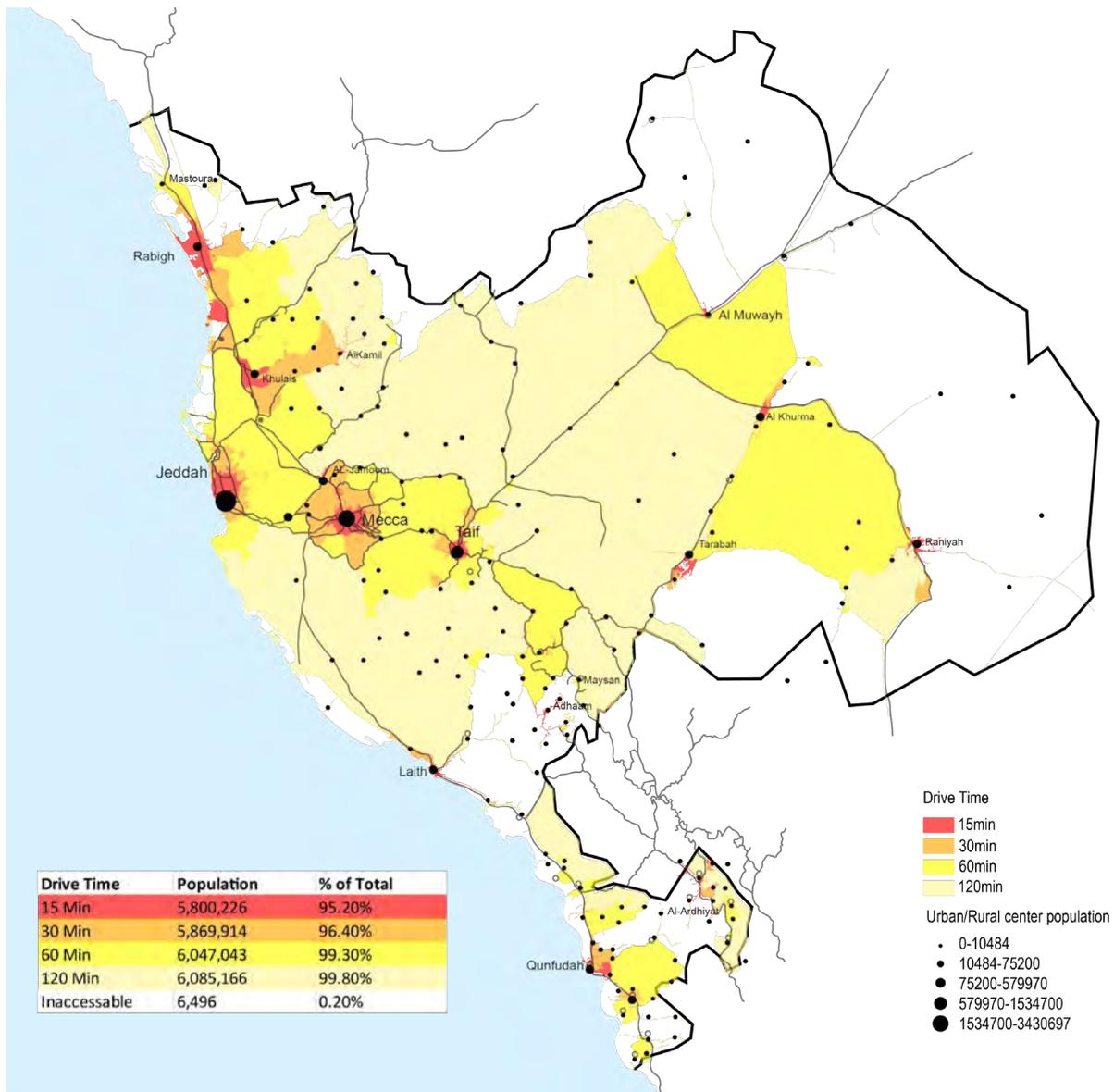


Fig. 9. Access and connectivity in the Makkah Region

3.2.2 Regional structure and resources

Movement Infrastructure

Although the region is considered comparably well-served with roads, the Regional Plan adopted the concept of a new link system to connect isolated areas of the region. This was to be characterised by a well-structure road hierarchy, including the upgrading of desert roads linking villages and urban centres.

in terms of economic resources. Small mining and agricultural activities exist, as well as grazing activities, but arable land areas could be increased if serviced with irrigation and other improvements. In addition to the development corridors identified by the regional plan for Makkah, four strong functional/thematic axes have been identified:

- The religious axis between Makkah and Madinah;
- The coastline axis connecting Jeddah with other regional growth centres along the coastline, supported by a major highway;
- The institutional axis directly connecting Taif to Riyadh;
- The Jeddah-Makkah-Taif Corridor.

According to UN-Habitat's drivability analysis, about 95% of the population resides within 15 minutes drive-time from the major urban centres, with more than 80% of the total population living in the three major cities and their peri-urban regions.



Developments along Jeddah's waterfront

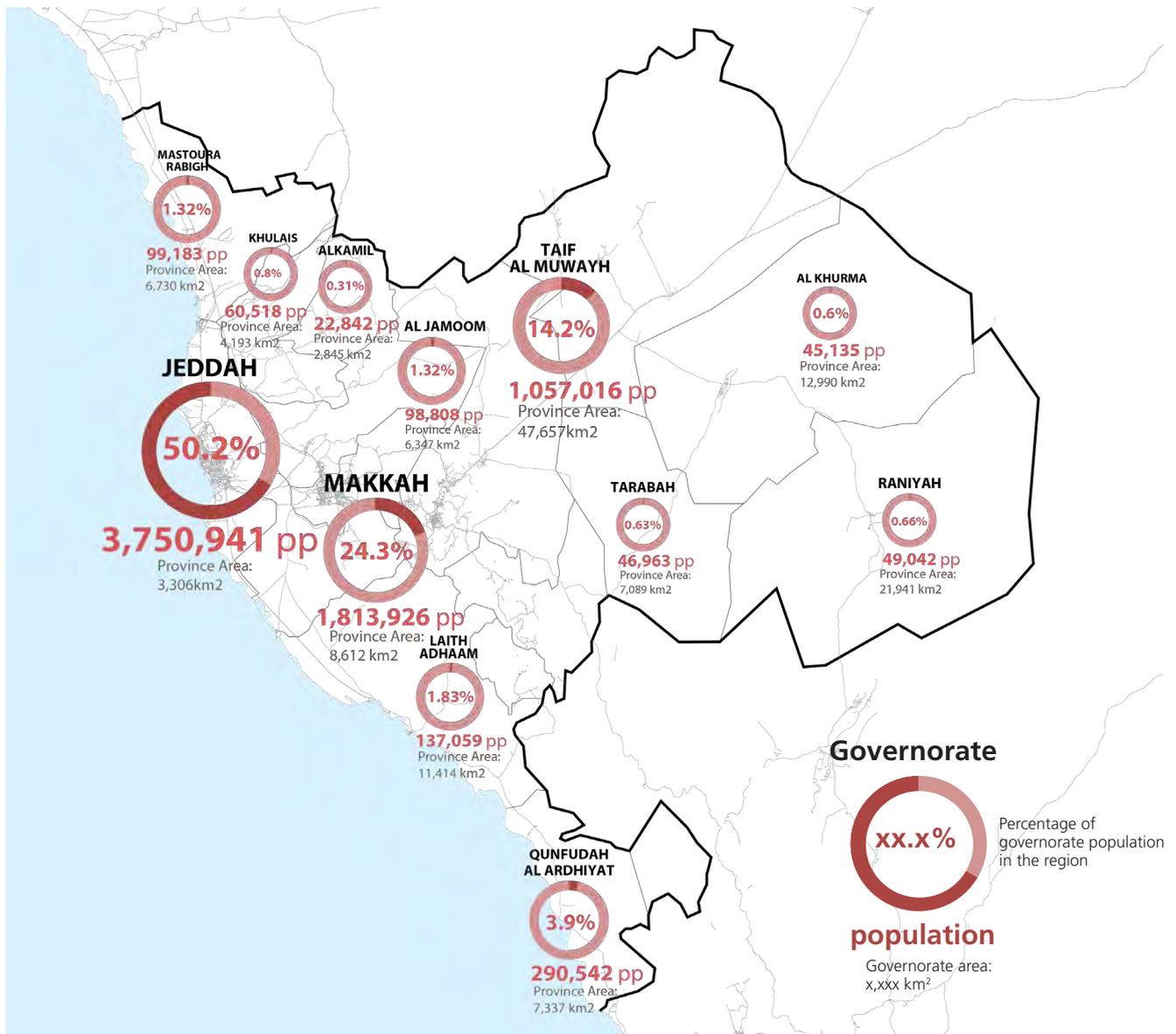


Fig. 10. Population distribution in the governorates according to 2010 census

Land use, physical constraints and urban clusters

The estimated space allocated for mining activities within the region is 3663 square kilometres, which accounts for 2.6% of the total area and about 15.4% of the urban land area. These areas are concentrated in the governorates of Rabigh, Jeddah, Makkah, Khulais, and Raniyah. Agricultural uses are allocated to 4.3% of the land, while 12.8% is dedicated for roads and railways, and 4.9% for urban clusters.

Pastures in desert areas represent 65.8% of natural land use in the region. Desert lands, constituting 53% of total area, are concentrated in the Khomra and Raniaih Region, while pastures are concentrated in the Laith, Gunfudah and Rabigh Governorates.

Undevelopable mountainous areas and valleys constitute 9.2% of the total area. For mountainous areas, the gradient level of

20% is considered the maximum level needed for acceptable development, as after that, the cost of construction is highly raised, with the only exceptions for a few special projects, such as touristic or road infrastructure development projects. Regarding the valleys, the Regional Plan recommends their preservation and the prevention of encroachment on the paths of these Wadis.

Urban clusters in the Makkah Region are characterised by dispersed cities, villages, and towns, which are distributed along the sides of valleys and road corridors. The cities represent 74.0% of the total urban cluster space, and the rest extends over the rural clusters, to various extents. The reason behind the relative rise in total space occupied by cities is due to the presence of the three largest urban clusters in the region Jeddah, Makkah, and Taif.



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A typical street in the historic part of Jeddah



3.3 City-region Structure and Dynamics

3.3.1 Environmental and topographic elements

Jeddah records higher average temperatures across the year within its city-region context when compared to Taif, which has a milder climate due to its geographic location and higher altitude. However, it remains cooler than Makkah considering its coastal nature. The percentage of humidity in Jeddah and Makkah have wider variations across the year in comparison with Taif due to proximity to the sea.

The average yearly humidity in Jeddah is around 63% and experiences extreme seasonal variation. Taif's milder climate is advantageous as a domestic tourism destination in the region and nationally. Rainfall rates vary consistently across the terrain of Makkah Region. With very minimal rain in Jeddah, the rainfall rate increases significantly towards the eastern areas, such as Taif. In Makkah, however, flash floods are common during winter season though the amount of precipitation is low. Moreover, due to the desert nature of the location, dust storms are common especially in Makkah.

The prevailing wind across the scale of the region is predominantly west and northwestern. Wind speed is relatively moderate across the year. During months of seasonal transition, prevailing winds may increase in speed up to 36

km/h, largely in the form of sandstorms. These mostly occur during the Spring and the end of Fall, with the phenomenon considered a factor of air pollution in the region.

Topographically, the city-region is composed of diverse terrain. From satellite imagery, the Hijaz mountains are clearly visible between the cities of Taif and Makkah. The Hejaz Mountain comprises a range of heights with an upper limit of approximately 2700 metres of elevation to the south and 1450 metres to the West. This mountain line is argued to be a key obstacle to feasibility of the long-proposed Makkah - Taif railway connection.³

3.3.2 City-region economy

Jeddah and Makkah continue to be engines of the region's economy as a whole. The comparative advantages of Makkah and Jeddah, continue to attract populations from smaller settlements in the region. At continuation of the current rates, this may result in unsustainable urban growth patterns and consequently, widen the disparity among the governorates of the region. The current conditions confirm that the pattern of settlement in the Makkah Region is concentrated in the



Highway link to the Holy City of Makkah

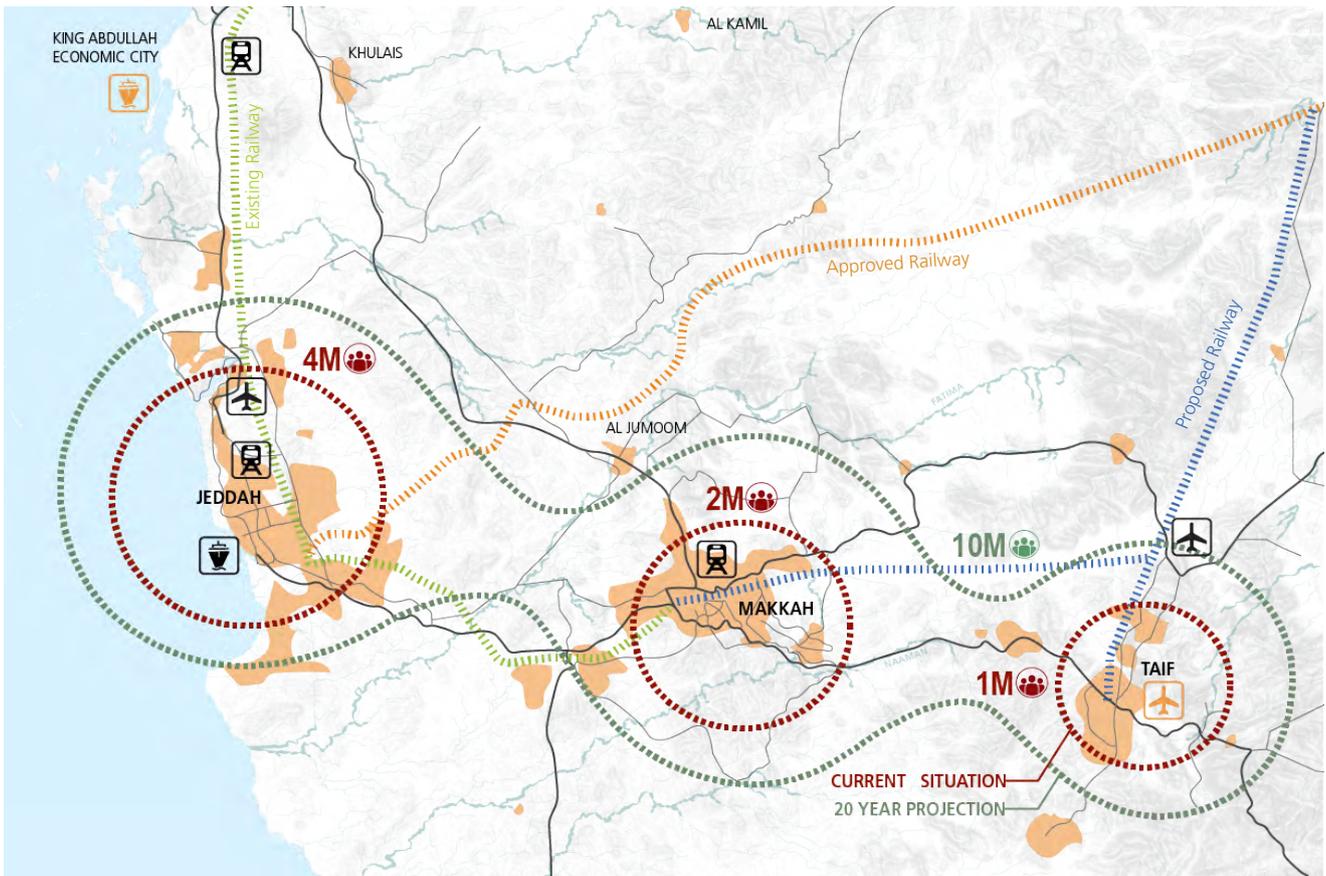


Fig. 11. Current population distribution and 20 years projection

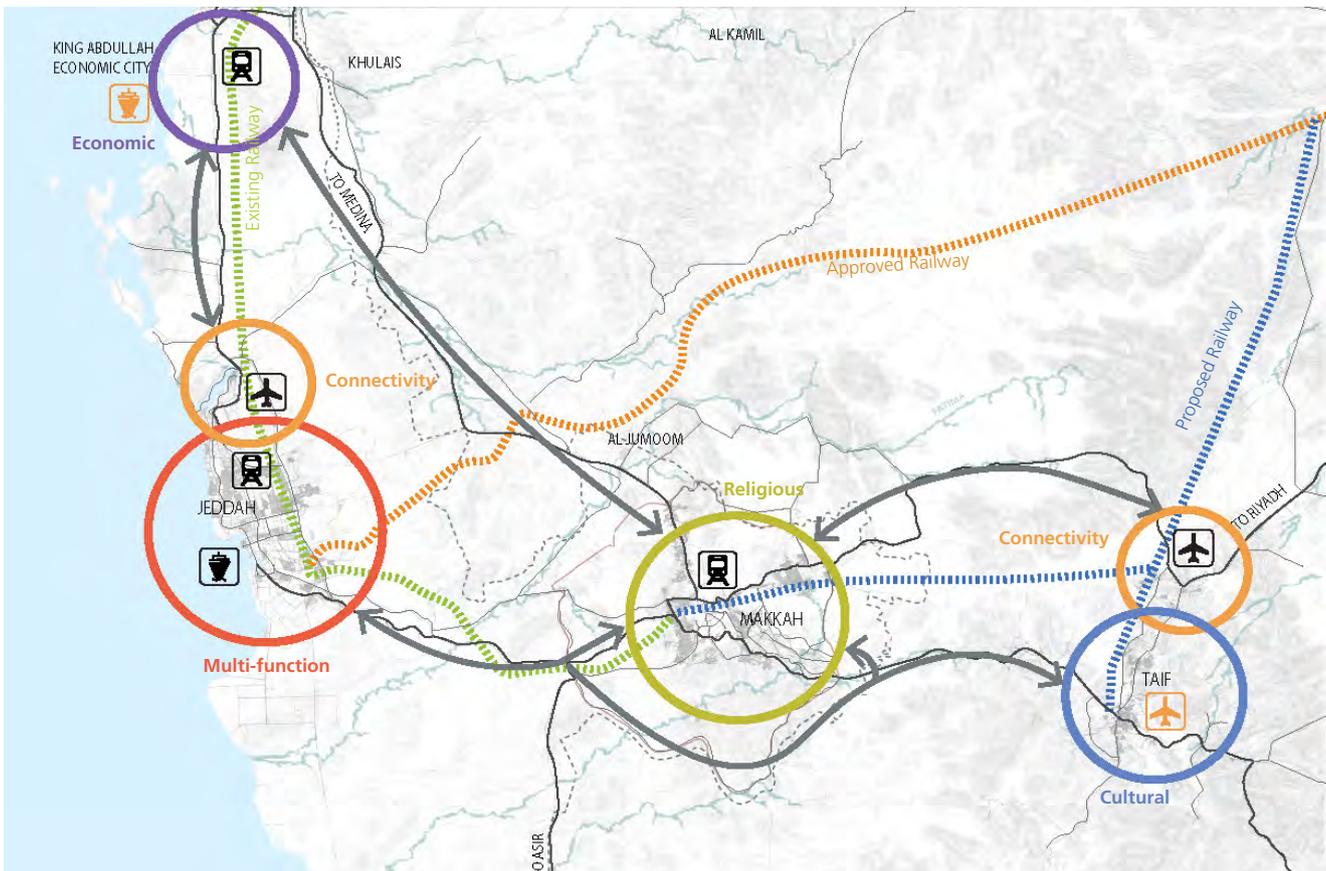


Fig. 12. Functional connectivity



two major urban centres of Jeddah and Makkah, hosting almost 71% of the total regional population. There are no other medium-sized urban centres, except for the city of Taif, with a population of 667,000 people. 96% of the urbanised population live in these three cities, while the rest of the region remains populated by small communities and yet insignificant urban agglomerations, which emphasizes the absence of a balanced hierarchy across cities and growth centres.

It can be argued that the Jeddah, Makkah, and Taif corridor is the strongest in the Kingdom, as this corridor hosts 22% of the national population, and contributes to 20% of total GDP in the Kingdom. With almost 7,000,000 people, the corridor constitutes 87% of the regional population and at the current growth rates, its population will rise to a little over 10,000,000 in 20 years time. This is in part due to the recent inauguration of Al Haramain Railway, and the new Taif Airport, licensed as a Hajj and Umrah terminal, to be operational by 2020.

Over time, these three most populated centres will become further linked through interlocking economic systems, shared natural resources and ecosystems, and common transportation systems. A great example of these shared resources and their functional complementarity already existing within the three city system, is the water desalination plant in Jeddah, which provides drinking water for Makkah and Taif, while Taif remains the food basket of the region, exporting crops to Makkah and Jeddah.

Infrastructurally, all three benefit from the recent development of regional transport such as the Al Haramain Railway and the new Taif International Airport. This symbiosis is created by developing Taif as a major hub for international Hajj and Umrah traffic, in order to ease the burden on Jeddah's King Abdulaziz International Airport during the peak seasons. Currently, the majority of the several million Hajj pilgrims coming from abroad each year, arrive at a special terminal in Jeddah International Airport, while a smaller proportion fly into Madinah.

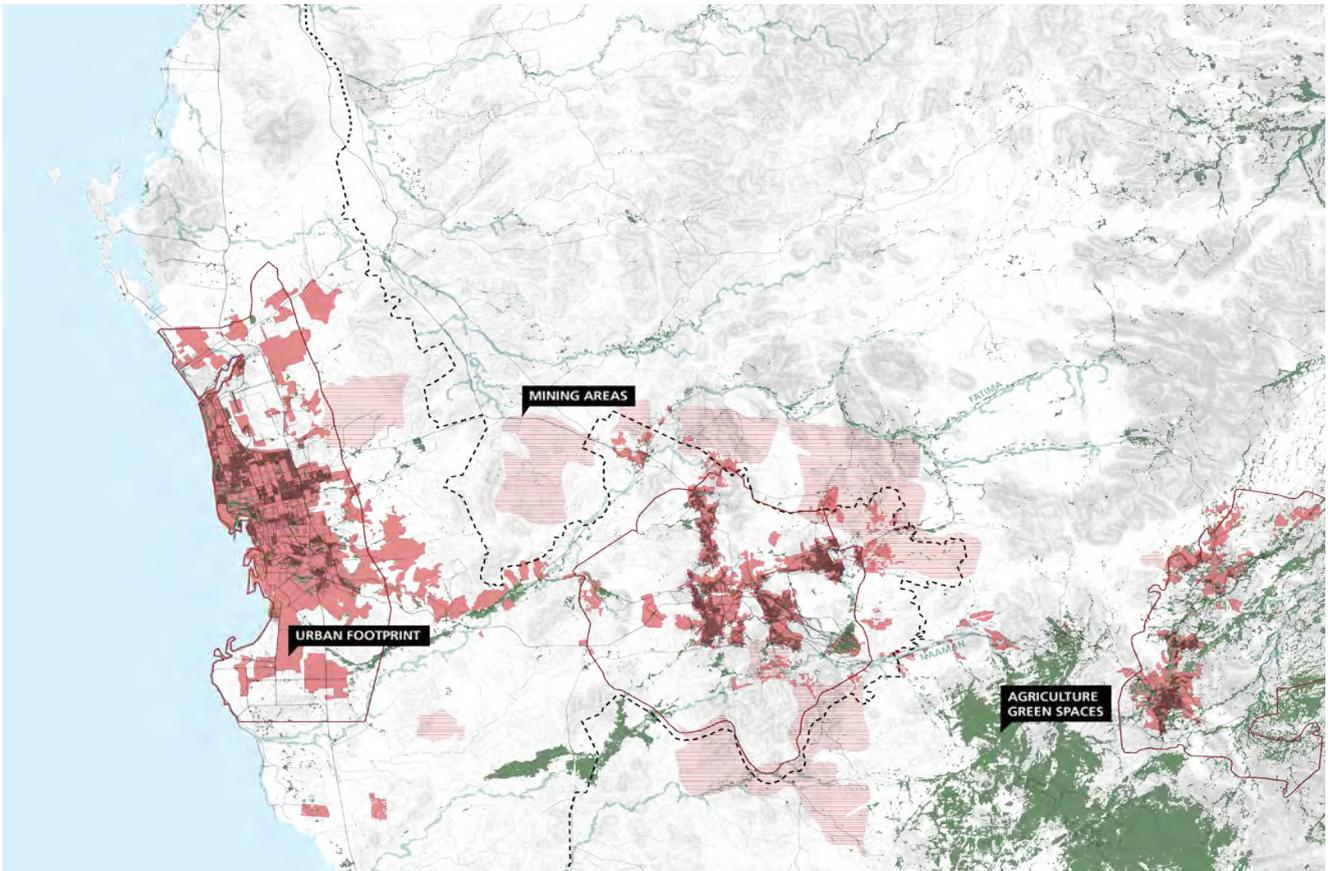


Fig. 13. Urban footprint, agricultural land and mining areas

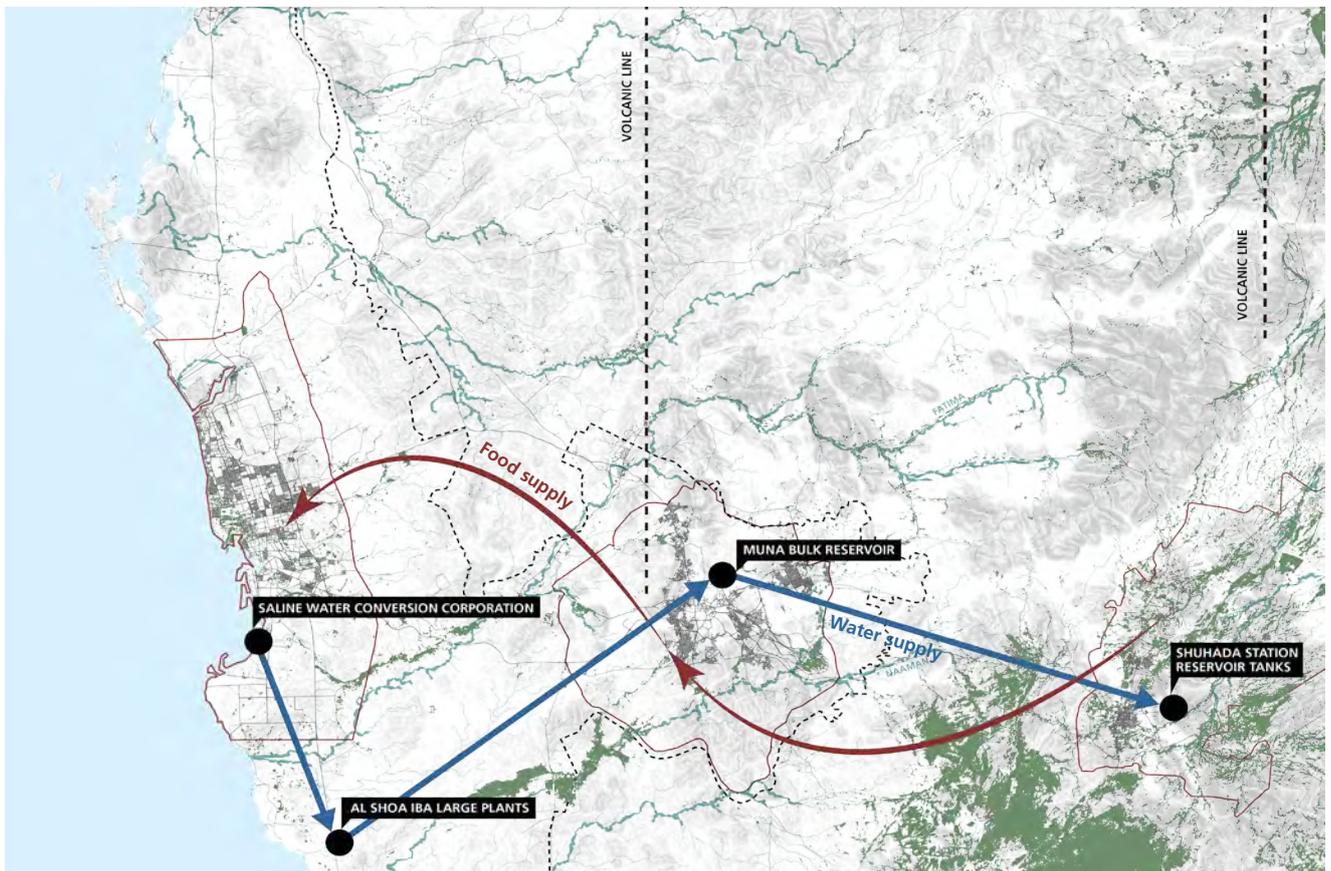


Fig. 14. Wadis, green areas, water distribution and food production

3

GOVERNANCE AND FINANCIAL FRAMEWORKS



4.1 Legal and Institutional Context

Jeddah's legal planning framework is shaped by the Kingdom's legislative environment which is based on Islamic Sharia Law. The law-making authority is vested in four entities; the King, the Shura Council, the Council of Ministers and the Ministerial departments. Consequently, there are five legislative instruments (Royal Order, Royal Decree, Supreme Order, Council of Ministers Resolution and Ministerial Decree) that function in a hierarchical order, underpinning their authority and validity. Moreover, the Amanah of Jeddah has the capacity to issue zoning regulations such as the Al-Beeh Building Regulation 2006, which was updated in 2009. Collectively, the city of Jeddah is guided by over 500 existing urban planning related instruments with most of these having been promulgated at the lowest administrative level (Circulars)⁴ lacking authoritative legal force.

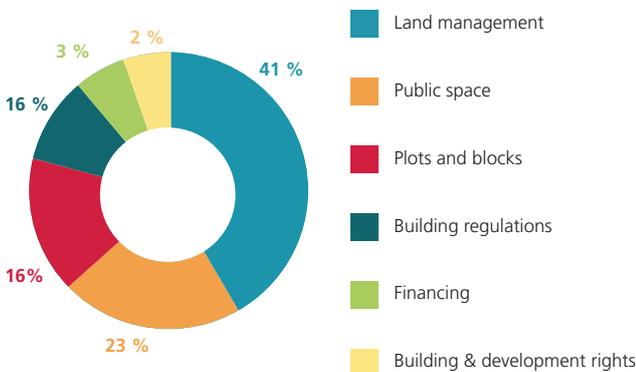


Fig. 15. Number of urban laws in KSA based on the Main Themes of Urban Planning Legislation (UN-Habitat)

The Ministry of Municipal and Rural Affairs (MoMRA) is legally entrusted with the task of conducting urban planning of the Kingdom's cities, including the permitting of all types of construction activity. It therefore plays a significant role in Jeddah's growth and development patterns. The Municipality of Jeddah (Amanah), as the local level actor for Jeddah, acts solely as an implementing arm for MoMRA. The institutional budgetary system is also centralised, meaning that Jeddah's development is reliant on funding allocation from MoMRA, through the sole fiscal resource of annual line item budgeting. The private sector plays a key role in Jeddah's economic development. However, their construction and land filling activities have engendered indiscriminate land development, rising cost of housing, a speculative land market and urban sprawl.⁵

The Kingdom's planning system, which follows a hierarchy of spatial levels and is predominantly top-down, influences the spatial system of Jeddah. The National Spatial Strategy (NSS) of 2001 is the guiding plan for the Kingdom. The Strategic Urban Makkah Regional Plan 2005, which was updated in 2012, influences the impact of the lower-level plans that guide Jeddah's urban development. The Jeddah Plan which

is composed of a strategic component (the Structural Plan 2015), supported by a regulatory document (the Local Plan 2005) identifies strategic land uses and infrastructure networks within the metropolitan area and applies controls to urban land use and building regulations within the municipal boundary. The Urban Growth Boundary aims to prevent urban sprawl in the outskirts of cities without adequate urban infrastructure and the Land Subdivision Plans form the basic building blocks that guide Jeddah's development.

Apart from NSS which is enshrined in law, the remaining planning instruments are defined only by procedural manuals which compromises their legitimacy. By nature, these instruments cannot construct a system of legal accountability and transparency among the relevant actors. Moreover, there is evidence to suggest that weak enforcement of development control, combined with previous land use and building control regulations, has facilitated urban sprawl in Jeddah. This has led to unbalanced growth and development which has affected social, economic and environmental sustainability.⁶

In terms of reform, Jeddah would benefit from both fiscal and jurisdictional decentralisation to facilitate independent and innovative solutions to urban-social problems at the Amanah level. This should entail:

- The transfer of local planning authority from MoMRA to the Amanah, with provision for independent action without recourse, to effectively address community needs. This is supported by the New Urban Agenda, which specifies that territorial urban design and planning processes should be led by sub-national and local governments, though their implementation will require coordination with all spheres of governments as well as participation of the civil society, the public sector and other relevant stakeholders.
- Fiscal decentralisation, which gives autonomy to the Amanah to source funds to finance development activities. Revenue generation activities in cities may also include taxes and levies. Urban areas should be allowed to collect some form of property taxes to fund development activities. The recent White Lands Act that imposes fees on undeveloped plots in urban areas to tackle land speculation, housing shortage and indiscriminate land development, shows that regulatory mechanisms can be leveraged to generate revenue while fostering an efficient development framework.
- Opening of avenues for actors, including the private and voluntary sectors and the general community, to participate in decisions regarding projects that affect them.
- The city of Jeddah would benefit from a quality legislative instrument that supports participatory city-wide slum upgrading. This legal reform process should be jointly undertaken with efforts to strengthen the



Shops and street vendors in Jeddah

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implementation function of the Jeddah Development and Urban Regeneration Company and should be used to integrate residents of informal areas into key national plans, policies, mobility infrastructure and other mega-urban development projects.

The legal framework needs to enshrine an acceptable level of public participation in decision making, to foster equality and inclusion.

Revising the Urban Growth Boundary Law to include clear criteria for its definition would enhance technical and vertical accountability. The Law also needs to place more emphasis on establishing the Development Protection Boundary as a no-development zone, not only to prevent haphazard development but also to discourage the advantage taken by private interests from laxity in the legal text. These initiatives will strengthen policy formulation designed to move the city towards a more sustainable, compact and dense future. Primarily, a post-legislative scrutiny of the urban growth boundary law should be undertaken to assess whether or not it has met its policy objectives. This could, in turn, inform the legal reform process as well as planning policy options.

4.2 Planning Instruments and Procedures

4.2.1 Hierarchy of plans

The planning system of Jeddah is derived from the de facto planning hierarchy of the Kingdom. Within this framework, there are four different levels of spatial plans: national, regional, local and district. Figure 16 highlights the planning instruments in force in Jeddah.

4.2.2 Regional Plan for Makkah Region

Regional planning represents the second-tier of spatial planning in KSA which aims to address the natural, urban, social and economic aspects of regional development. The Strategic Urban Makkah Regional Plan of 2005 was prepared and approved by the Regional Council for the Makkah Region as a comprehensive 20-year vision for economic, social and spatial development based on the NSS (2001), 8th development plan (2005-2010), and the results of surveys and studies that were undertaken as part of the regional plan project. However, Jeddah Municipality did not participate in the preparation of the regional plan for the region of Makkah.

4.2.3 The Jeddah Plan

The Jeddah Plan⁷ is a planning tool composed of a strategic component (the Structural Plan of Jeddah Metropolitan), and a regulatory document (Local Plan). The scope of these plans includes:

- Long term strategy for the city;
- Identification of relevant development areas;

- Identification of urban/not urban land;
- Main mobility system;
- Environmental protection;
- Infrastructure provision;
- Detailed land use;
- Urban regulations; and
- Detailed proposals for selected areas

The Structural Plan of Jeddah Metropolitan

A report that was published in 2015⁸ indicates that the Amanah of Jeddah established four plans to guide development across the Jeddah Governorate over a 20-year planning period. These plans are; Jeddah Strategic Plan, Jeddah Sub-regional Plan, Jeddah Structural Plan and Jeddah Local Plans (Area Action Plans). The first three plans (Strategic, Sub-regional and Structural plans) were prepared by the Amanah of Jeddah in consultation with the AECOM consulting company and approved in 2015 by MoMRA. These plans are aligned with the NSS, Regional Plan and 9th development plan.

The Jeddah Strategic Plan outlines the municipality's development vision, mission and objectives for Jeddah Governorate until 2033. In addition, it defines the governorate-wide objectives and policies that will guide decision-making regarding land use planning, urban policy making, infrastructure planning, investment, governance and provision of civic facilities. The Jeddah Sub-regional Plan aims to identify the extent of urban growth and spatial strategy for Jeddah Governorate until 2033, where it a) sets out long parameters for growth and development; b) identifies locations for sub-regional urban growth and environmental protection; and c) defines the detailed development strategy for Jeddah's urban area.

The Structural Plan aims to identify key spatial structures akin to those provided for in the Regional Spatial Strategy. It is built on a set of studies that respond to multiple urban challenges and has been prepared in accordance not only with the development objectives, outlined by the Jeddah Strategic Plan but also, the parameters for growth as identified within the Jeddah Sub-regional Plan. The main objectives are to provide social and public facilities, better spatial design and to concentrate development in seven town centres of the city (Al Janoob, Moulaisaa, Markaz Al Madinah, Jeddah Al Jadeedah, Telal Jeddah, Obhur, Thuwal).

This plan additionally identifies strategic land uses and infrastructure networks within the metropolitan area of the 2030/1450 Urban Growth Boundary (UGB). Within this growth boundary, 121,675 hectares of land have been allocated for residential development.

Local Plan

The Local Plan represents the third level of the urban planning system in KSA and is largely focused on those areas of a municipality which are contained within the urban growth boundary, with particular focus on housing. The Local



Wooden balconies and window screens in Al Balad

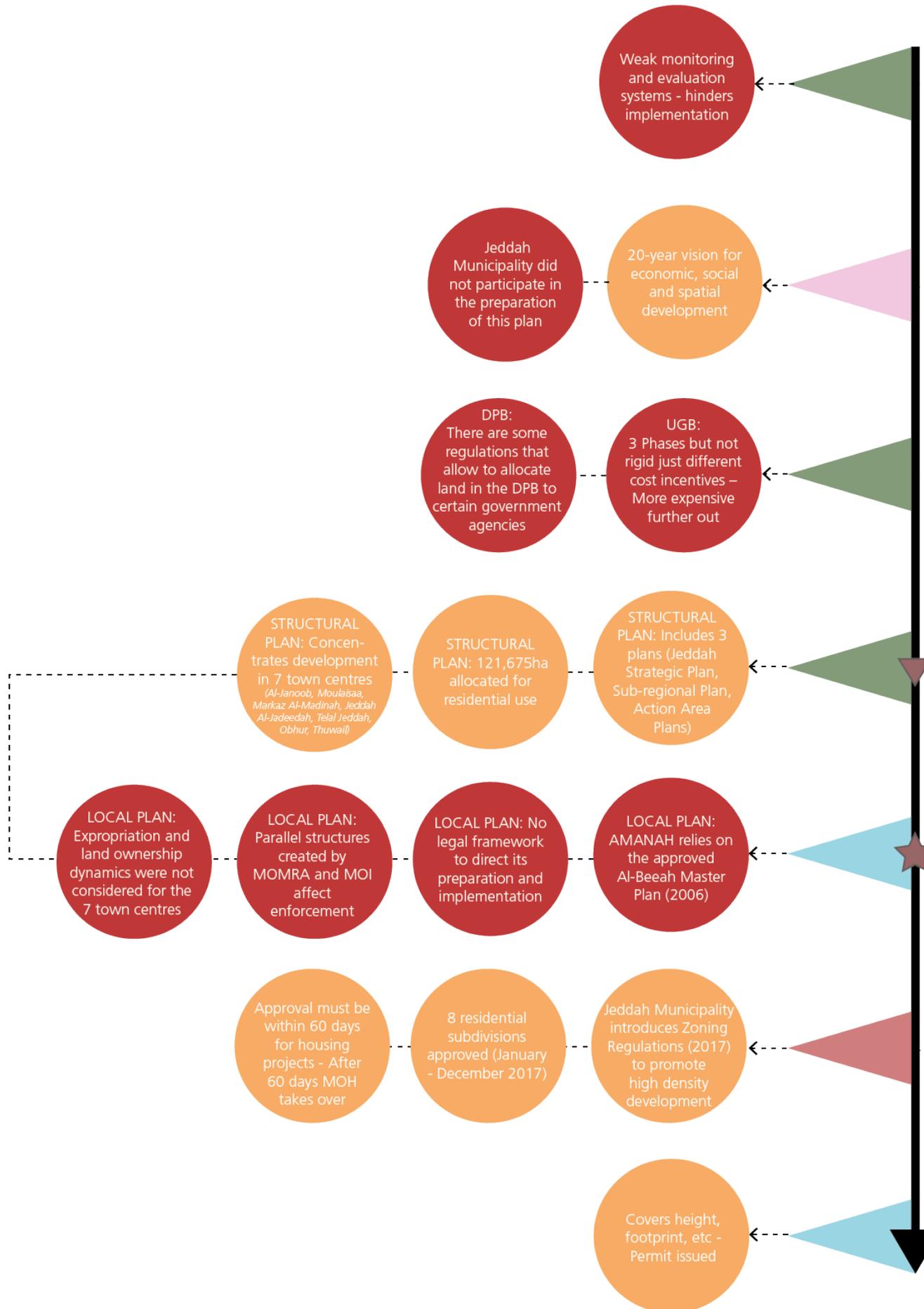
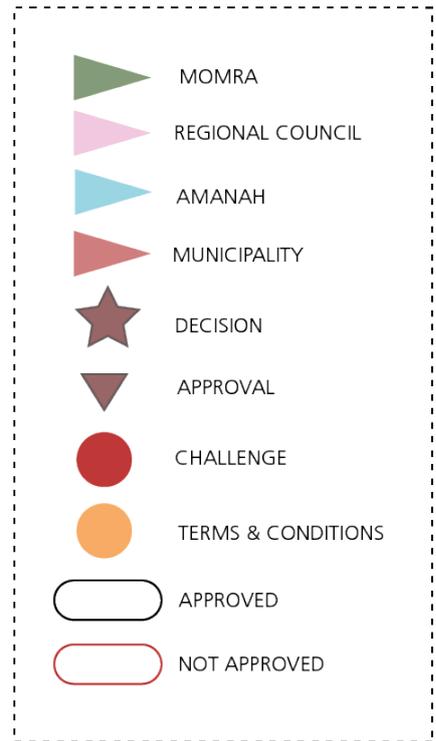
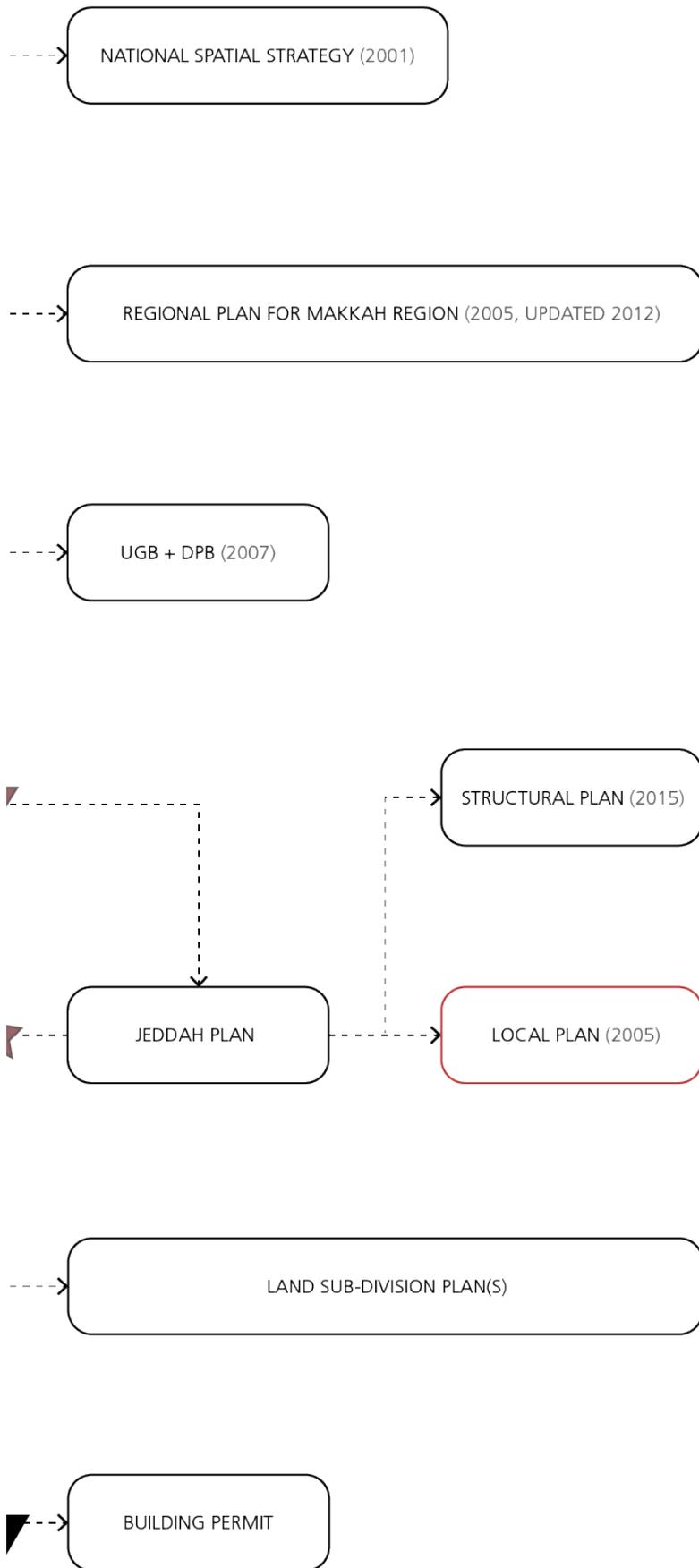


Fig. 16. FSCP simplified representation of hierarchy of plans and the planning instruments for the city of Jeddah



Plan contains the Urban Atlas which details the permitted land uses for each part of the city. It is complemented by a regulation report which contains specifications on permissible development rights such as floor area ratio, street dynamics, building heights, areas of special building regulations, etc.

The aim of the local plan is to a) apply controls to urban land use and building regulations; b) to provide public services and infrastructure in a cost effective and integrated manner; c) set basic requirements for proposed road networks; and d) help facilitate the development of public and private sector housing.

The local plan is prepared by various consultants following the “Booklet of the Terms of Reference for the Preparation of the Local Plan” which is formulated by MoMRA. This Booklet was updated in 2015 and one key technical change is the requirement that the lifespan of new plans should be 14 years (2015-2029). However, this booklet has no legal standing and there is no accompanying legal framework to support the enforcement of the local plans.

The development of the Local Plan is complicated by the existence of parallel structures applied by MoMRA and the Ministry of the Interior. Whilst the legal mandate for planning clearly lies in the Municipalities (under MoMRA), there are jurisdictional overlaps with the Regional Development Authority. While MoMRA is designated as the central spatial planning institution, there still lacks a clear mechanism for coordination. This frequently leads to an impasse in decision-making which affects the delivery of technical standards within municipalities such as Jeddah.

The Jeddah Local Plan is yet to be approved though it was prepared by the Amanah in 2005. Currently, the Amanah of Jeddah at the local level relies on the Al Beeh Master Plan, which was approved by MoMRA in 2006. This Plan adopts a ‘smart growth policy’, to encourage compact development as a sustainable approach. To implement this policy, the Jeddah Municipality introduced zoning regulations in 2017, to promote high density and intensive development.⁹

The challenges facing the implementation of plans in Jeddah are as follows:

- The Amanah has not signed an implementation strategy TOR with AECOM (consulting company) before which the process cannot commence. Moreover, other sectoral agencies such as the Electricity Company have not always been fully active in the implementation process; and
- Property expropriation, land ownership and compensation were not considered in the seven urban centres proposed in the plans prepared by AECOM.

4.2.4 Jeddah Urban Growth and Development Protection Boundaries

Legal Framework

In 2008, the Prime Minister issued decree No. 157, which sets the overall regulations for both the Urban Growth Boundary (until 2030) and the Development Protection Boundary. The executive regulations were issued in 2010 by the MOMRA Ministerial Decree No. 11769, followed by the current revision (MOMRA Ministerial Decree No. 66000) which was enacted in 2014. The growth boundary is intended to control urban expansion and prevent sprawl in the outskirts of cities without adequate urban infrastructure, whereas the development protection boundary sets a long-term plan for future development of cities beyond the 2030 urban growth boundary.

The 2014 Decree stipulates several general development principles such as:

- Strategic development projects that are part of the spatial strategies, including major road and railway networks passing through private lands, should be prioritized over any other development projects;
- Development projects outside the boundary, are only permitted with the approval of MoMRA; and
- Large-scale development projects should follow specified detailed standards.

The Law also defines infrastructural standards that developers are to follow based on the city's categorization as either national, regional or local centre and the size of the proposed lot.

Legally, the area between the Development Protection Boundary and the 2030 Urban Growth Boundary is protected and not earmarked for development, however, the law does outline exceptional mechanisms for building mega or national-regional economic projects therein.

Moreover, given the law, certain agencies have rights to lands situated in protected areas between the two boundaries. Approval of development projects in such cases is routinely controlled by set of regulations in this regard. Additionally, given the legal flexibility surrounding the definition of “mega” or “strategic” projects, private residential developments have been approved outside the 2030 urban growth boundary. These factors have undermined the functional effectiveness of the regulations, the rule of law, and the compact development of urban areas.

Setting the Boundary

The urban growth boundary for Jeddah, was set simultaneously alongside those of other cities by MoMRA, through a Committee under the Unit of Coordination and Projects. The composition of the committee is not clear, however, it is

URBAN BOUNDARY CLASSIFICATION OF LAND SUBDIVISION APPROVALS AND THE URBAN BOUNDARY PHASES		
EXECUTIVE REGULATION ISSUED BY THE MINISTERIAL DECREE NO 66,000 IN 20/12/2014		
1 ST PHASE (2014-2018)	2 ND PHASE (2019-2024)	3 RD PHASE (2025-2030)
NATIONAL GROWTH CENTRES (MAKKAH, RIYADH, MADINAH, JEDDAH AND DAMMAM)		
MORE THAN 500,000 SQM		
<ul style="list-style-type: none"> - Tarmacking of internal roads - Water, sanitation and electricity - Median light poles - Storm water infrastructure 	<ul style="list-style-type: none"> - Tarmacking of internal roads - Water, sanitation and electricity - Median light poles - Storm water infrastructure - Connect to closest main road - % of residential area completed not less than 50% - Provide land for social services (schools, kindergartens, hospitals, etc.) 	<ul style="list-style-type: none"> - Tarmacking of internal roads - Water, sanitation and electricity - Median light poles - Storm water infrastructure - Connect to closest main road - % of residential area completed not less than 50% - Provide land for social services (schools, kindergartens, hospitals, etc.)
<ul style="list-style-type: none"> - Tarmacking of internal roads - Sanitation and electricity - Provide land for social services (schools, kindergartens, hospitals) 	-	-

Fig. 17. Matrix showing the development options within the phases of the Urban Boundary in the National Growth Centres (Including Jeddah)



A street in downtown Jeddah

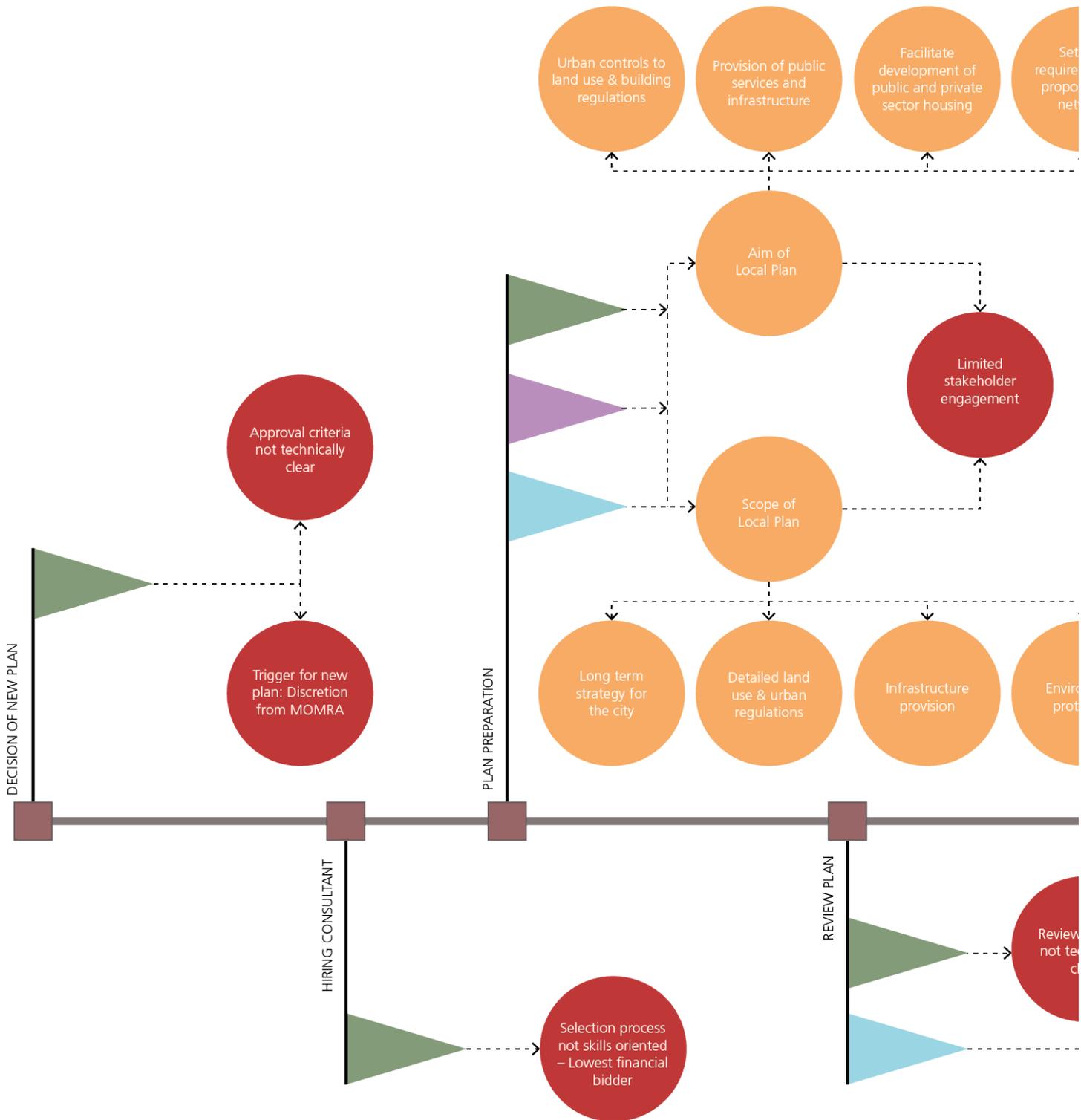
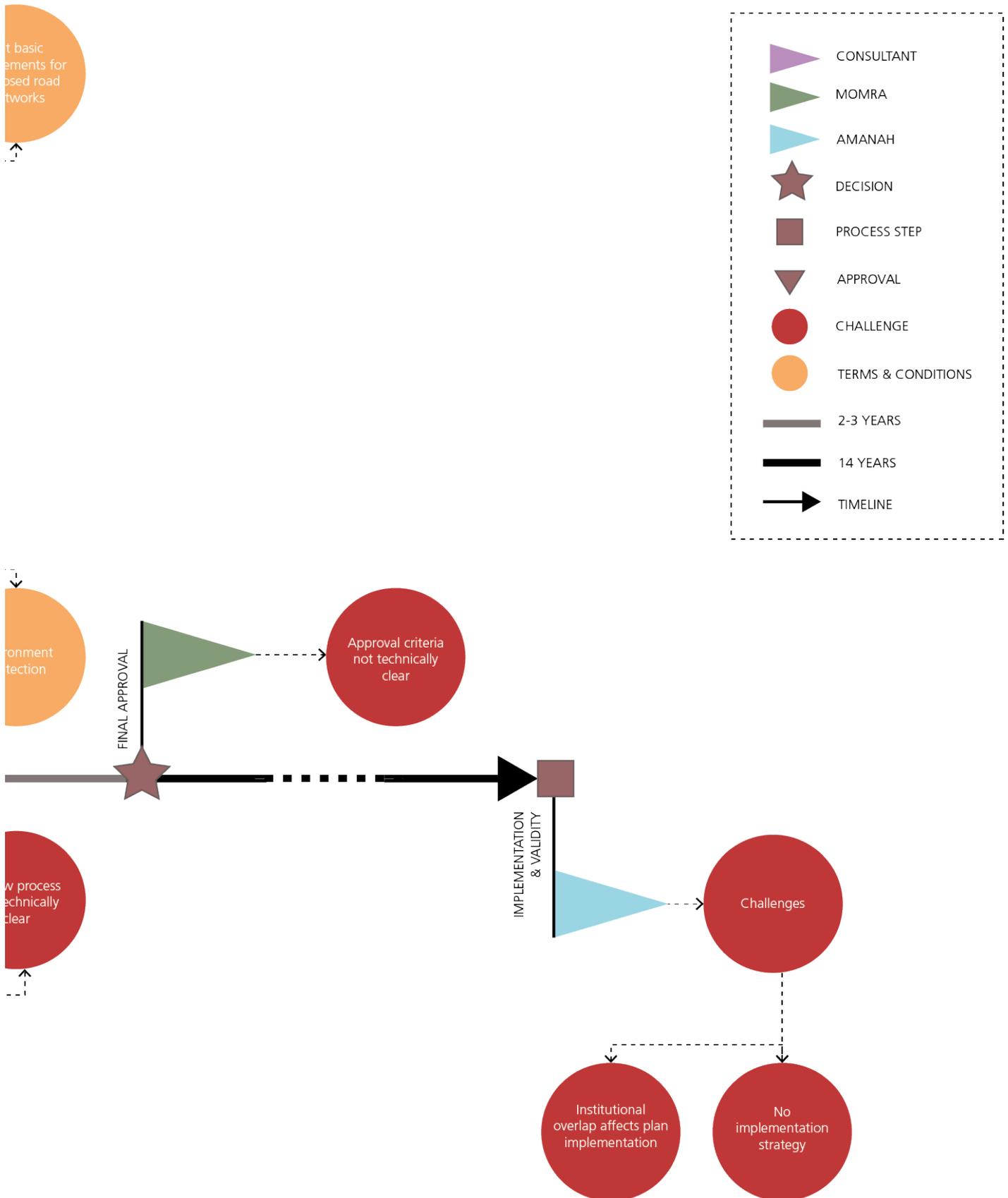


Fig. 18. FSCP simplified representation of Planning Process and Actors involved in the preparation of the Jeddah Local Plan



known that it did not include the municipality of Jeddah, which remains formally responsible for planning at city level. There is an understanding that the calculations were based on factors such as historical and expected population and built growth in the city, however, there are no published criterion explaining the methodological calculation of the boundary size.

Challenges

In Jeddah, no permits have been approved beyond the growth boundary but there is disparity between the size of the boundary and Jeddah's demographic calculations by the Committee, which undermines densification. Based on current population growth projections, the 2030 density will be 62.5 people/hectare, which is well below any recommended target, including UN-Habitat recommendation of 150 people/hectare.

Permitting

Development within the urban growth boundary is closely linked to permitting and development control. The process is as follows:

- A developer submits a land subdivision plan with detailed implementation plans for the instalment of the requisite infrastructure to the Amanah;
- The Amanah assesses application in accordance with the provisions of the Law on Urban Growth Boundary; except those cases defined by MoMRA Ministerial Decree No 17777. This decree delegates certain roles to the mayors for approving land subdivision solely in relation to the size of residential projects. The Mayor of Jeddah is an approval authority under this Law;
- Application sent to MoMRA for review in accordance with development standards and applicable building codes;
- Building permit is either refused or granted by MoMRA;
- A developer whose permit has been refused has two options of appeal: a) recourse to the Amanah and MoMRA calling for re-study of the application; and b) file the case in the relevant jurisdictional administrative court; and
- The decision in the above appeal processes is final and binding on all the parties.

White Lands Act - Jeddah

The percentage of undeveloped land ("white lands") in Jeddah is high, at 27% of total land available for urbanisation within the growth boundary. The existence of white lands has been a major contributor to a growing housing shortage, particularly for youth and the growing population. This is largely attributed to property hoarding, intended to maximize land value before development. The government recently issued the White Lands Tax Law¹⁰ that imposes an annual land tax of 2.5% of value on 'white land', which is defined as vacant land located in 'populated areas', zoned for residential or for dual residential and commercial use. The aim of this Law is to: a) increase the supply of developed land to better address housing shortages; b) make residential land available at reasonable prices; and c) combat monopolistic practices. The Ministry of Housing, as

the implementing authority, will first implement the Law in Jeddah, as one of three cities with the highest percentages of White Lands (see figure 19).

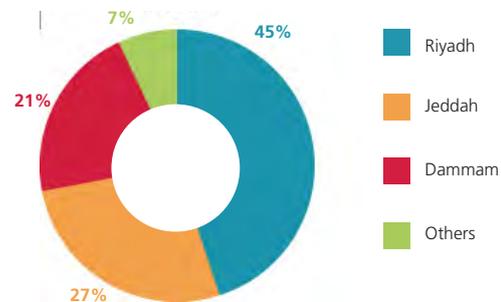


Fig. 19. Percentage of White Lands – First phase of implementation of the White Lands Law

4.2.5 Land Subdivision Plans

The Land Subdivision Plans are the basic building blocks for KSA cities' growth and development. The Mayor of Jeddah has the power to approve land subdivision in accordance with the following criteria (Ministerial Decree No. 17777 of 2010):

- The land must be within the approved phase of the urban boundary;
- The land must not be government land (approval by MoMRA);
- The land use specified is consistent with the instructions and regulations governing it;
- The subdivision will not result in cancellation or modification of an approved regulation, plan or authorized land use;
- The review of land subdivisions concerning housing projects must be undertaken within 60 days of application. After the lapse of 60 days, approval powers are transferred to the Ministry of Housing; and
- All necessary planning procedures must have been completed and the Deputy Ministry for Town Planning issued with a certified copy of the plan after its approval.

The Amanah has approved eight (8) residential land subdivisions between January-December 2017.¹¹

4.3 The Institutional Context

4.3.1 Urban institutions in KSA

Jeddah's growth and development pattern is impacted by the centralised planning institutional framework of KSA under the Ministry of Municipal and Rural Affairs (MoMRA). MoMRA is entrusted with the task of conducting urban planning of all the Kingdom's cities. That includes ensuring provision of necessary roads and fixtures, maintenance and cleanliness of the environment in addition to the management of licensing for



© FSCP

Street vendors in Jeddah

all types of construction activity.¹² The Deputy Ministry of Town Planning, which falls under MoMRA and its departments such as Local Planning, Studies & Research, Projects Coordination and Urban Planning & Design, is mandated to coordinate with “concerned bodies” in charge of planning to achieve comprehensive urban development.¹³ In practice, there is little coordination between these departments and the Amanah, which affects service delivery and project implementation.

4.3.2 Regional context: Makkah Region

According to the Ministry of Interior administrative classification, the Makkah Region is divided into 17 governorates and 113 centres (36 class A, 77 class B). Jeddah, as the largest city in the region in terms of city and population size, is not included in this classification but instead is governed as a “municipality” (Amanah) headed by a Mayor. Jeddah’s precise status is a 1st class Amanah,¹⁴ as defined by MoMRA. Given this structure, the Amanah is allocated funds by MoMRA for development action and municipal services through annual line item budgeting.¹⁵ This is the sole fiscal resource available to Jeddah¹⁶ though the city is capable of generating around 35 per cent of its expenditure from advertising fees and property leases.¹⁷

There are additional institutions in the Makkah Region that manage and regulate the development process. The Emirate/AMARAH of the Region, is headed by the Regional Prince who, pursuant to the Regional Law,¹⁸ reports to the Ministry of Interior. The same law mandates the Emirate to oversee all authorities and institutions operating within the Makkah Region. This supervisory role is designed to support citizen welfare and mediate disputes arising between two or more government agencies.

The Regional Council¹⁹ is based in the Amarah and is required to:²⁰

- Identify the needs of the region and propose their inclusion in the National Development Plan;
- Identify beneficial projects for the Region and submit these as activities requiring funding. These requests are vetted, and viable projects selected for funding. Funding is provided as part of the National Development Plans as part of the yearly national budget. This is the sole resource available to municipalities.
- Study the organizational arrangement of the regional administrative centres, follow up implementation of any modifications; and
- Implement the provisions of the development, budget plan, and carry out the needed coordination.

The Integration Development Centre (IDC) is a regional centre

that aims to tackle the challenges faced by investors and developers, follow up the implementation of projects, develop performance indicators for projects and encourage investment within the region.²¹

The Municipal Council, also located in the Amanah, supervises the activities of the Amanah and municipalities to ensure conformity to the Regional Plan in concurrence with the current needs of the region. Two thirds of Municipal council members are elected by citizen’s votes, the remainder appointed by MoMRA. The Council currently consists of 30 members. They approve:

- The municipal budget, allocated by national government. This is subject to continual revision in accordance with priorities set by the Council and Mayor;
- Residential plans, pending examination for procedural violation;
- The scope of municipal services; and
- Expropriation projects based on Mayoral priorities.

4.3.3 Local context: Jeddah

The Makkah Region is composed of several cities including Jeddah, which remains the largest in the region, in terms of both population and size. Jeddah’s size falls second only to Riyadh in the national context. As above, the city is managed by the Amanah which is directed by a mayor. The mayor is appointed by the Minister of MoMRA and the Amanah’s executive members are appointed by the Civil Service Bureau, by professional qualification.

Planning, preparation and implementation of legislation at the Amanah is conducted by the Deputy of Construction (DOC). The DOC,²² ensures compliance with MoMRA’s outline for the Kingdom’s cities, rural areas, streets and construction designs. The DOC employs roughly 55 planners and architects²³ and comprises five departments; a) the General Department of Urban Planning; b) the General Department of land and property; c) the General Department of development licenses; d) the General Department of Structural Plan and organization (concerned with implementing planning regulations and the Structural Plan); and e) the GIS Department. However, technical accountability is lacking in the DOCs changeable internal structure, which makes it difficult to trace the nature of operational relationships with external authorities. The Amanah established a Local Urban Observatory in 2007, which is monitored by the National Urban Observatory²⁴ (MoMRA Ministerial Decree No. 1280 of 2007). This observatory supports the DOC with a triennial measure of progress on the following:

- Achieving Vision 2030;

- Achieving Goal 11 of the SDGs; and
- City Prosperity Index indicators and other contextualized urban indicators.

The Jeddah Development and Urban Regeneration Company (JDURC), established in 2006, is functionally integrated under the Municipality of Jeddah. It initiates partnerships with the private sector in mega project development. It is additionally involved in the implementation of the metro line construction project as well as urban-upgrading in areas of unplanned settlements.²⁵

The Local Planning Department under MoMRA has three core implementation responsibilities in relation to the National Transformation Programme: a) the preparation of the Local Plan; b) technical support to the drafting process of the Planning Act; and c) undertaking studies on roads and parking spaces.

4.3.4 *Legal and institutional implications for Jeddah*

The majority of technical decisions and approvals passed in the local governance (Amanah), including planning decisions, are made on a discretionary basis according to the priorities set for the city. This affects the system's technical accountability,

predictability, and practical clarity. Coherence cannot improve until measures are taken to instill legal mechanisms that harmonize and guide the planning system.

4.4 Financial Context

Jeddah's position as one of the two largest cities in the Makkah Region, contributes to its importance as an economic hub for the Kingdom, with large productive industries representing about 18.5% of the total number of productive factories in the country.²⁶

The region's primary industries are (1) refined oil and related products, (2) food and beverage products, and (3) building materials. These attract more than 50% of regional industrial investment.²⁷

King Abdullah Economic City shares similar economic status with Jeddah while Jeddah's harbour boasts the title of largest in the Red Sea.²⁸

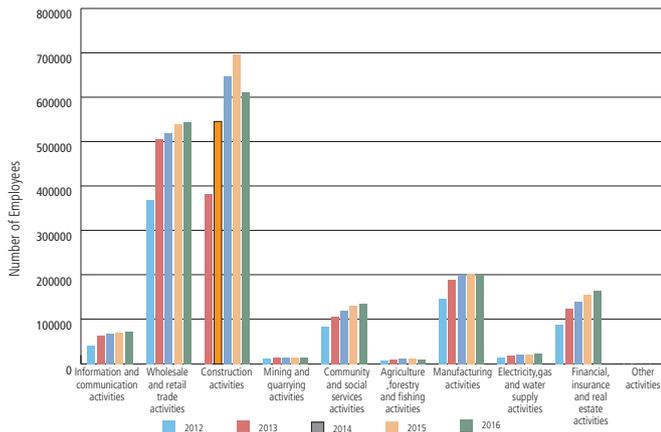
Although local economy is centred around traditional labour-intensive sectors (i.e. construction, wholesale and trade, and manufacturing activities), the government is working to foster



A marketplace along the streets of Jeddah

© FSCP

development and innovation, identifying strategic economic leverages focused on transportation and logistics, tourism, and tertiary sectors. Economic diversification in Jeddah is considered as key to achieving both the regional and the national economic goals of the 2030 Vision.²⁹



Source: General Organization for Social Insurance 2016

Fig. 20. Number of employees by economic sector, 2012-2016

Consequently, the development of public infrastructure (e.g., transportation and water treatment facilities), whilst maintaining service to Jeddah’s established and growing economic sectors is of priority to the government. Indeed, these elements are fundamental to increase market access, to spur competition, to harness the productive capacity of the city and its contribution to the national economy.

The government’s economic strategy includes a renewed commitment to providing access to job markets, quality education, health services, and affordable housing. It is challenged with keeping pace with the needs of the population, growing at 3.5% per year and representing 12% of the total population of the Kingdom.³⁰ By strengthening the feedback loop between (1) regional and local needs, (2) education and training, and (3) the local economy, municipal governments promote growth in human capital and generate better market conditions that lead to research, innovation and economic diversification.³¹

4.4.1 Financial system

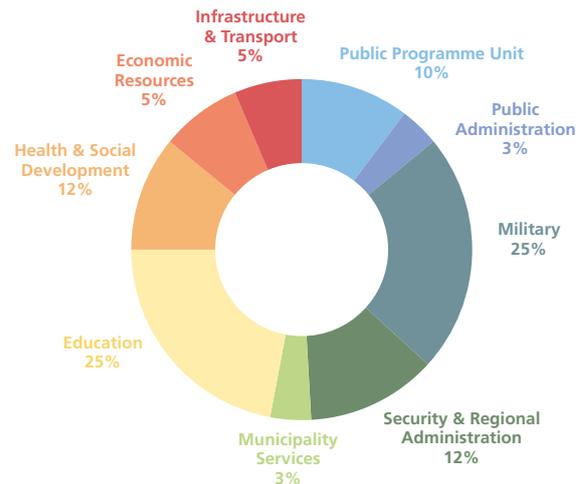
Sustainable urban and local economic development requires a sound and resilient municipal public finance management system. Currently, the National Development Plan directs Jeddah’s public finance system. This system is highly centralised and depends on intergovernmental transfers to fund local development activities and projects. In 2017, the central government allocated 5% of

the total budget to municipal services, which was to include projects and programs managed by the Ministry of Municipal and Rural Affairs (MoMRA) (see figure 21 and figure 22).

MoMRA, via Amanahs,³² is responsible for financing activities categorised as “municipal services,” such as urban planning, building licensing, sanitation, and road maintenance. In addition to MoMRA, several other government ministries and entities, such as the Emir and regional councils, fund and implement projects at the local level, (e.g., the Ministry of Education provides direct funding for city schools).

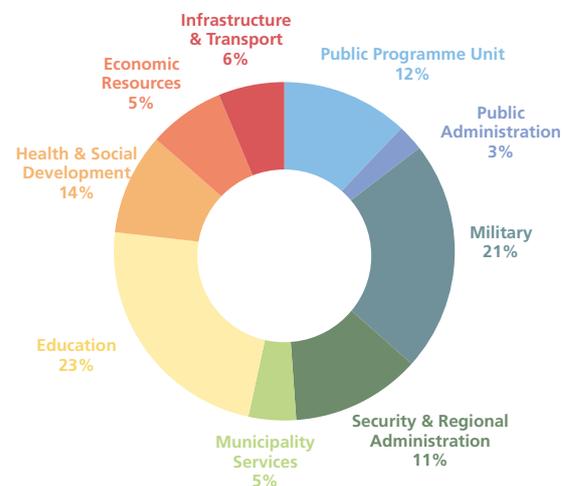
4.4.2 Municipal revenue

Currently, the Amanahs have few sources of revenue and limited authority to collect fees.³³ Although MoMRA introduced municipal fees, which expanded the own-source revenue base (all revenues collected by local government excluding federal/



Source: Bhatia, R. (2017). Saudi Arabia Budget 2017. The Gulf’s International Bank.

Fig. 21. Saudi Arabia national expenditure by sector, 2016



Source: Bhatia, R. (2017). Saudi Arabia Budget 2017. The Gulf’s International Bank.

Fig. 22. Saudi Arabia national expenditure by sector, 2017

central government transfers), local revenues remain insufficient. Consequently, Amanahs continue to rely on support from the central budget. Intergovernmental transfers from the MoF are based on annual budget proposals submitted by the various ministries.

In MoMRA, the budget drafting process tends to be influenced by municipal needs and priorities. Municipal governments submit project proposals for the next budgetary cycle, which are then submitted to MoMRA's leadership for final approval. The projects approved are included in the MoF's budget review and submitted for approval to receive funding.

4.4.3 Financing municipal operating costs

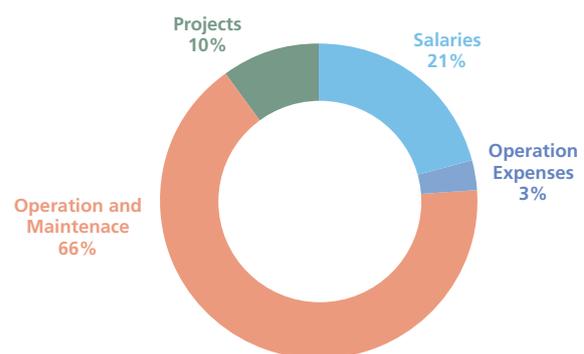
In 2016, Jeddah collected SAR 900 million in own-source revenue, corresponding to 36% of the city's budget.³⁴ This achievement is distinctive, surpassing the national Amanah average by 20%.³⁵

In an effort to improve municipal finance management and reduce dependency on the central government, the National Transformation Program (NTP) directs local government in the establishment of sound fiscal policies through the introduction of new finance instruments.³⁶

Budget Category	SAR (thousands)
Salaries	340,388
Operation Expenses	41,691
Operation and Maintenance Programmes and Contracts	1,050,000
Project	160,550
Total Budget	1,592,729

Source: Ministry of Finance, Saudi Arabia (2017)

Fig. 23. Amanah budget, Jeddah (2017)



Source: Jeddah Amanah, Kingdom of Saudi Arabia (2017)

Fig. 24. Amanah budget breakdown (2017)

4

THE CURRENT CITY





5.1 Urbanisation Patterns

5.1.1 The city's development patterns

The city of Jeddah is referred to as the Bride of the Red Sea, and is the Kingdom's largest coastal city. It is considered one of the most important cities of the Kingdom of Saudi Arabia as a business portal that has gained great significance in international trade. Previously it represented the external port of the Kingdom. As a result, it is well known for its industry and development in all fields of trade and services.

In addition, as mentioned above, Jeddah is characterized as the gate to the Two Holy Mosques in Saudi Arabia, and the first station for pilgrims who visit to the Holy Land (Makkah and Madinah). Approximately 5 million people who enter Jeddah annually, travel through King Abdulaziz International Airport, in order to perform Hajj.³⁷

The city of Jeddah is located on the west coast of the Kingdom of Saudi Arabia, at the centre of the eastern shore of the Red Sea. The urban area of Jeddah is calculated at approximately 84,658 hectares. The estimated population is 4 million, which represents 14% of the population of Saudi Arabia. The population growth rate in the city of Jeddah is 3.2% (Jeddah Municipality, 2013). It has a high percentage of youth, with more than 41% composed of those under the age of 24.

Jeddah was first inhabited roughly 2,500 years ago as a small fishing settlement and has long been a centre for traders and sailors. The city was already an established port with a history of spice trading when Caliph Osman Ibn Affan declared it the official port for Muslim pilgrims making their way to the Holy Cities of Makkah and Madinah in 26H (647). This marked a turning point in Jeddah's history, not only because of the increased possibilities for commerce, but also because it beckoned the arrival of pilgrims from all over the world, some of whom stayed in the city and laid the foundations for a future cosmopolitan Jeddah.

The Ottomans conquered Jeddah during their expansion into the Middle East in the early 900's (1500's) and built a stone wall around the city in order to fortify it against attacks from the Portuguese. It remained a fortified city until it was released from Turkish rule. Following the removal of the city walls in 1366 (1947), the city's population, fuelled by immigration, grew rapidly. In the period between 1366 (1947) and 1407 (1987), population growth averaged 9.5% annually.

Key moments in history:

- 1367 - 1375 (1948 – 1956) As KSA's principal port, Jeddah benefits from a boost in imports. Significant growth of city to the north and east after walls removed, increasing city area from 300 to 3,300 hectares.
- 1376 - 1382 (1957 – 1963) Physical growth stasis due to

POPULATION

 **4,082,184**

POPULATION DENSITY on built-up area

 **41.21 p/ha**

AGE PROFILE

 **41% < 24**

POPULATION GROWTH RATE

 **3.2 %**

JEDDAH CITY COMPARED TO MANHATTAN MUNICIPALITY



Population: 1,365,000
Area: 181.67 km²
Density: 75.13 p/ha

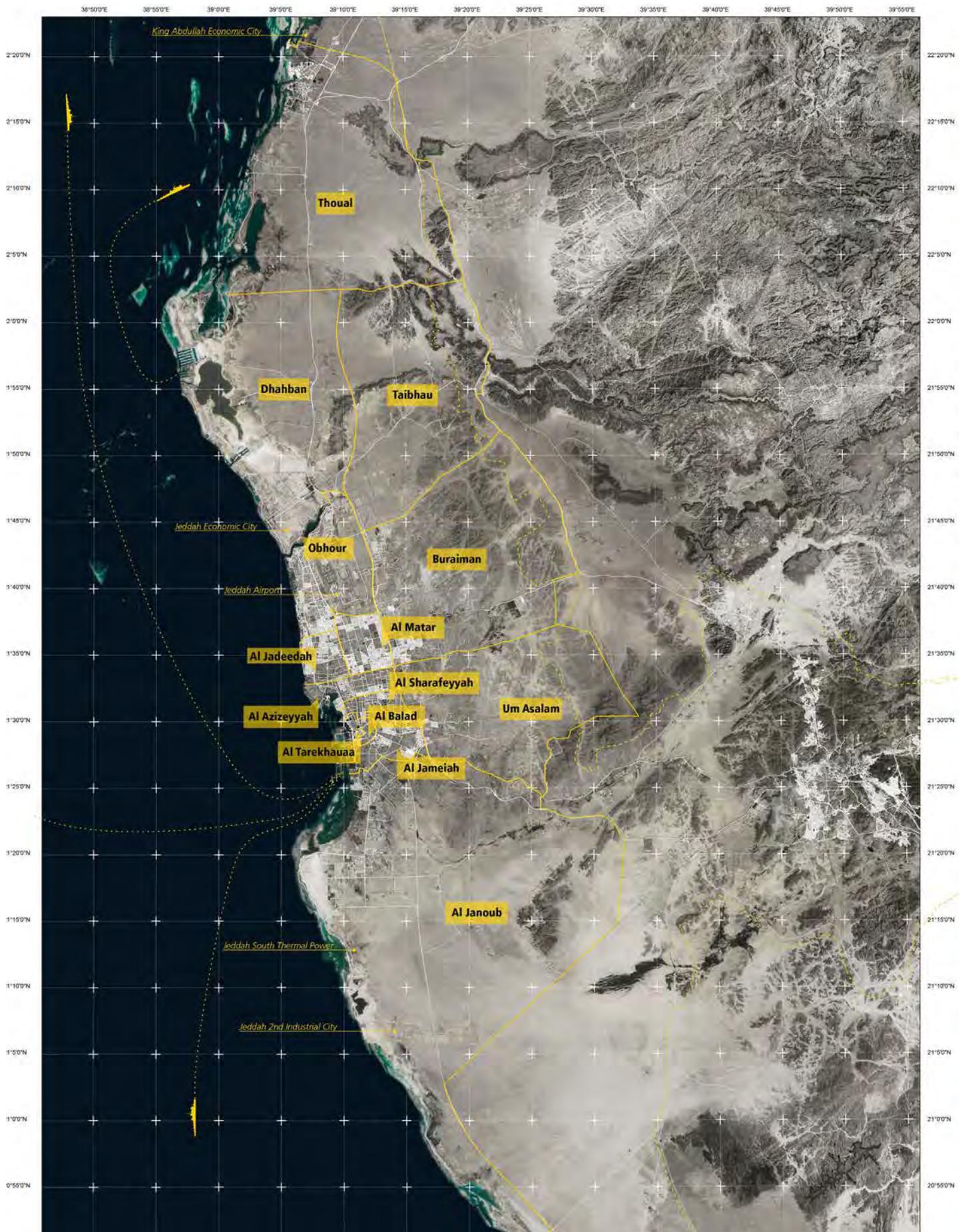
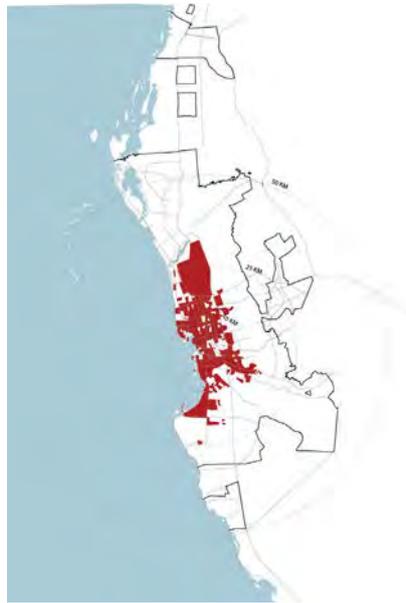


Fig. 25. Boundaries, neighbourhoods and key infrastructure



1970
Population: 381,000
Area: 18,840 ha



1993
Population: 2,046,000
Area: 40,739 ha



2007
Population: 3,247,134
Area: 54,175 ha

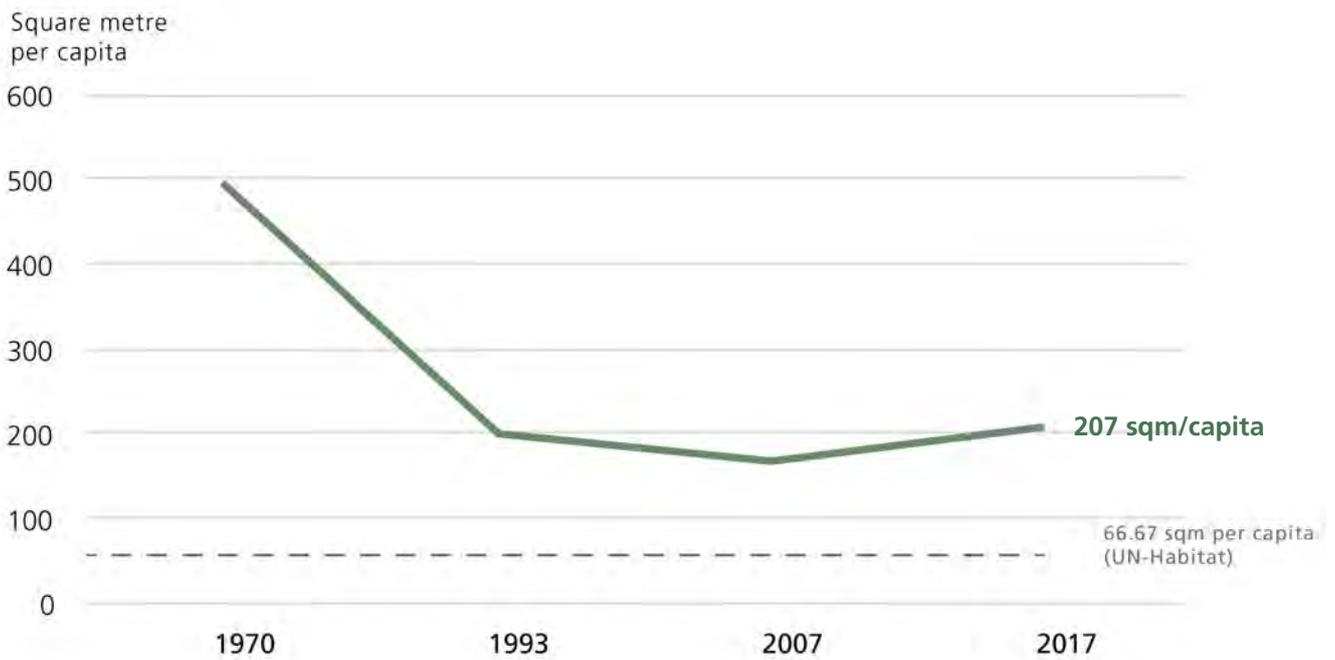


Fig. 26. Land allocated per capita

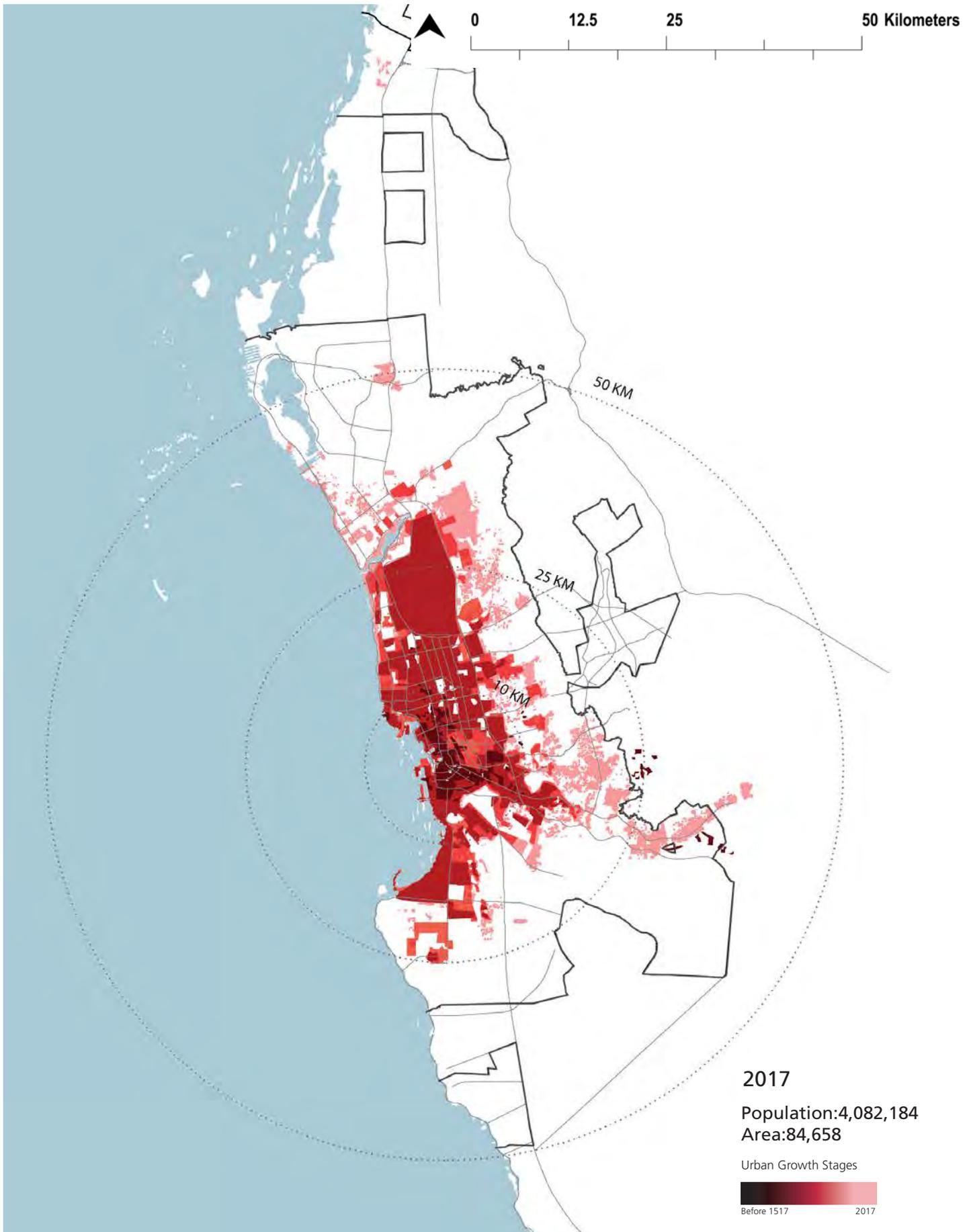


Fig. 27. Urban growth stages



downturn in value of oil and slow economic growth.

- 1383 - 1390 (1964 to 1971) Improved economic conditions lead to city area expansion by 50%. The majority (95%) of growth is concentrated in the north, with small amounts of growth to the east and south.
- 1395 (1976) Jeddah Islamic Port is established, altering Jeddah's coastline and the relationship between Al Balad and southern areas of city with the coast and city centre.
- 1401 (1981) King Abdulaziz International Airport opens including the new Hajj Terminal.
- 1431 (2010) Proposed Makkah Madinah Rail Line (MMRL).
- 1439 (2018) Makkah-Jeddah-Madinah Rail Line is currently functioning.

5.1.2 Administrative boundaries

The Development Protection Boundary (DPB) is shared between Jeddah and Makkah, however, the area in which the

Amanah of Jeddah can take institutional action is restricted to the former boundaries of the governorate. The Development Protection Boundary not only plays a legal role concerning the attribution of administrative power over smaller rural areas to a specific Amanah, but additionally functions as an instrument for management of development and city extensions that is designed to prevent urban sprawl and inefficient infrastructure networks. It further protects and preserves key ecological assets and agricultural land. UN-Habitat proposes to maintain the urban expansion within the 1450 UGB and to preserve the rest of the Development Protection Boundary. In Jeddah, the current DPB area is 4,402 square kilometres .

The further two restrictive boundaries are the Urban Growth Boundary (UGB) for 1435H and 1450H. These two boundaries are closely tied to current and future urban trends of the city; they are established to support current and future growth patterns, land uses, economic development and strategic

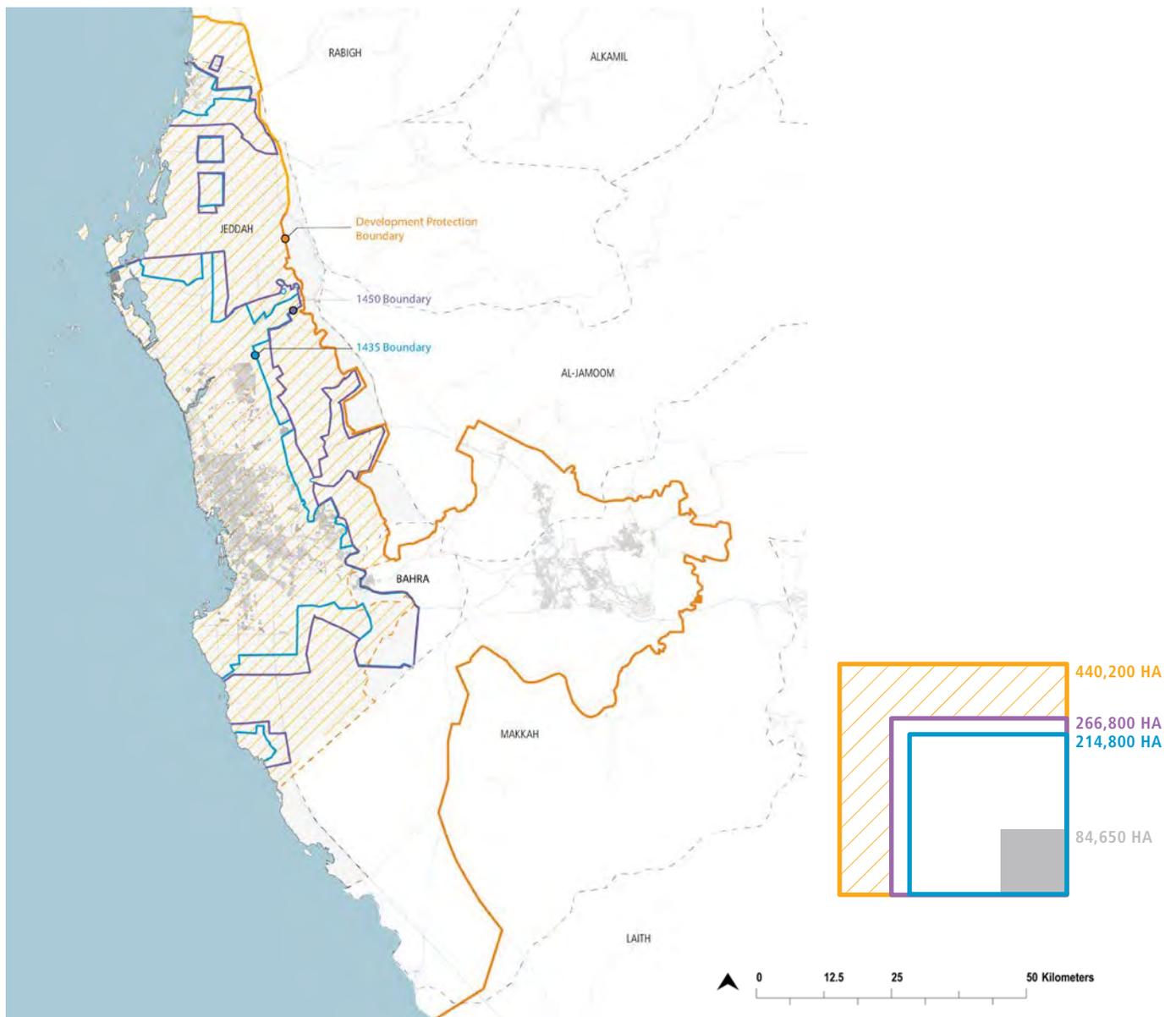


Fig. 28. Administrative boundaries



© FSCP

Al Balad's unique traditional architecture



governance. Like the DPB, the UGBs require careful planning in alignment with strategic visions and goals. The 1450 UGB covers an area of 2,668 square kilometres in Jeddah.

This system of boundaries includes some villages and settlements located on the northern part of Obhur Creek, where the Kingdom Tower is currently under construction.

5.1.3 Urban density

Jeddah hosts a permanent population of 4,082,184, on a built-up area that covers 84,675 hectares. The city in its entirety - extending from the core area of Al Balad to the neighborhoods recently built on the Northern extents of the city - has a population density of 48.21 p/ha.

The density analysis shows that density within the built-up area varies from 1 to 427 p/ha in Jeddah. More than 610,000 inhabitants, or 15% of the population, live in a density of more than 300 p/ha. These very high density areas are largely located at the urban core and cover an area of 1680 hectares. Successively, a population of more than 870,000, or 20% of city's population, live in densities between 150 to 300 p/ha over an area of roughly 4600 hectares.

Conversely, vast amounts of the population live in medium to low density areas towards the fringes of the city's urban footprint. Almost 18,930 of hectares of land occupied by 1,681,000 inhabitants, reflects 42% of total population in the

city, with a medium to low density of 50-150 p/ha. More than 857,000 inhabitants, more than 21% of the population lives in 53,120 hectares of very low density areas, with less than 50 p/ha. For example, Jeddah's waterfront - currently known as the villas neighborhood - has a density of 25-30 p/ha, and is mostly occupied by family villas with gardens.

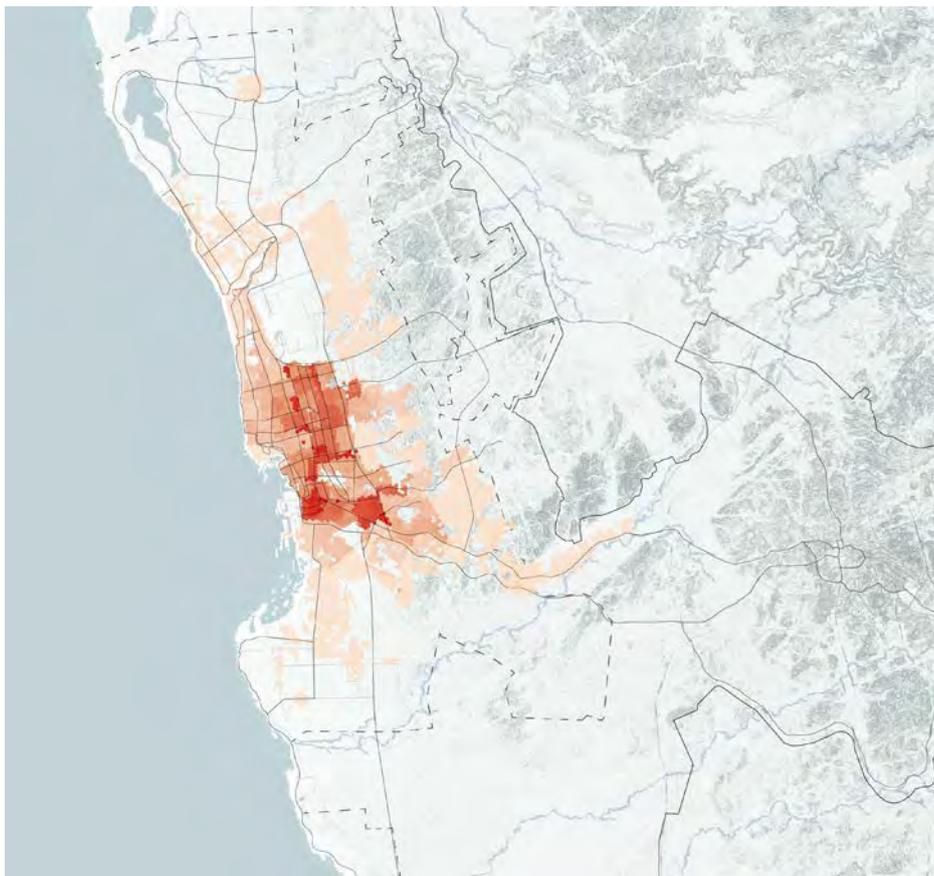
Since 1970, the Jeddah urban area has grown by more than 400% while, in the same period, its population has grown by more than 1000%. This demonstrates that density has been increasing in Jeddah, which deviates from the pattern set by many other Saudi cities. Despite this increment, the average density is still far from the preferred level. The urban built-up area can still be densified to move closer to 150 p/ha, as recommended by UN-Habitat.

According to the last Saudi Arabian census (2010), Jeddah is experiencing a population growth at a rate of 3.2% per annum, and its population is projected to reach more than 5,200,000 by 2033.

The 2015 Jeddah Plan projects a population of 7,664,547 and covers a built-up area of more than 164 thousand hectares with a density of 46.70 p/ha. At UN-Habitat, density recommendations indicate that the area could accommodate up to 24,000,000 people. If the new proposal is not drastically reduced in size, it is therefore indicative of a low-density condition with large amounts of vacant land and sprawling neighbourhoods.



Sidewalk neighborhood markets in Jeddah



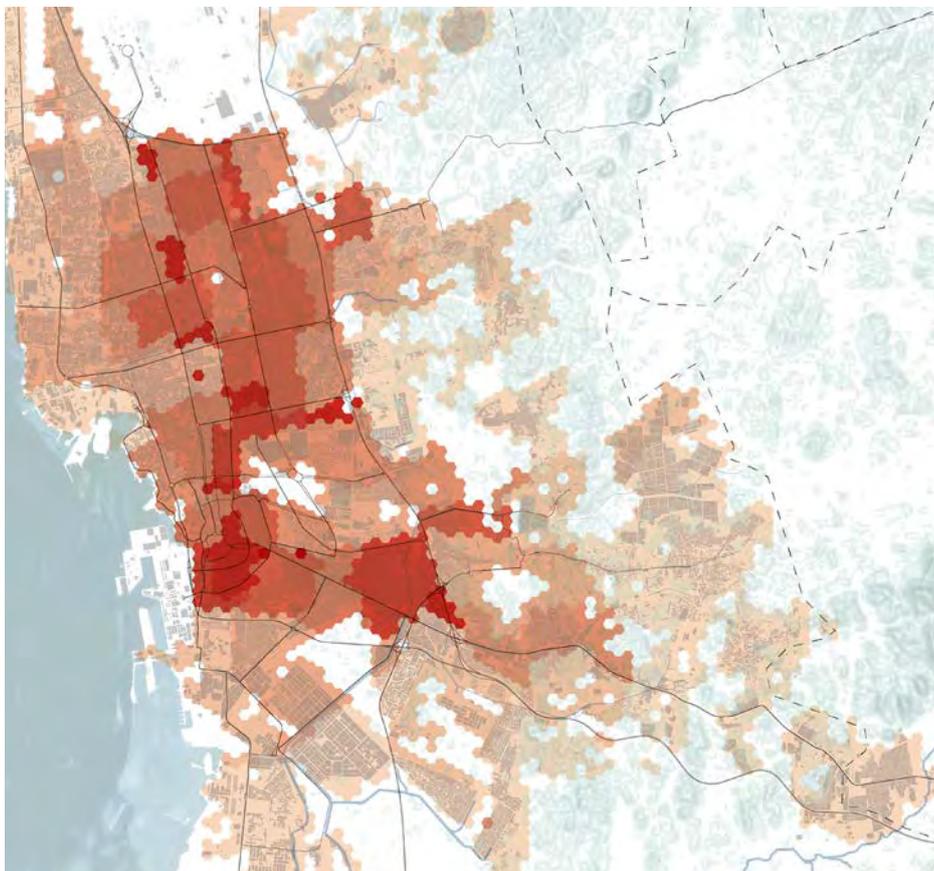
Residents:
4,082,184

Average population density:
56.74 p/ha

- 1 - 28 p/ha
- 29 - 43 p/ha
- 44 - 70 p/ha
- 71 - 100 p/ha
- 101 - 131 p/ha
- 132 - 191 p/ha
- 192 - 313 p/ha
- 314 - 1231 p/ha
- 1232 - 2600 p/ha



Fig. 29. Current distribution of population density in Jeddah Metropolitan Area



- 1 - 28 p/ha
- 29 - 43 p/ha
- 44 - 70 p/ha
- 71 - 100 p/ha
- 101 - 131 p/ha
- 132 - 191 p/ha
- 192 - 313 p/ha
- 314 - 1231 p/ha
- 1232 - 2600 p/ha

Fig. 30. Current distribution of population density in Jeddah City



5.1.4 Land use and vacant land

Jeddah's identity is deeply linked to its role as the commercial and business hub of the Kingdom. Based on the Jeddah Strategic Plan and on the Jeddah Structural Plan, Jeddah's land use is considerably monofunctional in the proposed areas for city expansion. Whereas the Al Balad used to represent a good example of pedestrian friendly mixed-use neighborhoods, recent developments have increased car dependence and are clearly organized around a monofunctional zoning system.

The largest category of land use is residential and currently occupies 46 percent of the built-up area with extended areas lacking proximate access to amenities and commercial facilities. Mixed land use is very low, covering only 0.3% of the total built-up area, however, there are small mixed-use plots located along the main axes leading to the Al Balad. Despite this, the Structural Plan reserves 58% of the planned area for residential use, and only a nominal 3.2% for mixed-use development. Though the plan aims to introduce the mixed-use centres on select junctions, the propagation of single-use development aggravates the current condition.

This lack of mixed land use stems from modern intervention in the urban layout. Vernacular districts, originally formed by 2-3 storey buildings with diffused mixed-use at the ground level, are being substituted by residential-only condominiums and high-rise buildings of various nature, with notable lack of commercial spaces on the street front. The system of highways

which efficiently services commuters has also dissected the urban fabric to produce isolated neighborhoods separated by 12 lanes of cars. Shopping malls have been erected along the main highways contributing to a car-oriented development model. Industrial land use is zoned in the Southern side of the city, forming an industrial district.

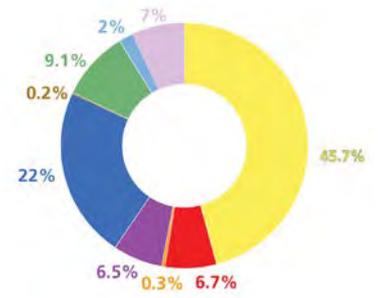
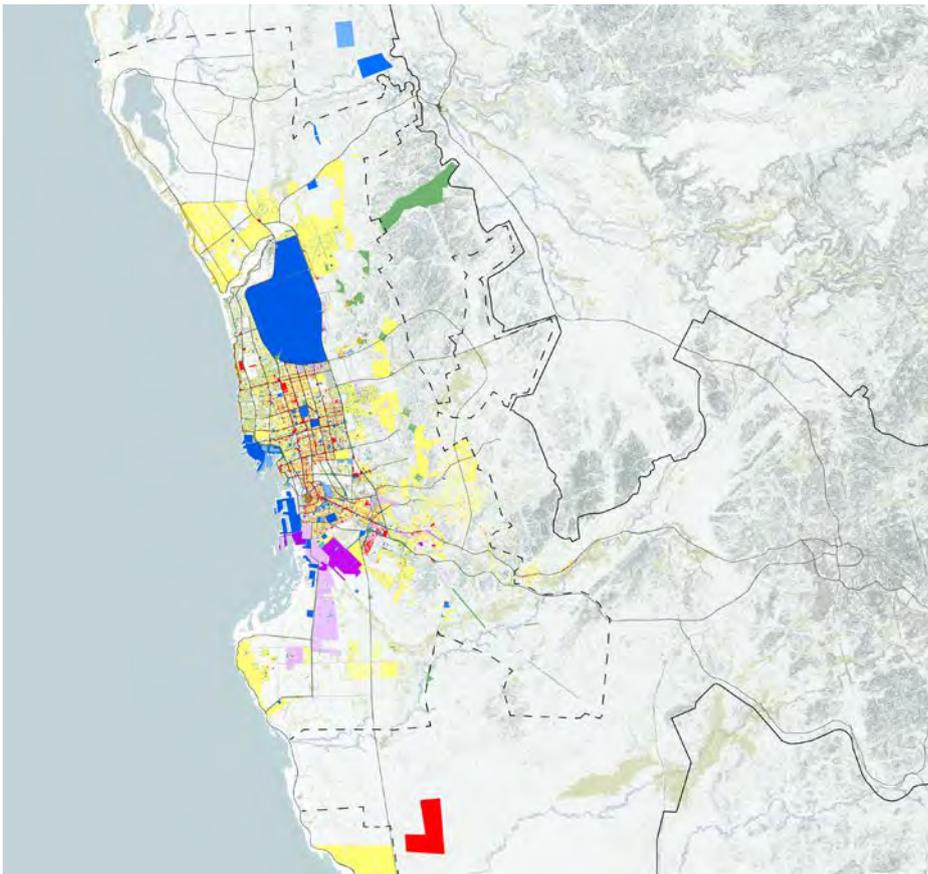
The area of Al Balad - now listed as a UNESCO World Heritage Site - previously housed a higher population density, however, recent development located along the series of highways that connect the South to the North of the city has resulted in abandonment in the old part of Jeddah. As Jeddah has expanded and modernized in the last century, the old town was neglected and its buildings have deteriorated.

The 2015 Structural Plan, suggested an "adjusted" approach to land use in Jeddah, through TOD (transit oriented development) and Public Transit Implementation. The plan has allocated environmental protection zones, designed to alleviate the risk of leapfrog development. The proposed land use allocates a total of 8% to agricultural land and 8% to open spaces.

Though the proposed plan has positive intentions such as the introduction of mixed-use areas, preservation of agricultural land, and establishment of environmental protection zones, it agglomerates the single land uses in selected locations



A corner of Jeddah town with vernacular urban pattern



- Residential
- Commercial
- Public facility
- Industrial
- Warehouses
- Tourism / hotels
- Historical areas
- Open spaces
- Governmental

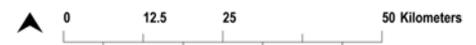
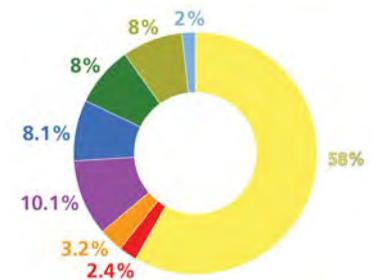
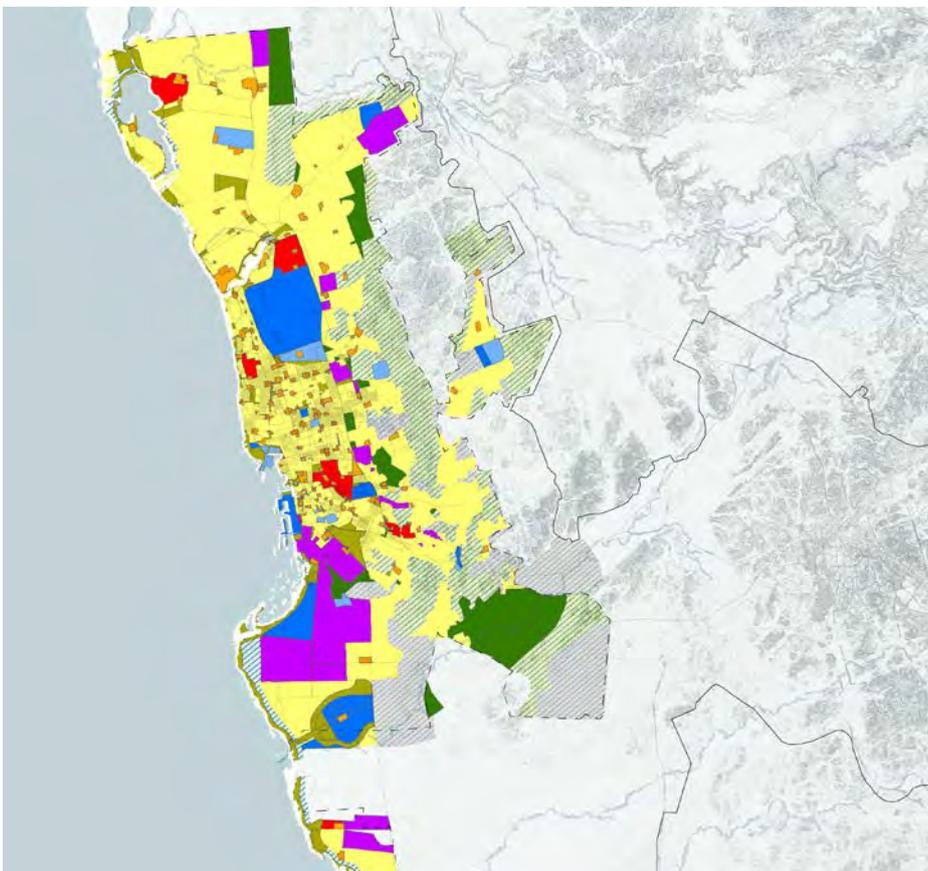


Fig. 31. Existing land use of Jeddah Metropolitan Region



- Residential
- Commercial
- Mixed-use
- Industrial
- Public Facility
- Agriculture
- Parks / open spaces
- Governmental
- Foothills protection zone
- Plains protection zone
- Coastal protection zone



Fig. 32. Proposed land use in the Jeddah Plan by the Amanah

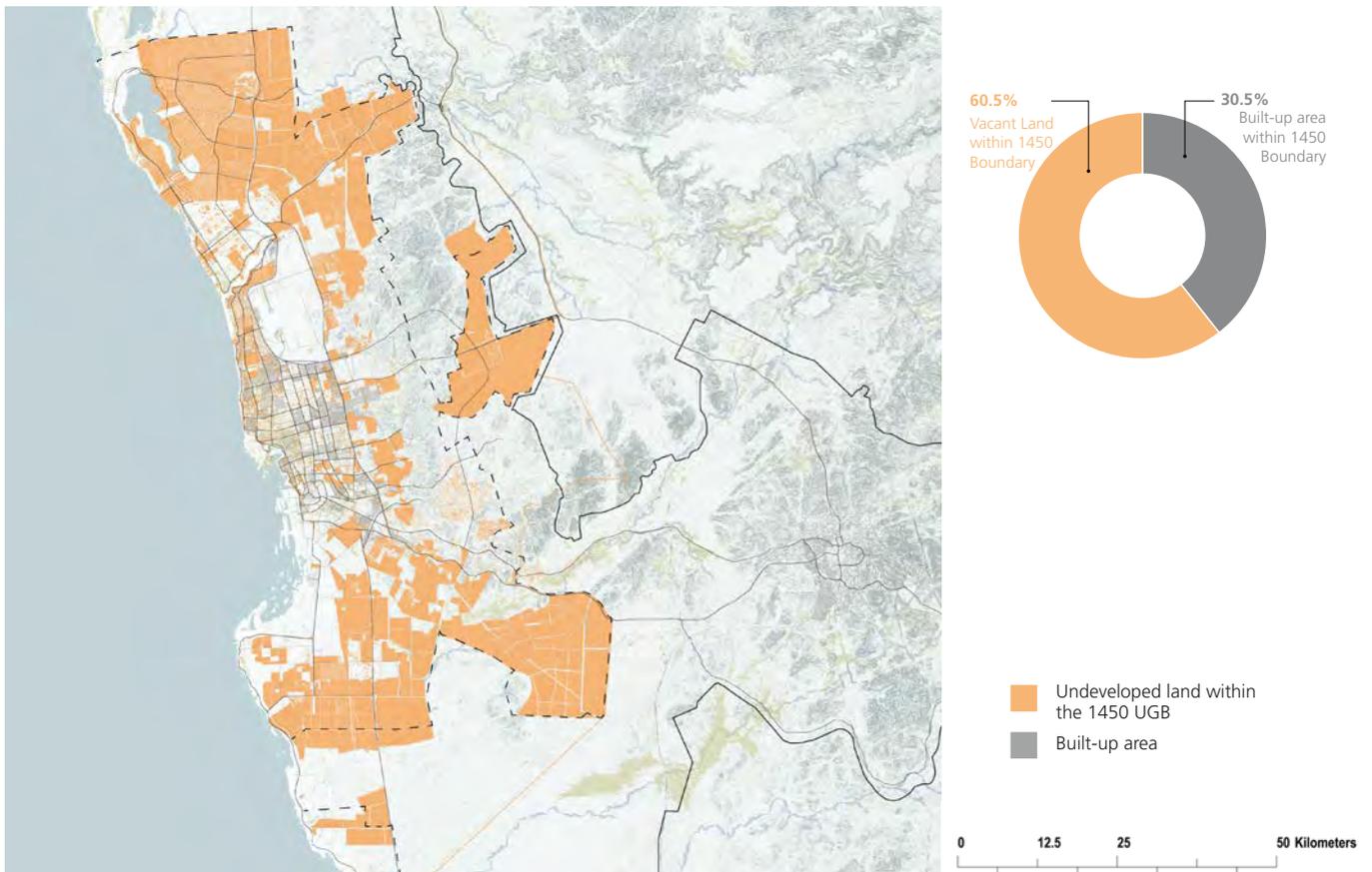


Fig. 33. Vacant land and undeveloped area

as industrial areas, public facilities and a vast amount of residential expansion areas, thus failing to dissolve the mono-functional development of Jeddah.

Jeddah currently holds a total of 54% vacant land within its 1450 UGB, constituting an estimated total area of 143,583 hectares. An estimated 14% of this area lies within the current footprint of the city, which amounts to 20,000 hectares. This vacant area alone could accommodate an additional 3,000,000 inhabitants at a density of 150 p/ha. Most of the vacant land within the 1450 UGB falls within environmental protection zones outlined in the Jeddah Plan, but there is still huge potential for redensification amongst the vacant land in the city centre.

5.2 Structuring Elements

5.2.1 Major infrastructure and economic nodes

The road network for the city of Jeddah is one of the most advanced in the country. The primary road structure is formed by a highway system, organised into two groups - N/S and E/W roads in the part of the city that developed between the airport and Al Balad, and the highways connecting the Al Balad to Makkah:

1st group:

- Madinah Road (connecting the city to the airport);
- Tahliyah Street (connecting the waterfront to the inner part of city - West-East)

2nd group:

- Makkah Road (connecting the Al Balad to Makkah; many informal settlements are located along this road)
- Jeddah-Makkah Expressway

The new highway, connecting the Jeddah International Airport to the Holy city, is the most congested in the Kingdom, due, in most part, to the volume of bus traffic, largely attributed to the transport of pilgrims traveling to Makkah from King Abdulaziz Airport in Jeddah. However, an additional, 36.3% of the national pilgrims traveling from locations within Saudi use this highway for Umrah or Hajj.

King Abdulaziz Airport's Hajj terminal is set to accommodate 310,000 pilgrims during Hajj season in 2018. Currently, 94% of international pilgrims land in Jeddah and travel to Makkah, either by bus or by train. The airport is also in a process of expansion, with new terminals planned to improve the level of services, in accordance with the highest international standards. The redevelopment aims at increasing its capacity to 30 million passengers in the

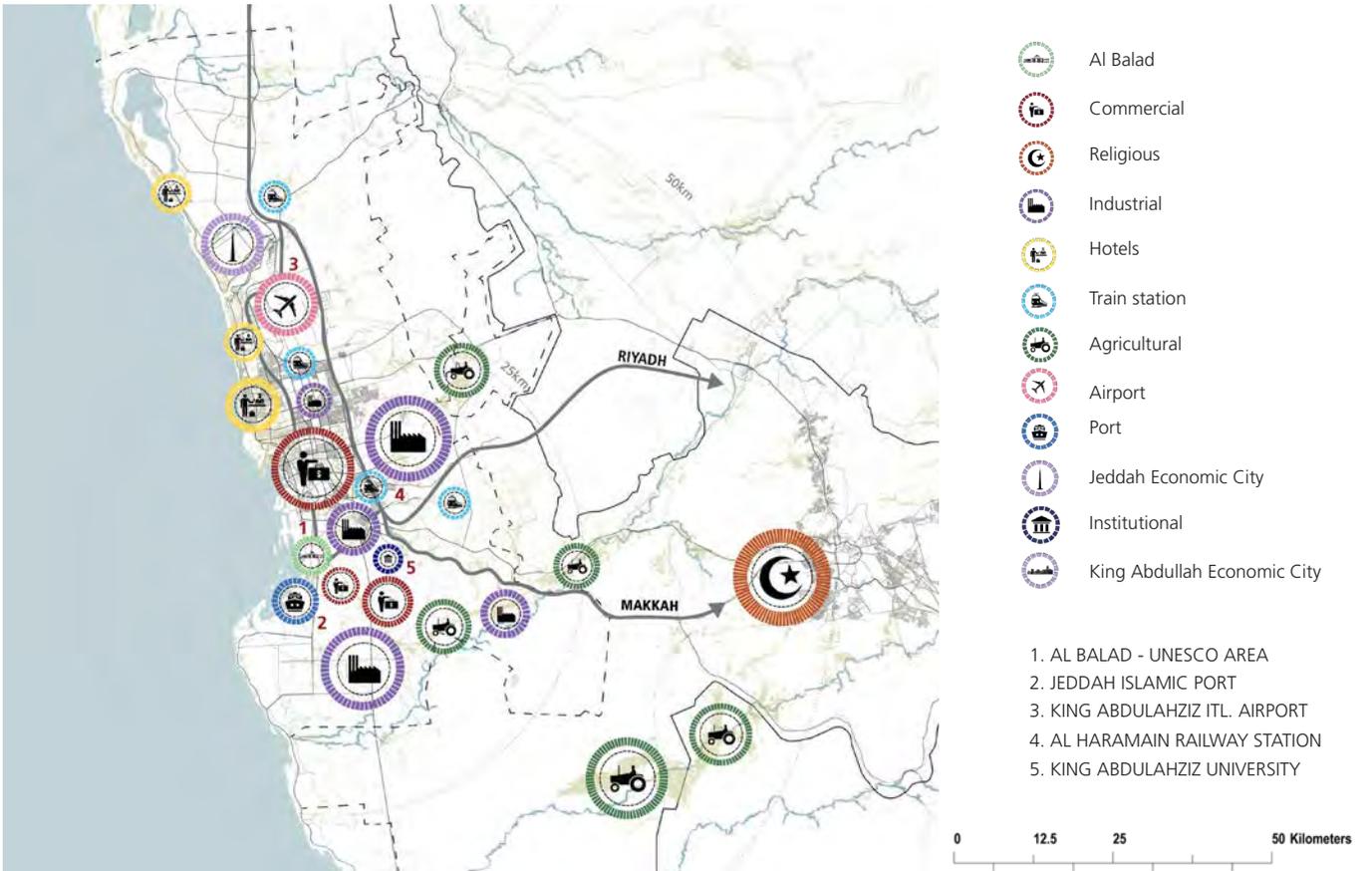


Fig. 34. Major infrastructure and economic nodes

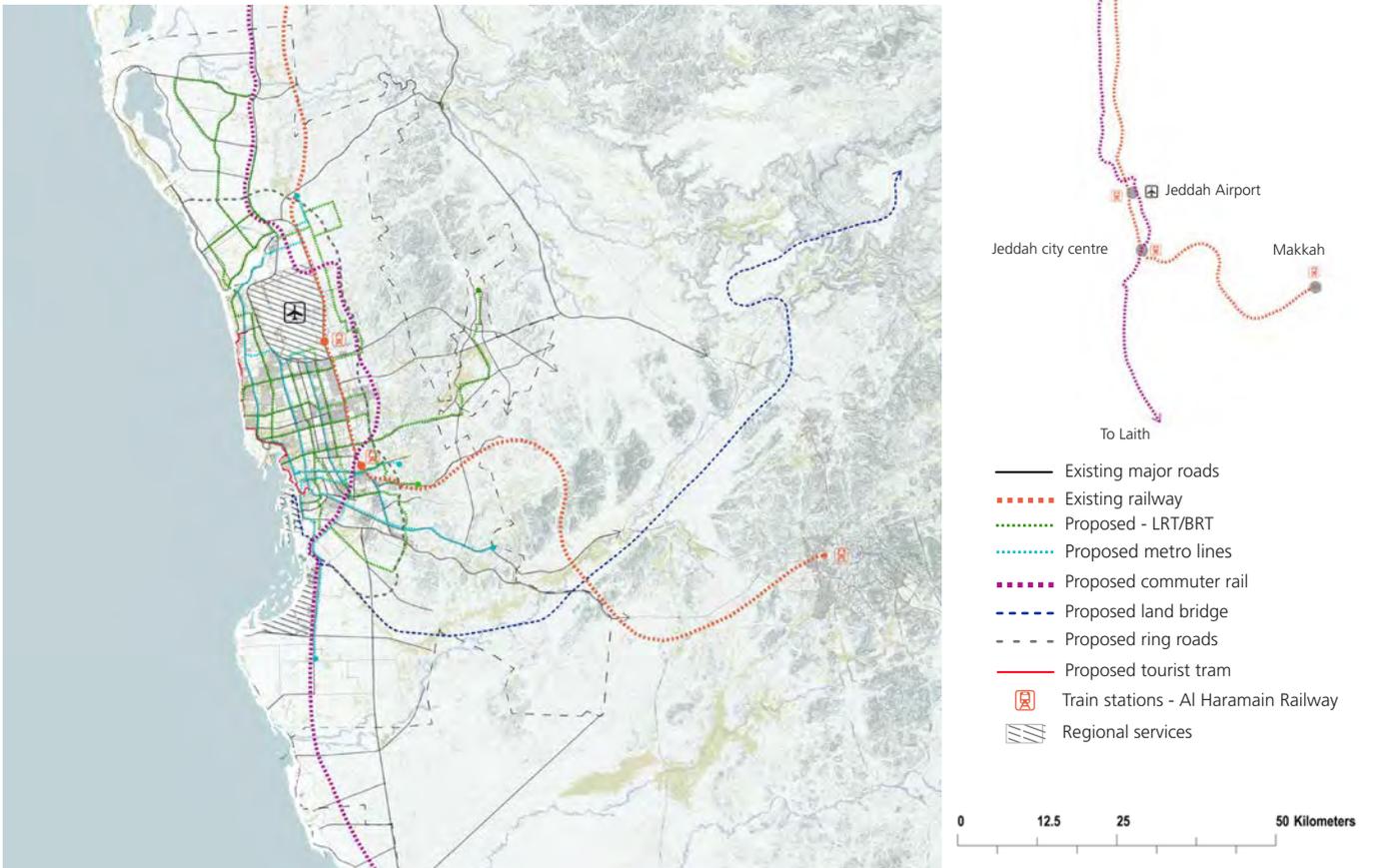


Fig. 35. Jeddah Metropolitan Area transportation network as per the Jeddah Plan by the Amanah



South Al Nuzhah Axis Development

The project aims to create a **new entrance to Jeddah** when arriving to the airport. The area of the development is **29.5 km²**. The project is **approved**.

Al Ruwais Slum Area Development Projects

The development aims to enhance the level of life in the neighborhood. It will include residential areas, medical facilities, commercial areas and hotels. The area of the project is **1.1 km²**. The project is **approved**.

Heart of Jeddah Project

The development is located at the old Jeddah airport area. It is a multi use urban development project. The area of the project is **0.85 km²**.

Qasr Khozam Development Project

The Project aims at redeveloping slum areas including Al-Khozam palace and parts of Al-Balad neighborhood. The Total area of the development is **4.12 km²**. The project is **approved** but currently **pending** until second review.

Fig. 36. Major investment projects



1.

South Al Nuzhah Axis Development



2.

Al Ruwais Slum Area Development Projects



3.

Heart of Jeddah Project



4.

Qasr Khozam Development Project



first phase, and 80 million passengers over the following phases.

In addition to the redevelopment of the King Abdulaziz Airport, the new Al Haramain High-speed Train, also known as the "Western railway" or "Makkah–Madinah high-speed railway", has recently been inaugurated and it is expected to play a key role in relieving road traffic volume. Al Haramain is a 453 kilometre high-speed intercity rail transport system, still partially under construction. Once completed, it will link the cities of Madinah and Makkah, passing through the King Abdullah Economic City, and the King Abdulaziz International Airport in Jeddah.

There are several additional major investment projects currently in the pipeline for Jeddah. These are:

- South Al Nuzhah Axis Development - The project is intended to form a new entrance to Jeddah when arriving from the airport. The area of the development is 2950 hectares. The project is approved.
- Al Ruwais Slum Area Development Projects - The development aims to improve quality of life in the neighborhood through a series of upgrading initiatives. This will include residential areas, medical facilities, commercial areas and hotels. The area of the project is 110 hectares. The project is approved.
- Heart of Jeddah Project - This is a multi-use development, located in the old Jeddah airport area.

The project area is 85 hectares.

- Qasr Khozam Development Project - The project is directed at the redevelopment of slum areas, including Al Khozam Palace and parts of Al Balad neighborhood. The total area of the development is 412 hectares. The project is approved pending a second review.

5.2.2 Environmental and topographic elements

Jeddah's location on the coast of the Red Sea dominates its climate and culture, as a principle gateway to holy cities with the largest sea port in the Red Sea. It has an arid climate with a tropical temperature range. Unlike other Saudi Arabian cities, Jeddah retains its warm temperature in winter, but summers are humid and extremely hot ranging from 30°C to 43°C. Jeddah receives a small amount of sparsely distributed rainfall in November and December; however, heavy thunderstorms are common in peak winter which falls between December and January. The city also experiences dust storms from the Arabian Peninsula's deserts or North Africa. This is most common in summer months, but contributes to the problem of air pollution, which is particularly prominent on hot summer days.

Jeddah's topography is the primary determinant factor in the city's development, with a sloped mountain range defining the eastern boundary of the city. The steep hills act as a natural border and limit eastern expansion of the urban footprint. As



Peripheral landscapes around Jeddah

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a result, the city has been developing on the north-south axis with the exception of small unplanned sprawls that occur on the skirts of the eastern hills.

Flood risk in unplanned settlements

Jeddah sits on the drainage path of 11 wadi catchments that lie to the east of the city. Currently there are three large channels that run through the city to collect stormwater runoff from the wadis. These drainage channels do not currently connect directly to the sea and rely on pumping to reach discharge points. Typically they are open, and are considered to be a health hazard during periods of low flow. In addition, illegal residential connections have prompted the Municipality of Jeddah to convert these drainage channels to subsurface culverts, beginning with the Northern Drainage Channel.

18% of unplanned settlements in Jeddah are located on wadis. This, combined with the informal expansion to the east of the city region, has been a major contributing factor to the multiple occurrences of flooding per decade, resulting in tremendous damage. To protect the east of the city from flooding and increase the amenity value of these areas, the provision of small-scale water retention ponds are advised in the wadis located in this region. Natural surface and groundwater water treatment techniques should be introduced in amenity areas.

There are a number of development practices that create and exacerbate flooding in the city, such as:

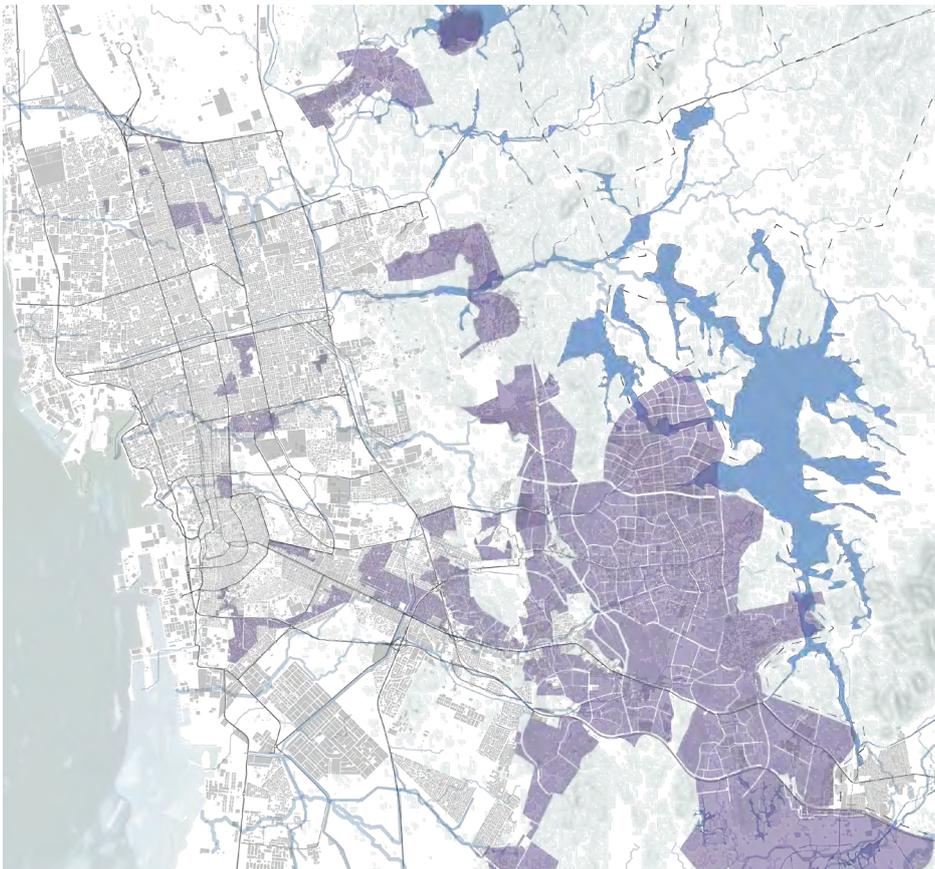
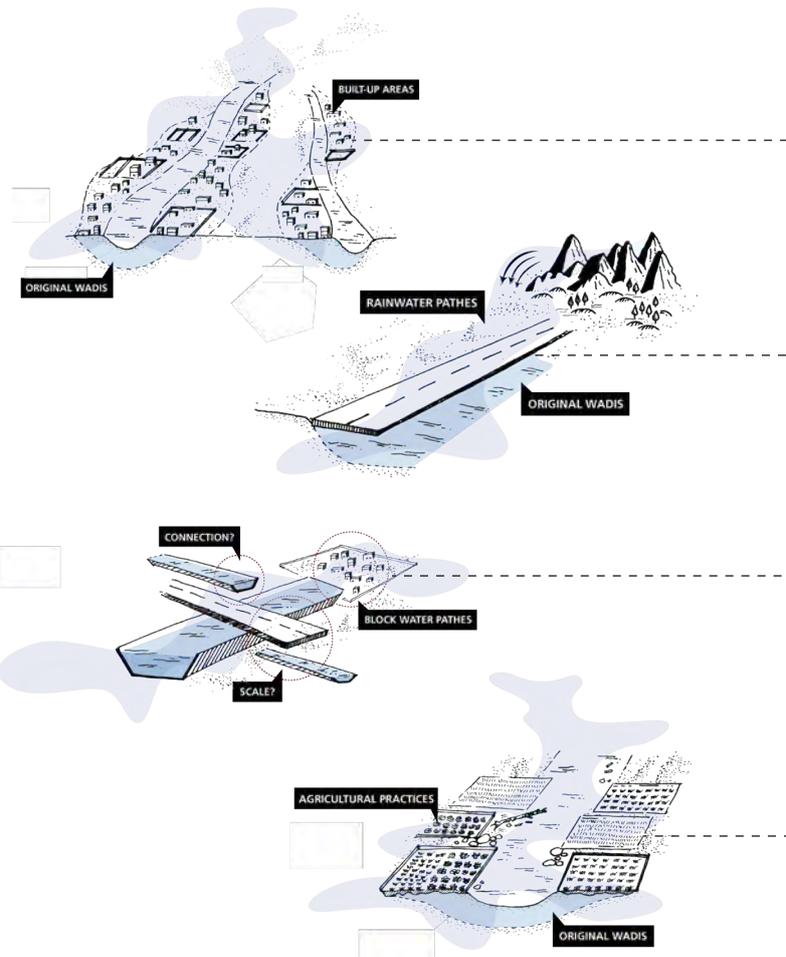


Fig. 37. Unplanned settlements and flood risks

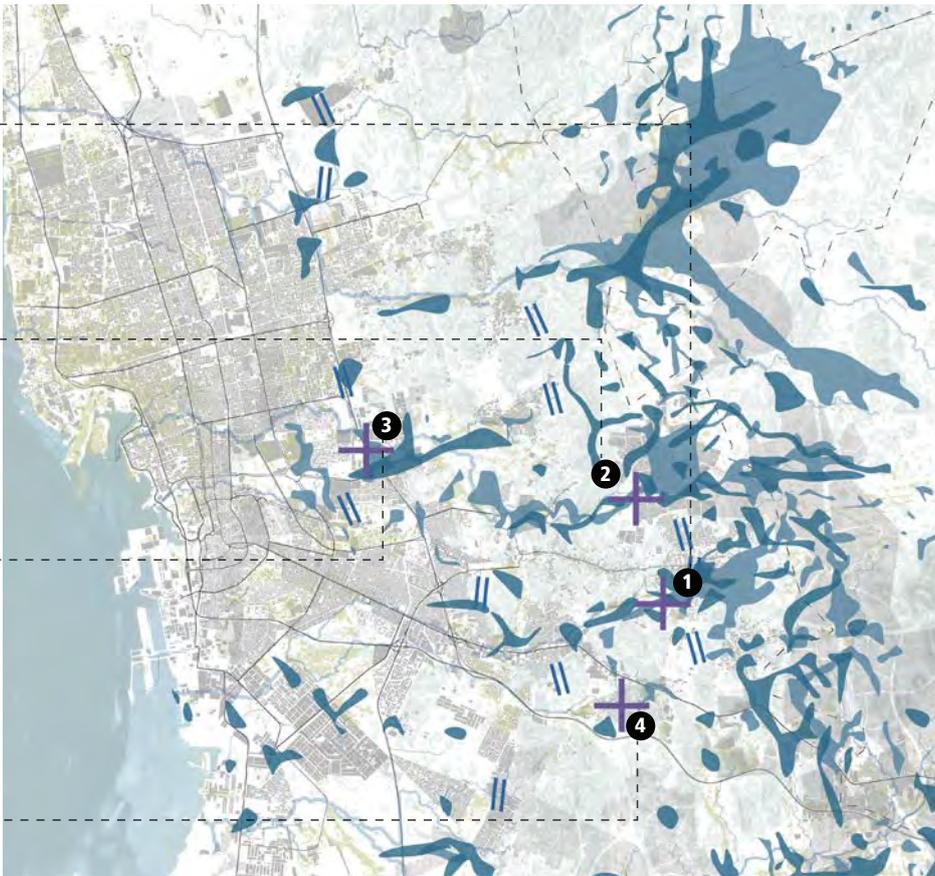
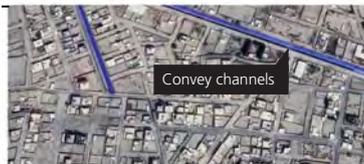


Fig. 38. Massive flood events (2009 - 2011)

- Flood event cases
- Major roads
- Dams
- Channels
- Flood affected areas 2009
- Flood affected areas 2011
- Green areas
- Major rivers
- Built-up areas



BUILDINGS OVER WADIS
Kilo 14 area (Wadis Methweb)

1



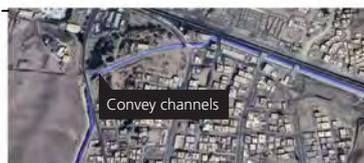
INFRASTRUCTURE OVER WADIS
Herazar area (Wadi Qus)

2



DISCONNECTED NETWORK AND CAPACITY CONSTRAINTS
Um El-Kheir area (Wadi Mraikh)

3



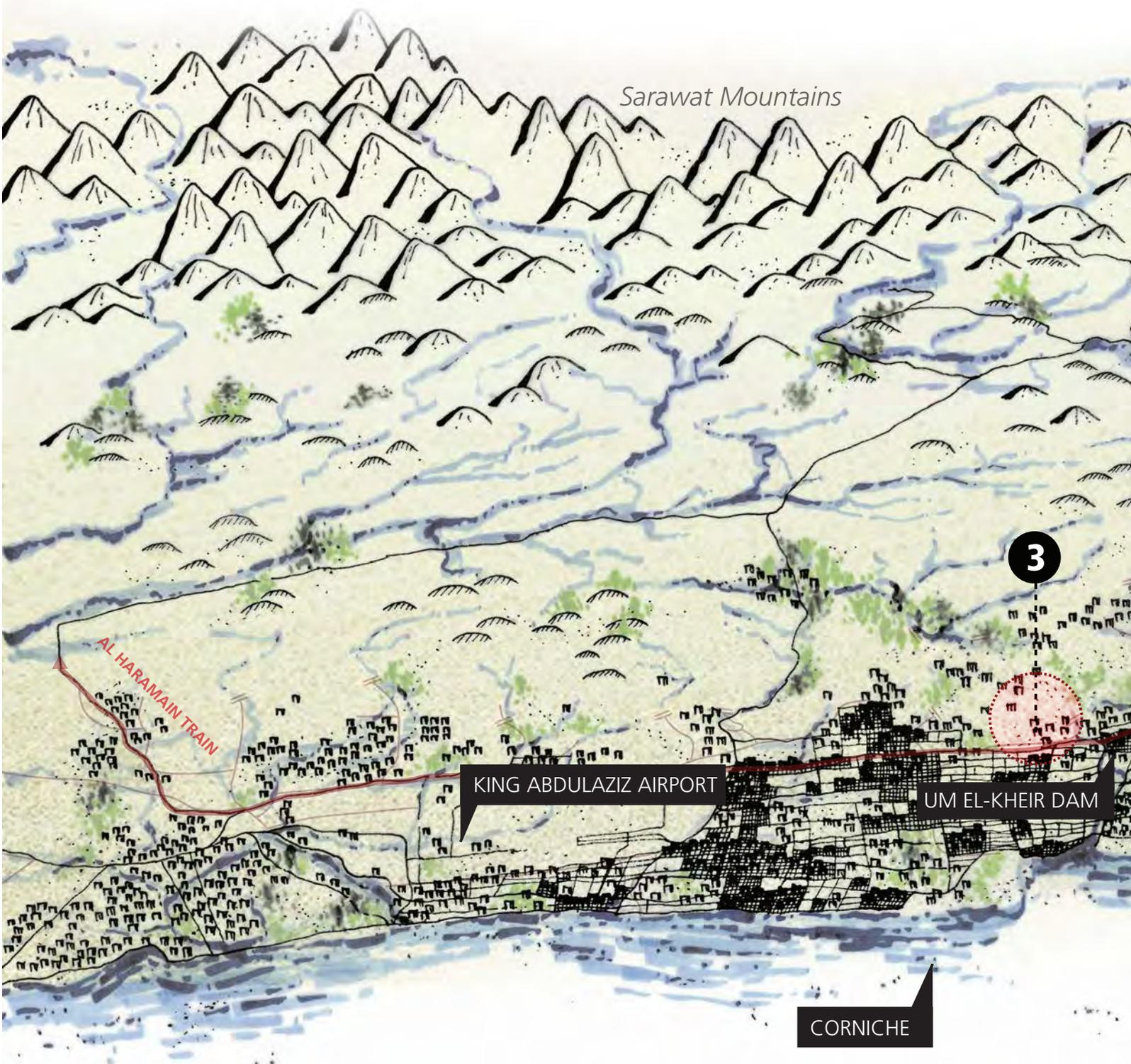
AGRICULTURAL PRACTICES OVER WADIS
Olya area (Wadi Ghulail)

4

(Source: AL SAUD, Mashaal Mohammed. Flood Control Management for the City and Surroundings of Jeddah, Saudi Arabia. Springer, 2015)



- 1** Buildings over Wadis
- 2** Infrastructure over Wadis
- 3** Disconnected-disparated channels
- 4** Agricultural practices over Wadis



Sarawat Mountains

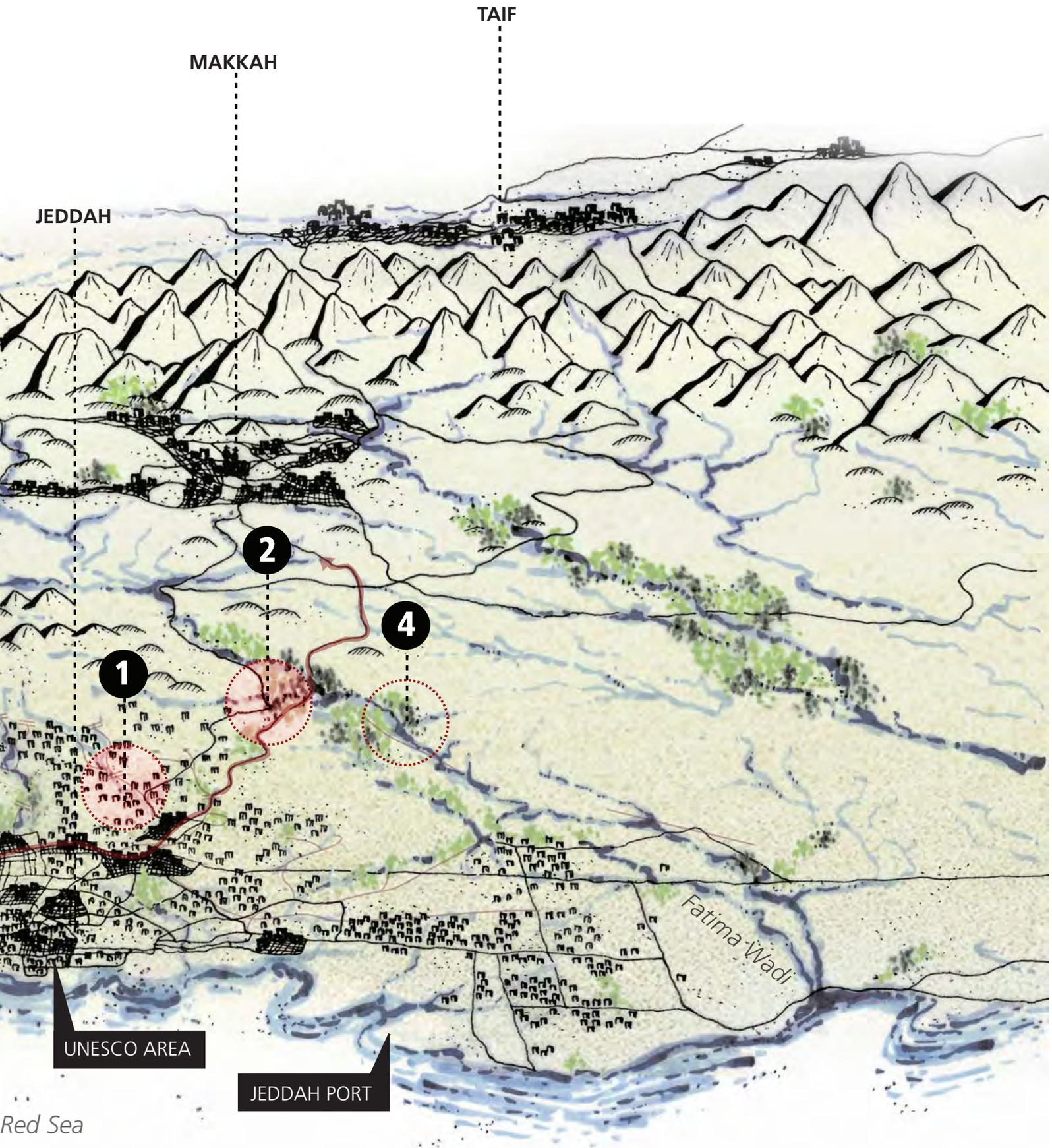
AL HARAMAIN TRAIN

KING ABDULAZIZ AIRPORT

UM EL-KHEIR DAM

CORNICHE

3



JEDDAH

MAKKAH

TAIF

1

2

4

Fatima Wadi

UNESCO AREA

JEDDAH PORT

Red Sea



- Building over wadis (Wadi Methweb)
- Roads and infrastructure over wadis (Wadi Qus)
- Disconnected network of canals and capacity constraints (Wadi Marikh)
- Agriculture over the wadis (Wadi Ghulail)

5.2.3 Unplanned settlements

In recent years, Saudi Arabia has been experiencing high rates of rural-urban migration. According to King Saud University in Riyadh. 74% of the recorded rural population have migrated to cities, looking for job opportunities and attractions that regional distribution prohibits equal access to. Paradigmatic of other urban centres in Saudi, Jeddah is witnessing an outbreak of unplanned settlements in the outskirts of the city. There currently exists little clarification in the definition of, or approach to, "unplanned settlements" in the land management system. The term is applied homogeneously to both historical vernacular neighbourhoods and new areas established on the outskirts of the city that are generally characterised by poorer construction standards. This abstraction has brought about heavy demolitions, making room for new developments in historical, and/or vernacular areas of the city, which are not protected by inscription in conservation plans.

In Jeddah almost 20% of the population lives in unplanned areas which constitute 23% of the built-up fabric. Unplanned settlements in the central part of the city generally present as traditional urban construction patterns with vernacular

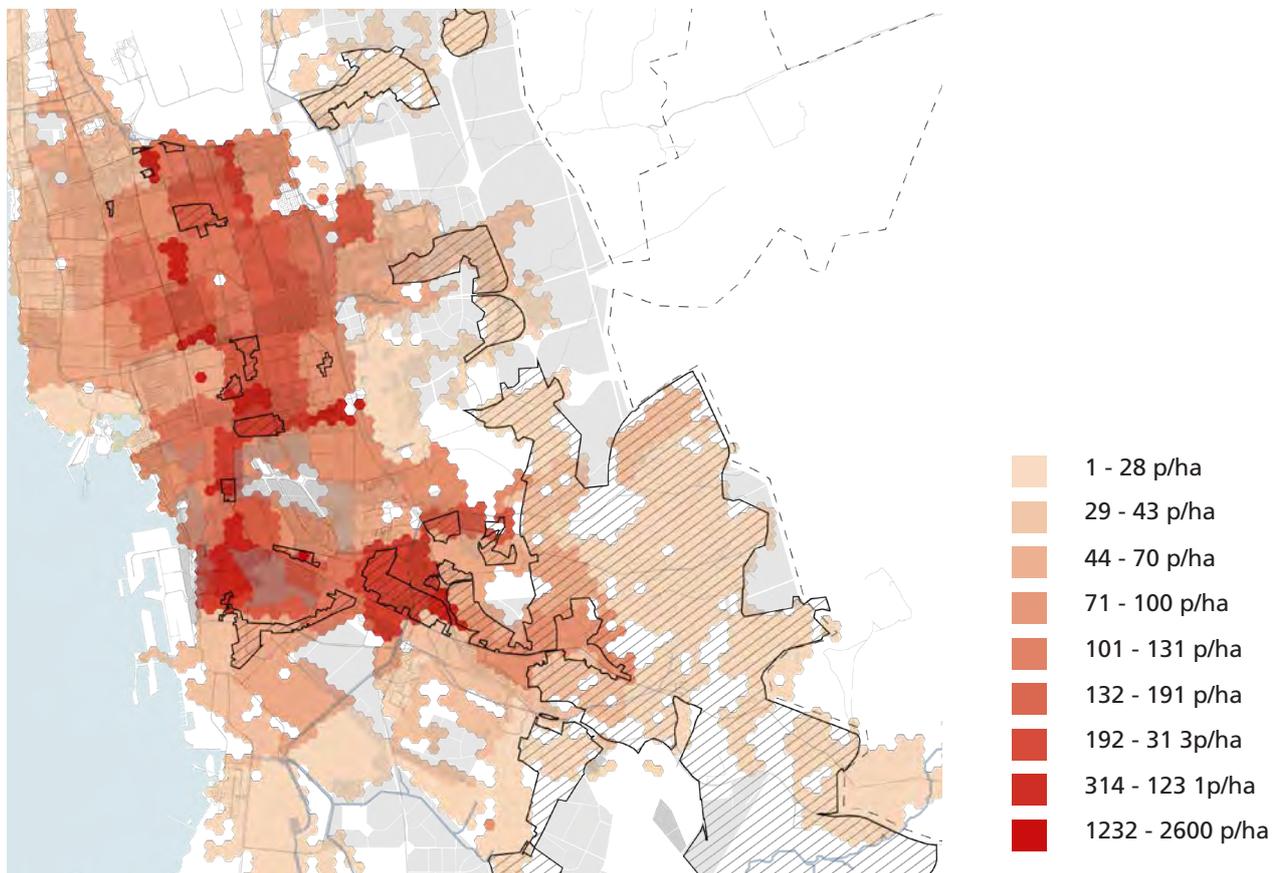
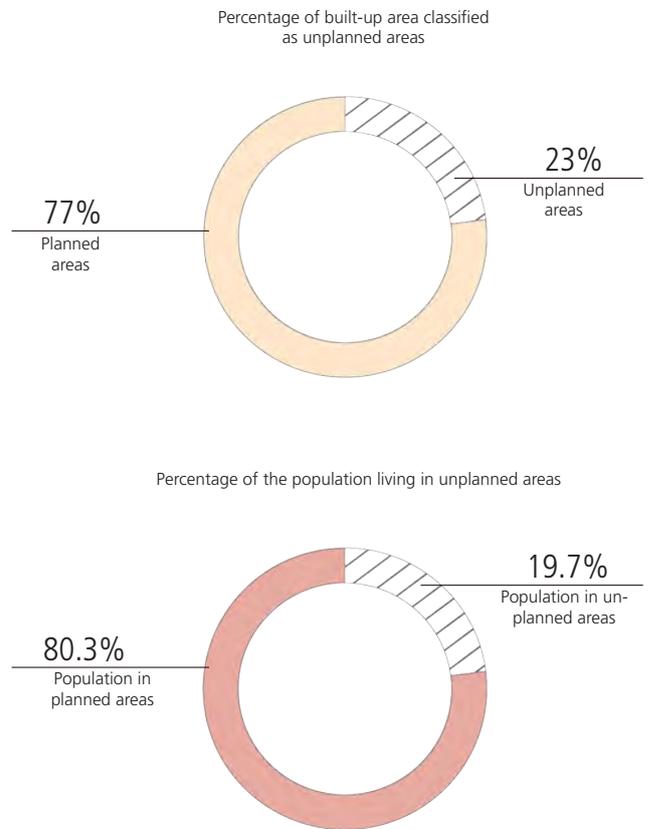


Fig. 39. Distribution of population density and unplanned settlements



Vernacular architecture in the city centre



structure, in which the population density is higher than the average of the city, at between 150 and 427 p/ha. These areas are usually well-connected to public services, pedestrian friendly, and demonstrate vibrant urban life centred around mixed land use.

Outside the vernacular centre, unplanned settlements in Jeddah are primarily concentrated in the eastern part of the city, occupying roughly 20,000 hectares of land. Density in these unplanned areas gradually decreases towards the eastern outskirts of the city, with demonstrated fringe concentrations of less than 30 p/ha. Typical characteristics of these unplanned areas include:

- Lack of basic services and amenities such as water, sanitation, waste collection, storm drainage, street lighting, paved footpaths, and roads for emergency access;
- Poor quality and often unsafe, living conditions; and
- Lack of public services, such as schools and hospitals within easy reach, and lack of public spaces and safe areas for children to play.

Jeddah and the Al Balad

The Government of the Custodian of the Two Holy Mosques, through the Saudi Commission for Tourism and Antiquities (SCTA), have nominated the Jeddah historical area for registration with the United Nations Educational, Scientific and Cultural Organization (UNESCO) Heritage Sites. The registration is dependent on the

demonstrated historical significance and urban/architectural values at both local and regional levels. The area represents a core site of 17 hectares and a buffer zone of 109 hectares. It is considered to be one of the most important historical and architectural sites along the shores of the Red Sea in Asia and Africa and includes a wide variety of historic buildings from a range of periods.

The Khozam Palace that is located the historical centre was constructed between 1928 to 1932, as the new residence of King Abdul Aziz in Jeddah. The palace lay south of the walled city and was constructed under the supervision of the engineer Muhammad bin Laden. After 1963 the palace was used as a royal guest house; from 1995 it has come to house the Regional Museum of Archaeology and Ethnography.

Current challenges to the historic centre of Jeddah include:

- Preservation and restoration of the UNESCO area, currently neglected or poorly maintained.
- Protection of the buffer zone from the masterplan of Qasr Khozam Development Project.

The Jeddah Strategic plan outlines an allocation of a minimum SR750 million for regeneration in the historical centre over the next ten years, as part of the planned development for the adjacent Jeddah Central district.

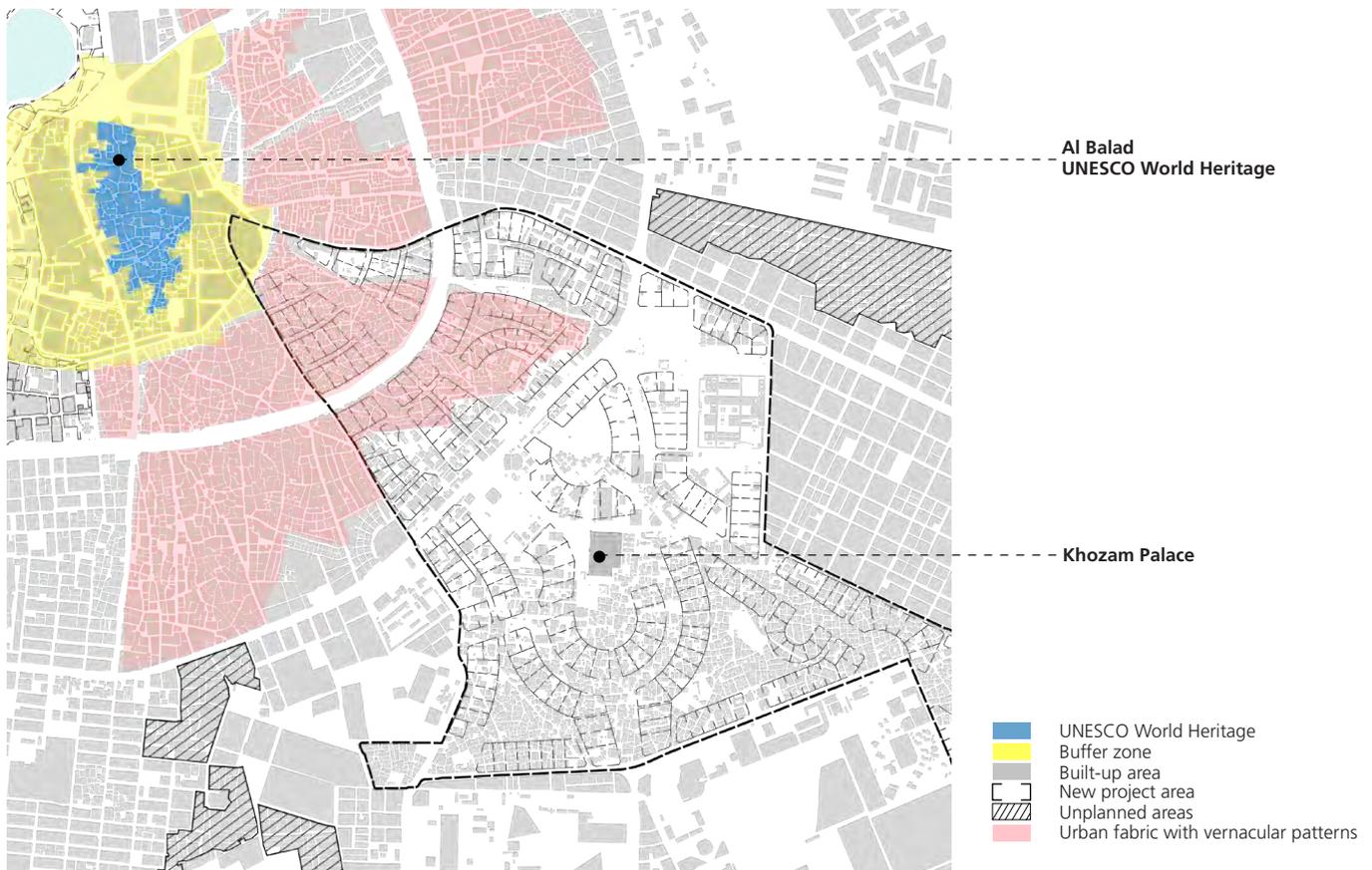
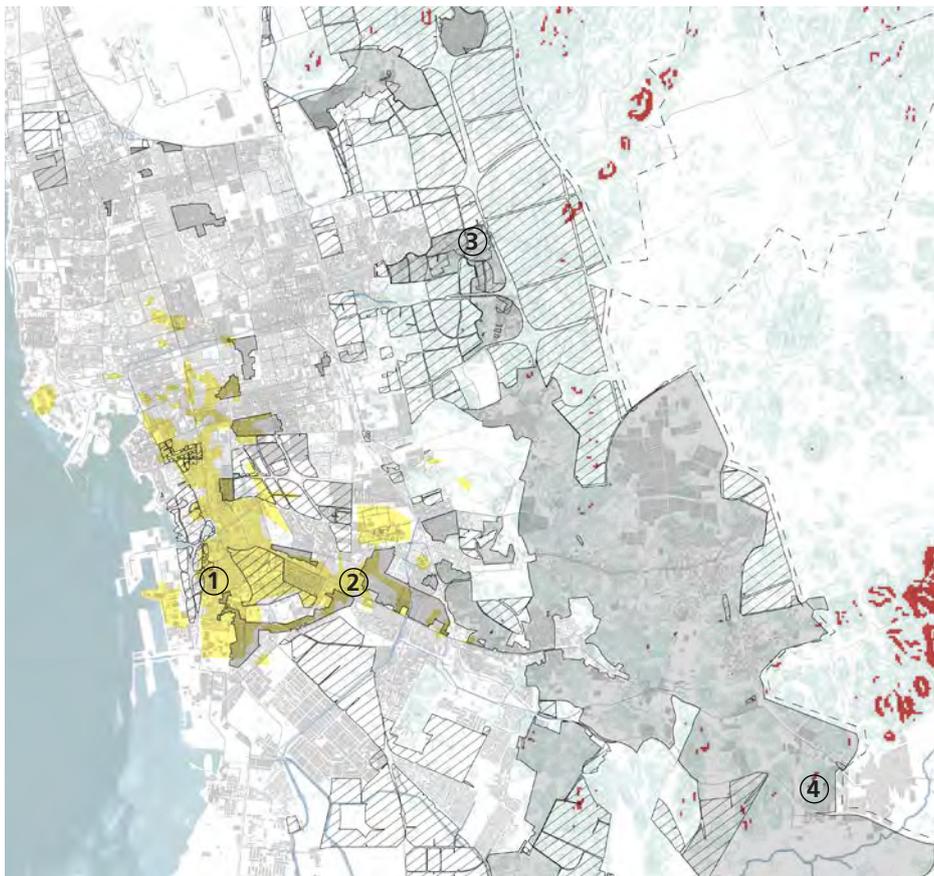


Fig. 40. UNESCO site and new developments in Jeddah



- Unplanned areas
- Areas with historic value
- Built-up area
- Areas of new development
- Areas at risk (above 30% slope)

Fig. 41. Areas with historic value and unplanned settlements exposed to land-slope risk

1.
Heritage area with vernacular urban fabric and new infrastructure



2.
Area with historic value, built before 1973



3.
Unplanned area on planned land



4.
Unplanned area at risk of landslope





Comparative analysis of climatic performance for vernacular urban patterns and new developments

The climate across the KSA is arid, which translates to dry and warm urban conditions. These climatic conditions are important to consider in relation to energy consumption, citizen health, and urban form. Urban form, as a cumulative expression of street layout, public space, and building typologies, has a considerable impact in the way cities in Saudi cope with this hyper-arid climate. Often, vernacular and historic urban patterns perform better, establishing milder urban microclimates. In order to learn from this condition, a series of variant dynamics across these urban patterns were identified and analysed in Jeddah.

The analysis aims at establishing a direct correlation between the urban layout of various districts and their climatic performance, proving, through a spatial/climatic analysis, how small and shaded street layouts, street vegetation, albedo or solar reflection and urban canopy effects, impact real and perceived urban climate across the city of Jeddah. The study, based on the Landsat Eight satellite imagery collection from June 2017, refers to the months with the highest recorded temperature values in Saudi Arabia, demonstrating the passive energy performance of the existing urban layout, in the most extreme weather conditions.

The effectiveness of each urban pattern is evaluated and assessed in its capacity for mitigation of the UHI effect, in order to inform principles that direct urban form for climate mitigation and adaptation in the Saudi context.

- **Case 1 - Highway in the city centre:** The imagery clearly shows that climatic performance of the highway systems are affected by overdimensioned streets, which provide a very low albedo value and are dangerously raising the average local temperature by at least 3°C.
- **Case 2 - UNESCO area:** Traditional urban pattern with vernacular construction demonstrates high climatic performances in lower recorded temperatures and energy loss.
- **Case 3 - Vernacular urban pattern and new development:** The selected area is a typical new development, characterised by a loose, low-density urban fabric with overdimensioned roads. The imagery clearly demonstrates the negative effects on climatic performance that echo discoveries made in the highway study. Over dimensioned roads and flat surfaces lacking intermittent shading provide low albedo values and result in higher local temperatures.



Residential area in the city with vernacular structures

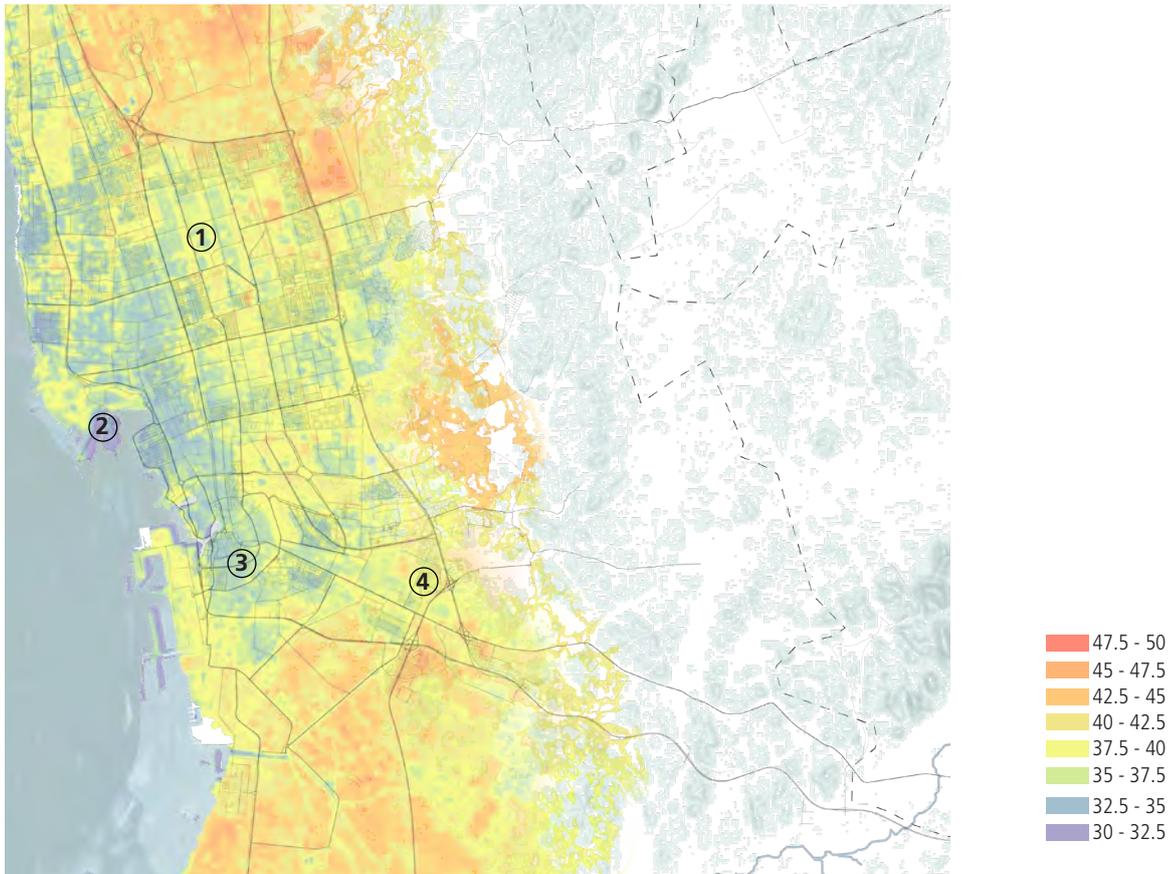
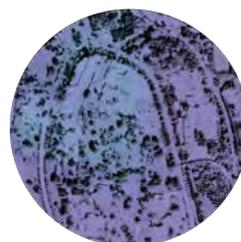


Fig. 42. Urban heat island effect and relation to the existing urban pattern implication on climatic factors

1.
Road within the residential area



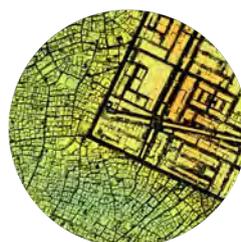
2.
Coastal green area/
Public park



3.
Area with historic value/
UNESCO site



4.
Vernacular urban pattern and new
development



°C





5.2.4 Accessibility analysis

Jeddah breaks away from the development paradigm set by the cities of Madinah and Makkah, in that did not develop as a radial structure. Though the old town was previously protected by walls, which have been replaced by a ring road, the overall footprint of the city is more deeply expressed by longitudinal development along the coast. Over time, a series of highways were installed to facilitate access between the two furthest sides of the city, however, these infrastructures have in fact caused clear fragmentation between neighborhoods.

The freeway system falls under responsibility of the Ministry of Transportation. All other roads – classified by function as arterial roads, collector roads, and local roads – are the responsibility of Jeddah Municipality.

At present, the car (or other private vehicle and taxi) is the dominant transportation mode in Jeddah. This represents over 96% of all daily travel and concurrently, many of Jeddah's roads experience high levels of congestion.

The enormous traffic volume and resultant congestion threatens not only the quality of the environment and the safety of road users but in the long term, can additionally undermine the economic prosperity of the city. Dealing effectively with traffic congestion and its effects will be critical to ensuring an environment in which the population can live, work and move about in comfort and safety.

To establish functionality of the city's current road network, a study was undertaken by UN-Habitat to calculate access to the two city centres of Al Balad and Al Rawdah within a 15-minute, 30-minute and 60-minute drive distance from anywhere in the city. For the analysis, the driving speed was calibrated at two-thirds of the designated road speed, taking into account traffic congestion in the city. The accessibility study, illustrated in figure 43, reveals travel times between these centres and the city only via private modes of transportation. The study found that 48% of the population, or equivalent to two million people, have access to the urban core within a 15-minute drive distance. This access increased to 73% within 30-minutes of driving time. Only 7% of the population was found to remain without access to the urban core area, with drive times in excess of 60 minutes.

Additionally, a pedestrian accessibility analysis has been applied to three central areas of the city. The results are as follows:

- Waterfront - 14,397 people living within a 10-minute walking distance from the selected centre. This is attributed to low density as the neighborhood is dominated by large residential villas;
- Al Rawdah - 82,376 people living within a 10-minute walking distance;
- Al Balad - 175,069 people living within a 10-minute walking distance.

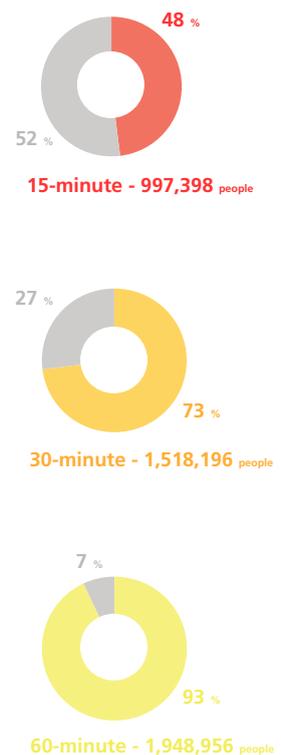
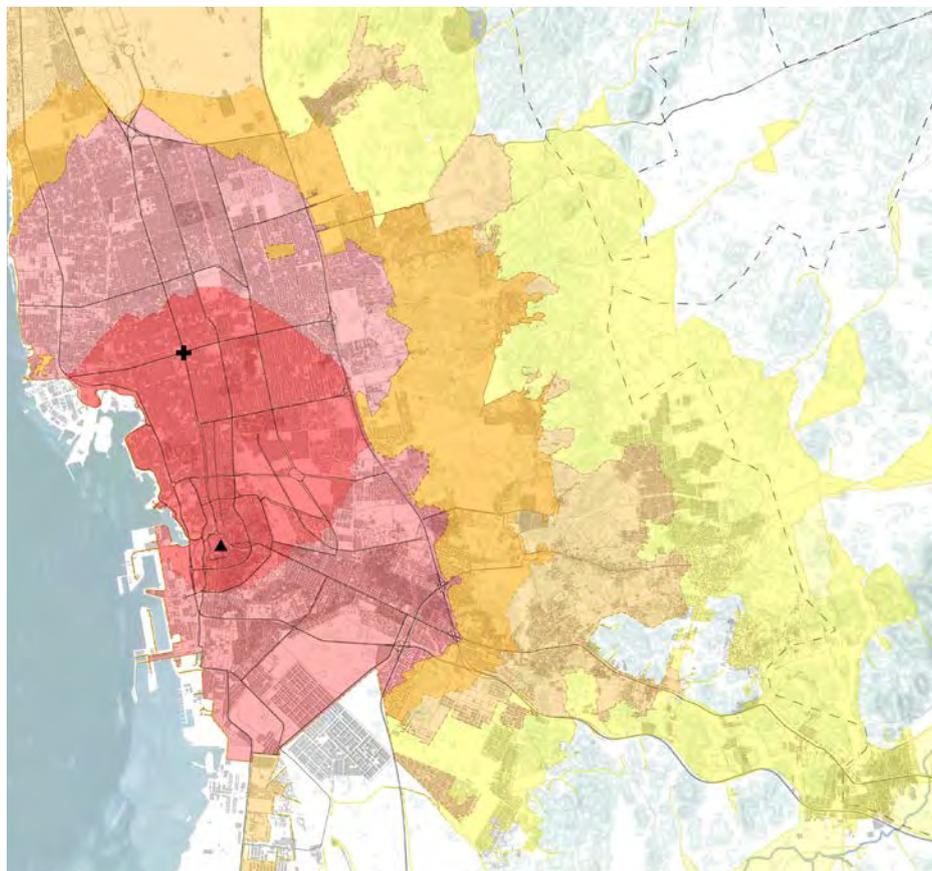
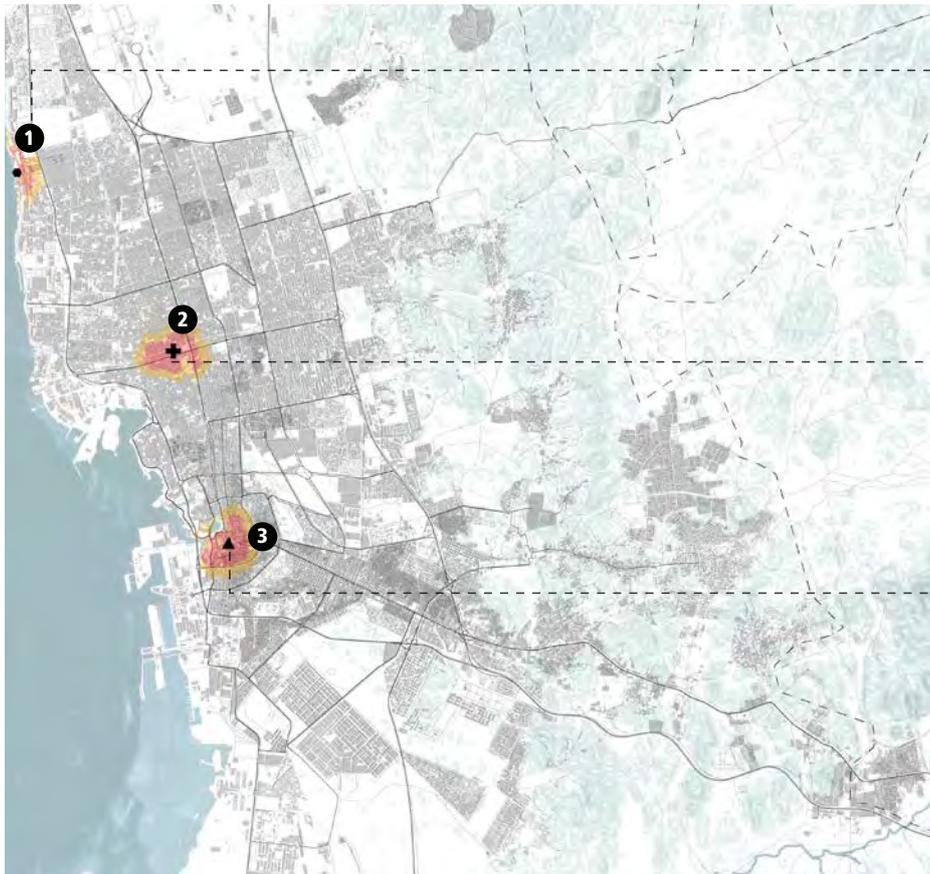


Fig. 43. Drivability to the commercial city centres



Traffic conditions on the streets of Jeddah



Corniche

The Jeddah Corniche is the **30 kilometres coastal resort area** of the city of Jeddah. Located **along the Red Sea**, the cornice features a coastal road, recreation areas, pavilions and large-scale civic sculptures — as well as **King Fahd's Fountain**, the highest fountain in the world.

Al Rawdah

Al Rawdah District of Jeddah nestled in the heart of the city, amidst residential buildings and considered the **main shopping and business area**.

Al Balad

Al Balad - the **historical city centre** of the city of Jeddah, the sight of old-world architecture dating from the 7th century, which was just recently added into the **UNESCO World Heritage sites** list, attracts many people every year. This area, populated with historic mosques, modern shopping malls and traditional markets known as souks, sits alongside the leading lights of 21st Century commerce.

Fig. 44. Walking accessibility to the city centres

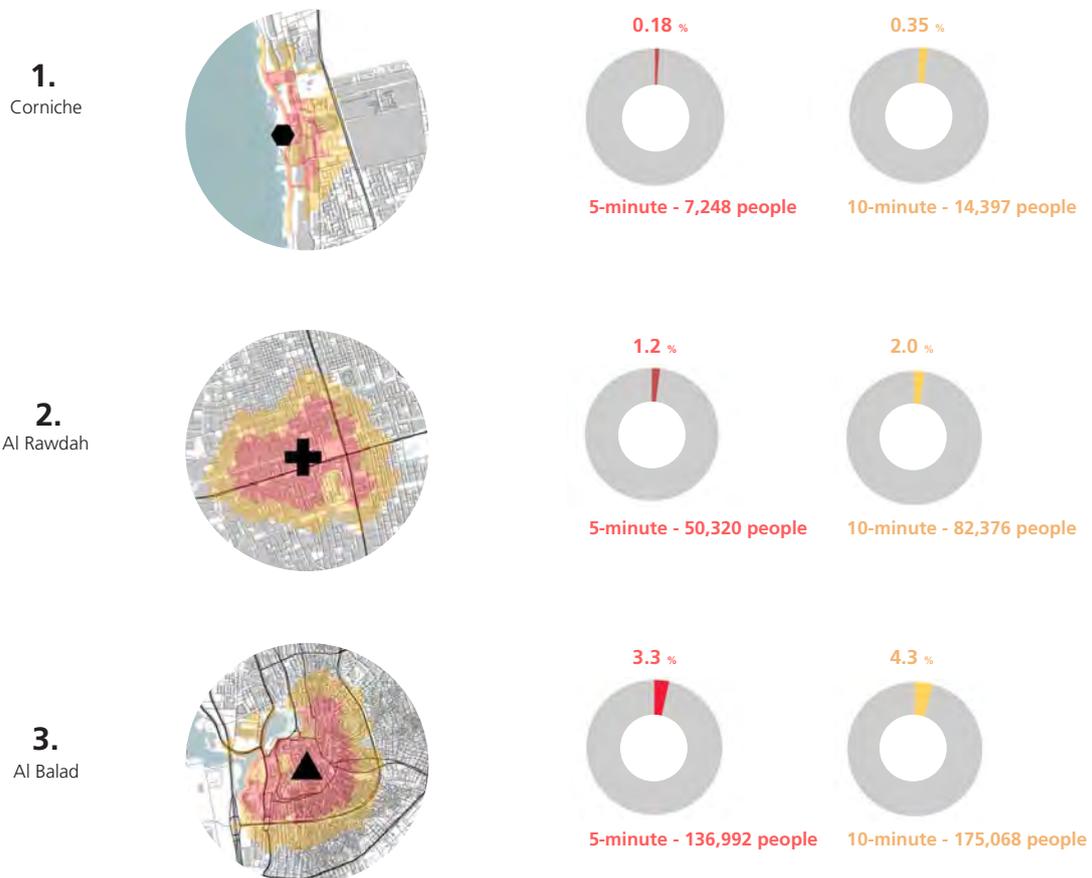




Fig. 45. Satellite images of Al Balad, Al Rawda and Corniche



Small alleys in old Jeddah

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5.2.5 The Jeddah Plan

The Jeddah Plan is a suite of plans intended to guide development across the Jeddah Governorate. It is delivered across four volumes. As explained in chapter 3.2.3, strategic, sub-regional and structural plans were prepared by the Amanah of Jeddah in consultation with the AECOM consulting company and approved in 2015 by MoMRA. For the local plan, the Amanah of Jeddah relies on the Al Beeah Master Plan, which was approved by MoMRA in 2006. These four volumes comprise:

Jeddah Strategic Plan

- Describes the Vision and Aims for development and urban growth within the Jeddah Governorate.
- Provides overarching Missions for the development of the Governorate to be taken forward in the sub-regional, structure and local plans.
- Defines Governorate-wide Objectives and Policies to guide decision making relating to land use planning, urban policy making, infrastructure planning, investment, governance and provision of civic facilities.
- Provides a management and implementation framework to ensure the long-term success of the Jeddah Plan.

Jeddah Sub-regional Plan

- Sets out a long-term spatial strategy for growth and development to 2033.
- Identifies locations for sub-regional urban growth and environmental protection.
- Provides a sub-regional spatial response to the Missions, Objectives and Policies set out in the Jeddah Strategic Plan.

Jeddah Structural Plan

- Provides a structural framework for urban growth and regeneration within the urban area.
- Provides strategic land use designations within the urban area of the Governorate.
- Provides a city-level spatial framework to guide intervention and investment by the Municipality and its public and private partners.

Jeddah Local Plan

- Provides a series of Local Plans that define a comprehensive strategy for coordinated development and design decisions across the urban area.
- Provides confidence and certainty to public and private sector bodies in advancing specific plans, programmes and investment.

The Structural Plan outlines a clear hierarchy between centres and their functions. As a general principle, local centres, neighbourhoods, districts and town centres should accommodate a balance of compatible uses. A balanced distribution of uses will maximise the efficiency of travel and ensure services and facilities are accessible to residents, workers and visitors.

In order to maximise the co-location and distribution of facilities, the land use strategy focuses on the establishment of mixed-use activity centres located in areas accessible to the populations that they serve.

The hierarchy is as follows:

- Metropolitan Centre - focused in area of vacant land within the urban core, adjacent to existing CBD.
- Town Centres - broadly distributed across accessible locations with sufficient land available within each of the Town Sectors identified by the Structural Plan.
- Multi-district and District Centres - distributed in accordance with the Structural Plan catchment standards, in many instances incorporating existing facilities.

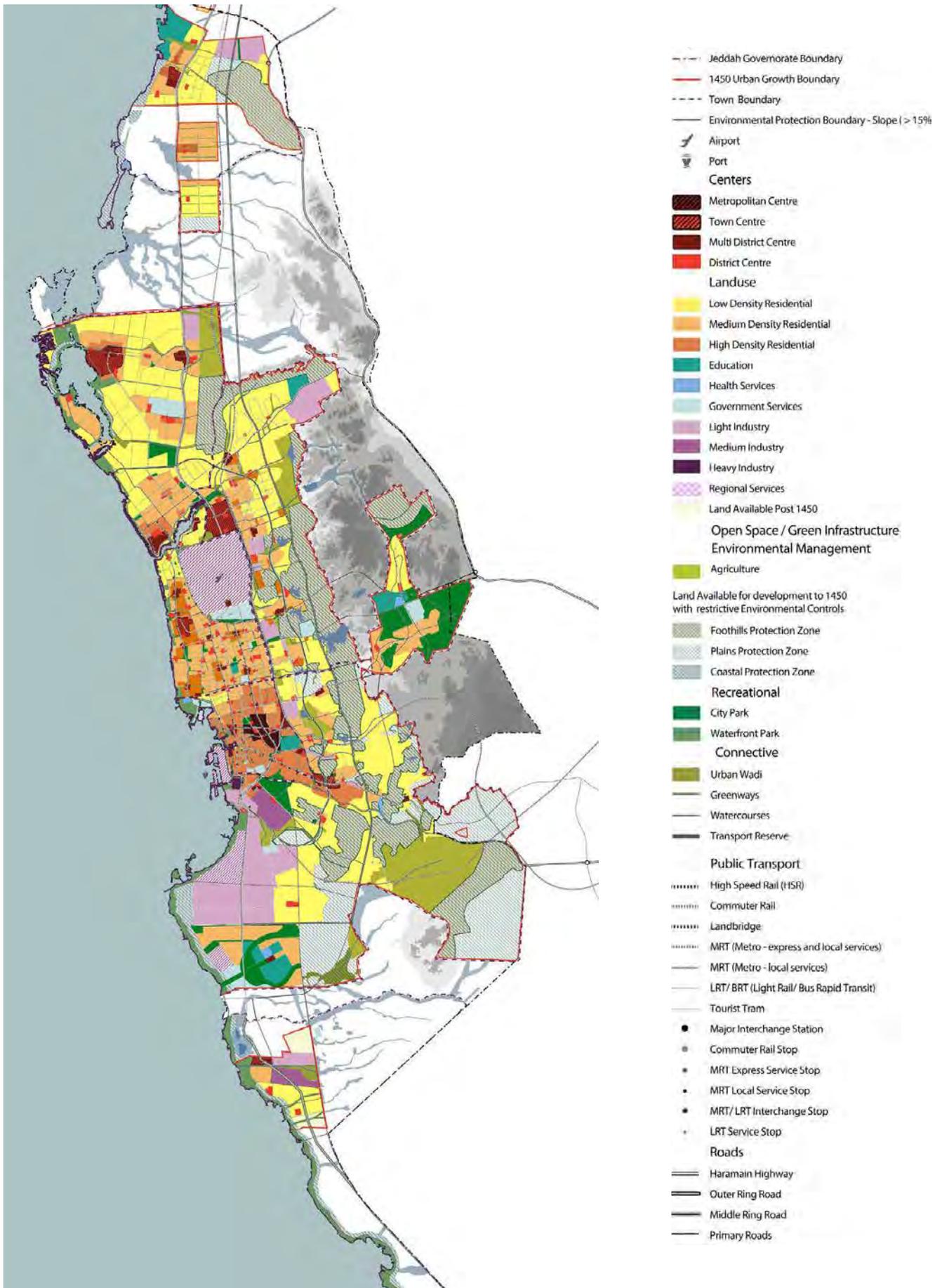


Fig. 46. The Jeddah Plan by the Amanah



5.2.6 Assessment of proposed transportation systems

The two driving initiatives of the Jeddah Structural Plan are TOD (transit oriented development) and Public Transit. Core to this approach is the introduction of an Express Metro Route (the Red Line). This would be supplemented by three Metro routes (the Orange, Blue and Green Lines) which concentrate on connecting the highest residential density areas of the city to key facilities and attractions (airport, port and CBD). The Metro and Express Metro Lines, together with a regional commuter rail route, converge on the main employment centre (CBD) to create a dense, high capacity network capable of sustaining the high employment levels proposed.

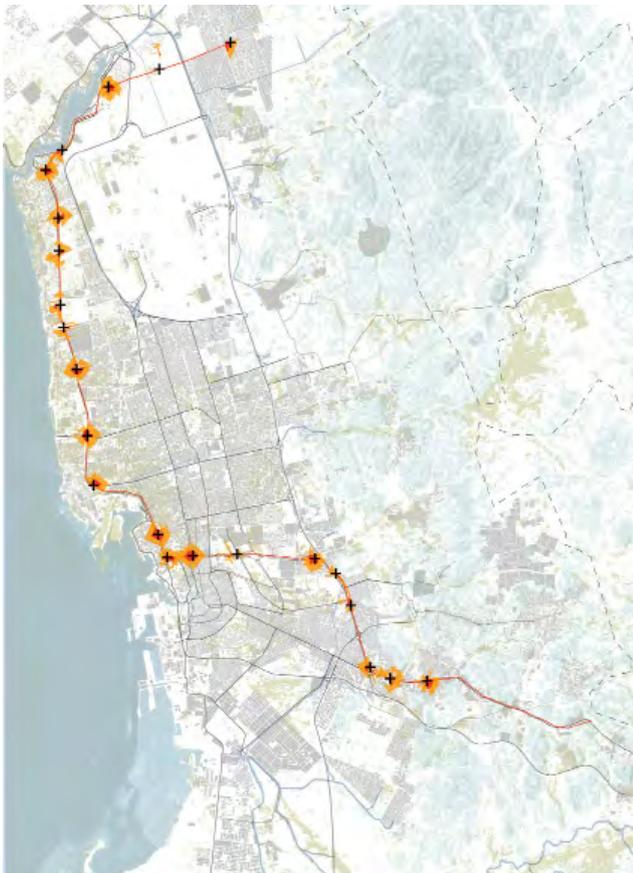
Outside the core city area, local networks of Express Bus and BRT routes would connect centres to the Metro and Regional Commuter rail interchanges. In some cases such as East Jeddah and Salaman Bay, LRT routes would form the spine for development and local movement.

As of 2018, the implementation of the metro system has started and the Al Haramain train station has recently opened to connect Jeddah with Makkah in under one hour.

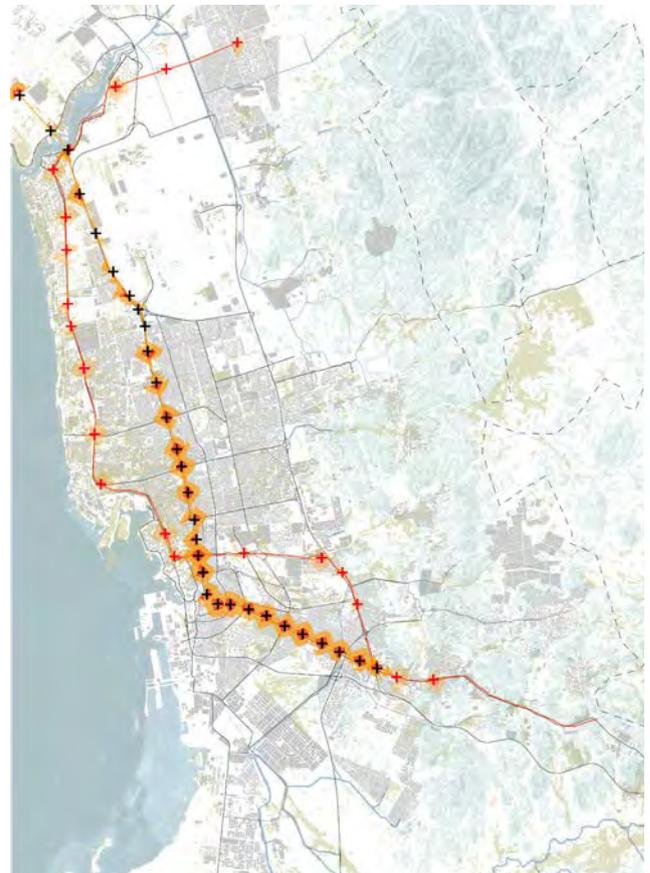
The four new lines, yet to be built, will combine to create an extensive public transport network, composed as follows:

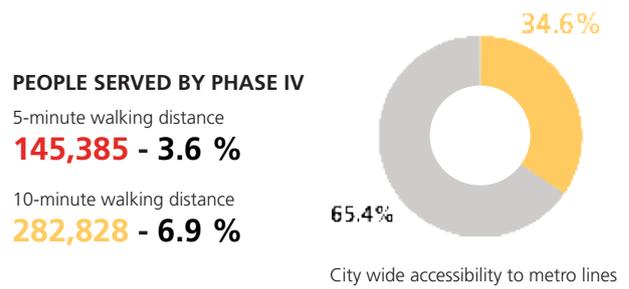
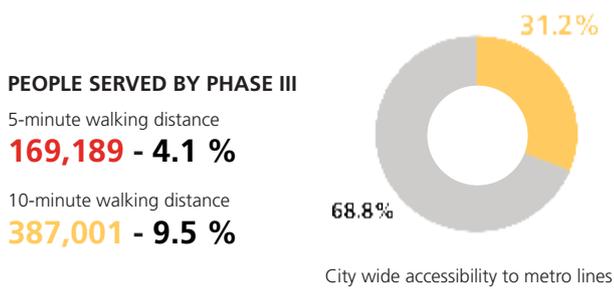
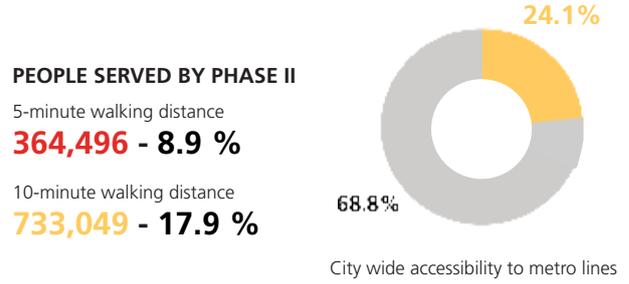
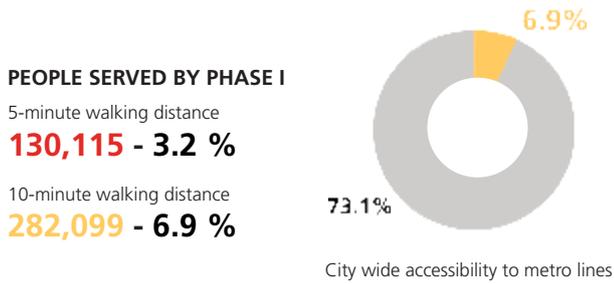
- Line I - Express Metro (red): from the North to the South of the city, running along the waterfront and concluding at the old Makkah road. This line will serve 6.9% of the existing population within a 10-minute walking catchment area; The Express Metro provides a high capacity, high speed, limited stop service. It connects the Town Centres in the urban core (Telal Jeddah, Jeddah Al-Jadeedah, Markaz Al Madinah and Moulaisaa). Major interchange stops are provided at King Abdullah Sports City in Telal Jeddah, Jeddah Al Jadeedah on the western coast, three stops throughout the CBD at Markaz Al Madinah and a final interchange at Moulaisaa. Typically these are 1-2 km apart. They will serve multi-district centres and provide interchange with level 3 LRT / BRT transit and local bus services. A minimum net density of 100 dwellings per hectare is required to support an Express Metro interchange. Its speed in service will be 25-30 kph (including stops) and hold a capacity of 30,000 ppdh.

Metro Line Phase I: 67 km and 22 stops

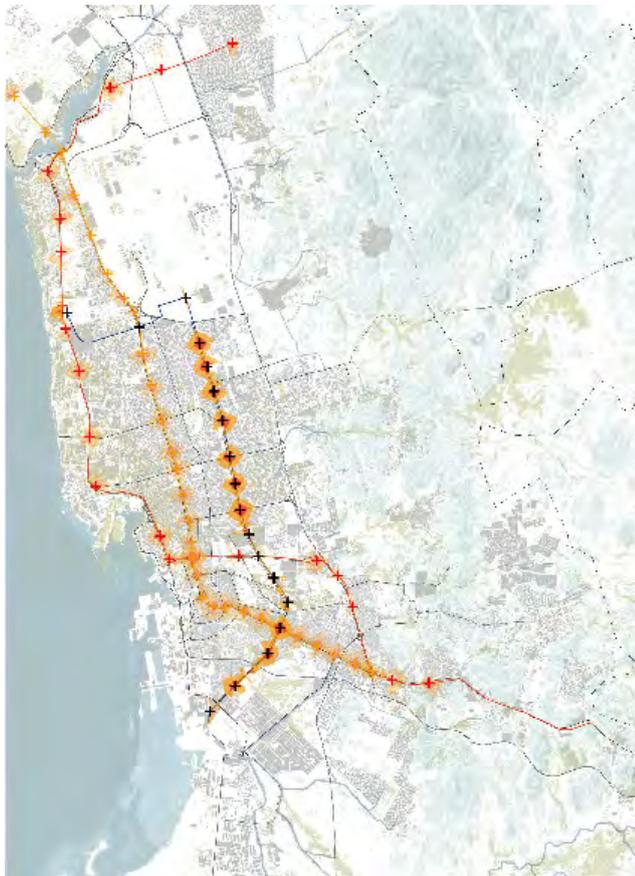


Metro Line Phase II: 41 km and 30 stops





Metro Line Phase III: 35 km and 19 stops



Metro Line Phase IV: 16.7 km and 12 stops



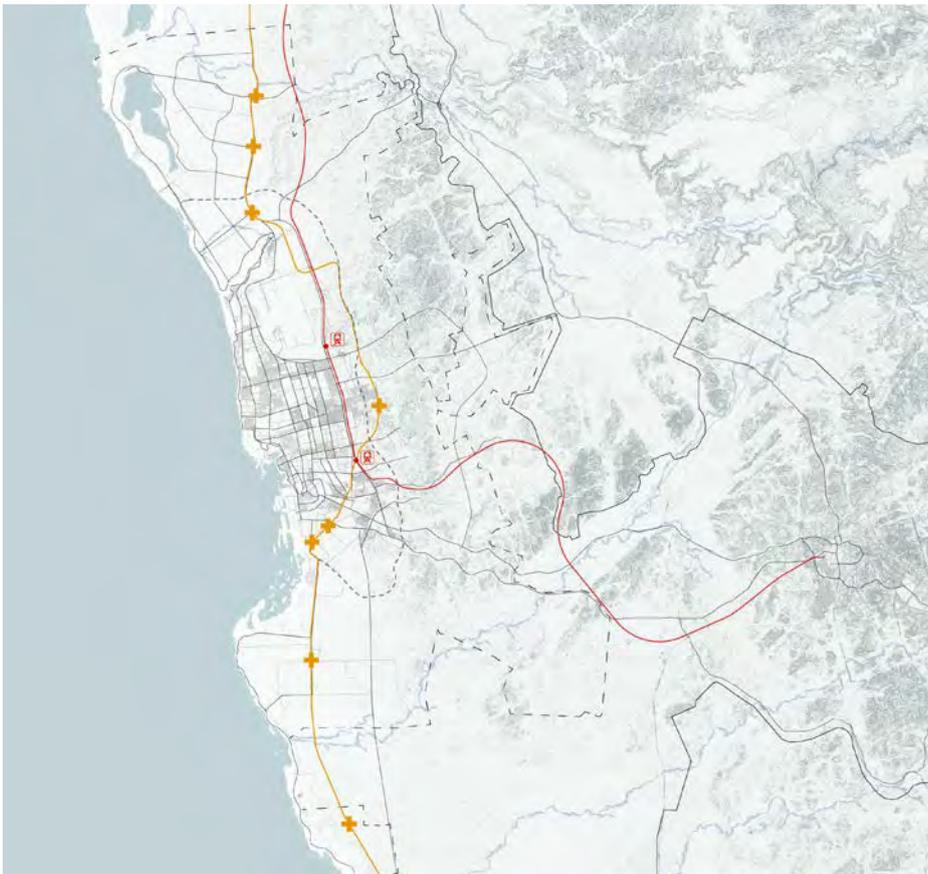


Fig. 47. Commuter rail accessibility analysis



5-minute -- 668 people (0.02%)
10-minute -- 1,813 people (0.04%)



5-minute -- 4,788 people (0.12%)
10-minute -- 11,172 people (0.3%)



5-minute -- 0 people (0.0%)
10-minute -- 0 people (0.0%)

- Line II (orange): The service runs in partial alignment with the Express Metro and serves all major interchanges to further distribute traffic across the city, to stations that connect into the LRT / BRT networks. This line will serve 17.9% of the existing population within a 10-minute walking catchment area;
- Line III (blue): This metro line will connect the international airport to the old city centre of Al Balad. The line will serve 9.5% of the existing population within a 10-minute walking catchment area;
- Line IV (purple): This line will connect the HSR station with the centre of Al Balad. The line will serve 6.9% of the existing population within a 10-minutes walking catchment area.

The proposed metro lines will constitute a high capacity urban transport system which aims to form the backbone around which to organise further networks. The BRT lines that will connect on an East-West axis will be very important to support the overall functionality of the North-South orientated metro lines.

5.3 Urban Density Scenarios

Crosscutting the diagnosis of the current urban conditions and the approved/submitted projects proposals, FSCP operated scenario-analysis for increased urban density. Initially, the current condition of the city has been examined to indicate conditions within a benchmark density that will form a comparative measure against which to set alternative scenarios. Secondly, a scenario has been developed in line with projections based on approved planning instruments. Finally, an alternative scenario has been developed in which the density distribution meets UN-Habitat recommendations. This UN-Habitat scenario is based on the Five Principles for Sustainable Neighbourhood Planning, which are as follows:

- Adequate space for streets and an efficient street network: The street network should occupy at least 30% of the land and at least 18 kilometres of street length per square kilometres,
- High density: At least 15,000 p/km², that is 150 p/ha or 61 p/acre,
- Mixed land use: At least 40% of floor space should be allocated for economic use in any neighbourhood,
- Social mix: The availability of houses in different price ranges and tenures in any given neighbourhood to accommodate different incomes; 20% to 50% of the residential floor area should be for low-cost housing, and



CURRENT CONDITION



population  **4,082,184**

built-up area  **84,650 ha**

average density on built-up area  **48.21 p/ha**

SCENARIO 1: NEW JEDDAH DEVELOPMENT PLAN



population  **7,664,547**

planned built-up area  **164,100 ha**

average density on planned built-up area  **46.7 p/ha**

SCENARIO 2: UN-HABITAT RECOMMENDATIONS



population  **7,664,547**

needed built-up area according to UN-Habitat recommendations  **51,097 ha**

vacant land needed to accommodate population growth  **24,000 ha***

average UN-Habitat recommended density  **150 p/ha**

* 1/7th of the expansion area proposed by the Jeddah Plan



each tenure type should not exceed 50% of the total,

- Limited land use specialisation: This is to limit single function blocks or neighbourhoods; single function blocks should cover less than 10% of any neighbourhood.

Current Condition

The current population in Jeddah amounts to 4,082,184 people occupying a built-up area of 84,650 hectares. This generates a population density of 48.21 p/ha, which is almost one third of UN-Habitat recommended density of 150 p/ha.

Scenario I: Jeddah Plan 2015

According to the 2015 Jeddah Structural Plan and Vision 2030, the planned built-up area should increase to 164,100 hectares, hosting a population of 7,664,547 people. Even with such a substantial increase in population, the average density will decrease to 46.70 p/ha over the built-up area. The plan overestimates the spatial extents of the development, encouraging sprawl.

Scenario II: UN-Habitat Recommendations

The UN-Habitat scenario supports sustainable neighbourhood planning for the city, promoting an increased density of 150p/ha in line with UN-Habitat recommendations. At the current rate of growth, projected to reach an increased population size of 7,664,547 by 2030, the additional built-up area needed to absorb the city's future population at the recommended density would require only 24,000 hectares (15% of the built-up area proposed by the Structural Plan). This scenario indicates that there are roughly 20,000 hectares of vacant area available within the existing urban footprint, that can accommodate 80% of Jeddah's projected additional 2030 population. The scenario shows that expanding the current urban footprint is not necessary and suggests strategic interventions to support policies that will facilitate the densification of existing urban areas. This will provide citizens with maximum benefits for an improved quality of life, at an affordable cost.

Jeddah's population density is not considered to be abnormally low in comparison with other Saudi Cities. However, by applying specific planning policies that concentrate density around specific areas, the overall population density could noticeably increase, counteracting low-density expansions. The scenario proposed based on UN-Habitat recommendations suggests limiting the urban expansion of the city and increasing the density in the existing urban footprint by introducing mixed land use and developing the vacant land that exists inside the urban area, to provide public facilities and open spaces.

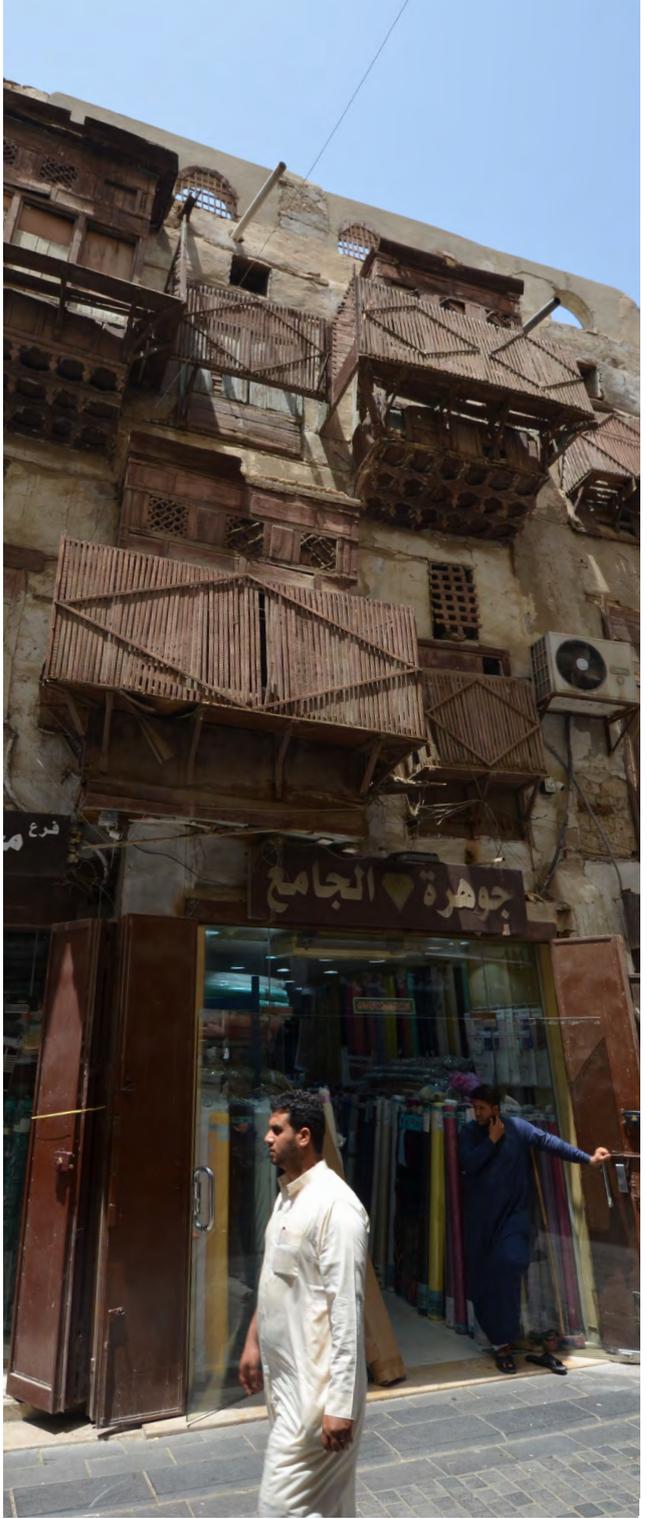


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Jeddah's informal settlements

5

STRATEGIC DIAGNOSIS



6.1 Identifying and Defining Main Strategic Issues

During the evidence-based and cross-scalar analysis undertaken, three main issues affecting the sustainable urban development of Jeddah were identified. These issues represent the strategic framing of a complex diagnosis, synthesised through three conceptual lenses. These lenses are firstly defined in their conceptual nature, and later contextualised by an examination of their spatial manifestation in Jeddah, at different scales.

6.1.1 Unbalanced growth and development patterns

This often happens when a city grows rapidly, presenting a widespread sprawl phenomenon that manifests in inharmoniously balanced developments across its territorial extension. Dysfunctionalities in urban management, both institutionally and experientially, are brought to light. In this scenario, the city demonstrates low-density and does not perform effectively, its services and facilities are not well-balanced in distribution and accessibility, which results in inequitable citizenry experience. This condition additionally makes the provision and maintenance of basic services and transport infrastructure costly and challenging. In Jeddah, this is becoming visible along the Makkah and Madinah highways, and in the low-density developments along the Northern coastline of the city.



6.1.2 Endangered historical / vernacular urban pattern

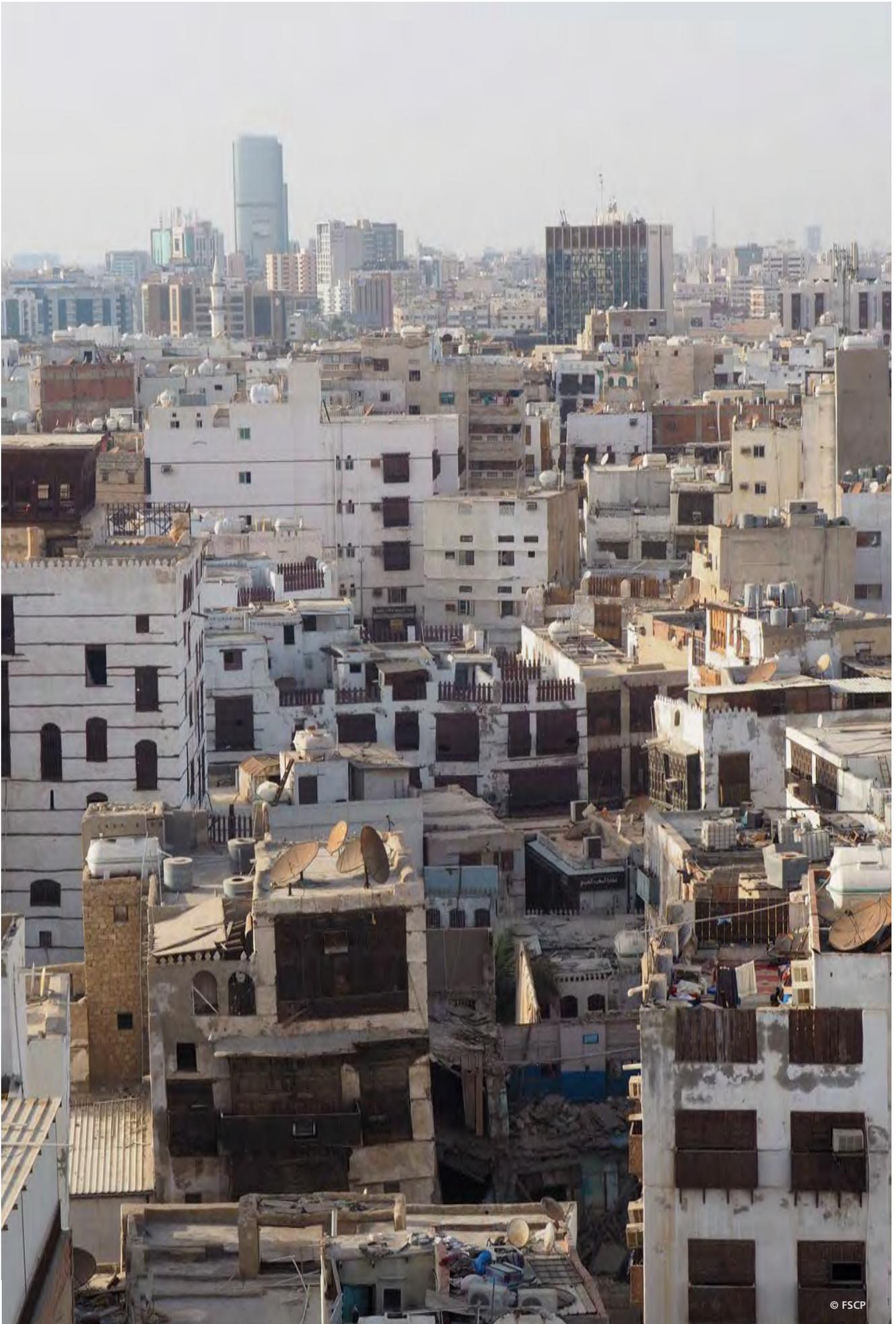
Planning regulation systems in Saudi Arabian cities are currently under development within a unified framework. One of the challenges that will need to be addressed concerns the need for a comprehensive set of criteria that distinguish historical vernacular urban patterns from informal, unplanned settlements. In the absence of such a regulatory framework, historical neighbourhoods in Saudi cities are being erased to make space for new developments. Not only does this endanger heritage and disrupt the sense of identity tied to a historically stratified urban environment, but these new developments additionally disrupt the connectivity to the surrounding urban fabric, whilst alienating themselves to the neighbouring building typologies and established patterns. The introduction of appropriate heritage protection rules for articulated portions of the urban patterns, extended to streetscapes and fabric layout, will reduce risk to traditional urban layouts. These traditional layouts are characterised by narrow alleyways, that excel climatically in terms of passive energy performances and function as vibrant public spaces that generate social value.



6.1.3 Socio-ecological and economic imbalance

Each city is formed by complex social, economic and ecological systems. In a sustainable city, the balance between these three interrelated systems is maintained and enhanced over time. If any one system is given continued preference over the others, over time, a structural imbalance will emerge that alters the sustainable trajectory of the city's growth and development. A symptomatic example of this imbalance in Jeddah, is the insufficient water drainage network. The city has been witnessing severe flood events during the rainy seasons. It affects not only major infrastructure in the city, but also residential neighbourhoods, particularly in the unplanned expansion areas on the city fringe. The design of open channels causes a additional health hazards during the low flow, heavily impacting the socio-spatial balance of the city's health.





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View of Jeddah, overlooking old settlements and new development



6.2 Analysing Jeddah's Three Issues in Depth

6.2.1 Jeddah's unbalanced growth and development patterns

At both the city-region and metropolitan scale, it is easy to identify how sprawling development on the Northern edge of the city, has left patches of vacant undeveloped land. The 2015 Structural Plan echoes this condition and identifies areas for expansion most prominently in the South and North extremities of the city. The plan is simultaneously considering new developments and public transit on an expanded basis, though the city has huge scope for densification within the current footprint. The overdimensioned Development Protection Boundary, overlapping with the Makkah municipal boundary, encourages a sprawling growth pattern, as it is viewed more as a prompter for new development, than as a buffer area for protection from development. The aim of this boundary should be to keep the city compact and organised, rather than providing legal and spatial authorisation for sprawled development.

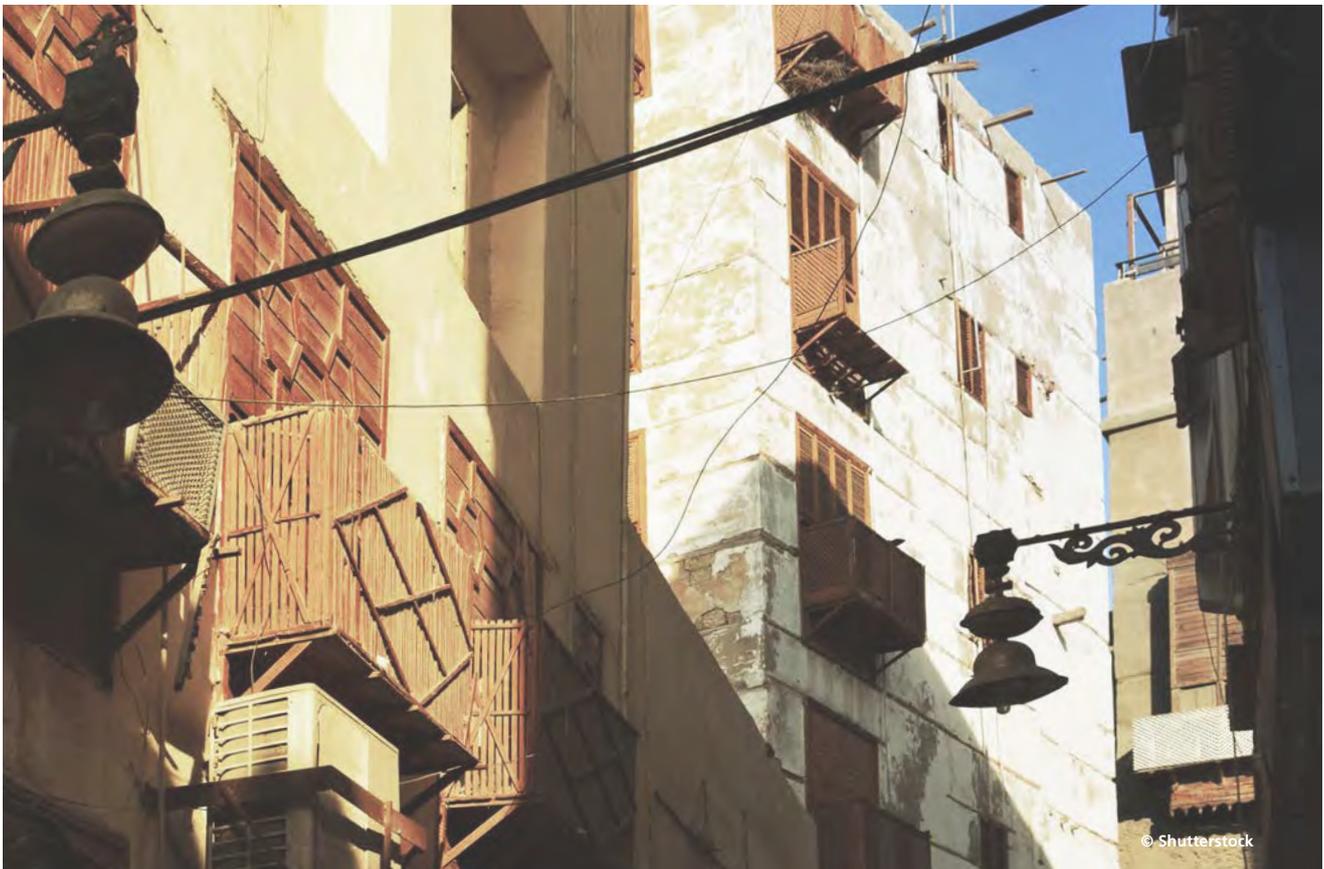
The developmental pattern of the city is composed of:

- Fragmented development: Many districts and blocks are isolated from one another.
- Inconsistent density: Pockets of higher density are interspersed at random with vacant or significantly underutilised land.

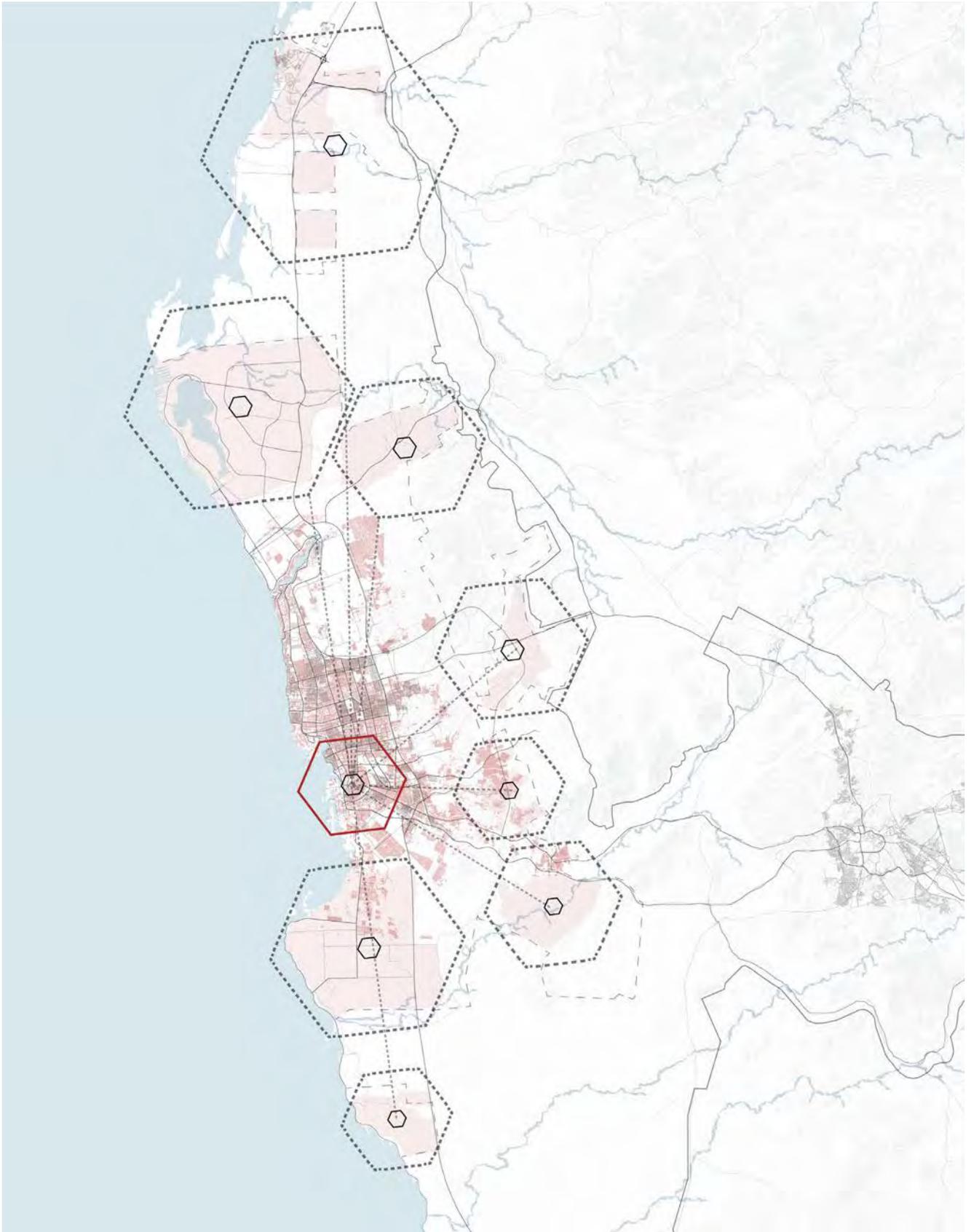
- A dominant highway network: This uses large quantities of land whilst isolating city blocks from one another.

At the urban scale, the population density is 48.21 p/ha, which is not an uncharacteristically low value in comparison to other Saudi cities. However, it remains far lower than the UN-Habitat recommended average of 150 p/ha, which is key to supporting sustainable neighbourhood planning and design. As the vacant land within the current urban footprint amounts to approximately 24% of the total urban area, the city needs to concentrate further development in these areas through punctual infill and densification strategies, rather than promote new developments on the outskirts of the city.

At the neighbourhood scale, this reads as a series of excluded (or secluded) patches of urban fabric, often on the outskirts of the denser city, and far from mixed-use areas. Entire neighbourhoods are singularly residential, and the overall percentage of mixed-use development is very low. In the future, the ways that new neighbourhoods are considered will have a critical effect on the finance of the city, which will be challenged by infrastructure costs for settlements located far away from city centres.



Traditional building structures in Al Balad



- Proposed new developments
- Existing core of the city

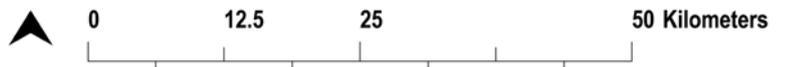


Fig. 48. Jeddah's unbalanced growth and development patterns



Urban sprawl causes inefficiency in urban management and a heightened cost for the Government, accrued in delivery of infrastructure and public services. In a sprawled city, the cost incurred by the municipality in provision of electricity, sewage and clean water is higher than in a compact city, which additionally applies to maintenance, as infrastructure is more widespread. The low density of population does not effectively recover these costs in an ordinary revenue system.

6.2.2 Endangered historic / vernacular urban pattern in Jeddah

Jeddah recognised the value of its historic attributes more than twenty years ago, and was the first municipality in Saudi Arabia to list historic monuments and buildings. As a result, Jeddah is the only city in the Kingdom with a historic city district listed as a UNESCO Heritage Site (Al Balad). Today, though Al Balad has been the focus of UNESCO criteria for World Heritage Status, it continues to fall into disrepair and the unique attributes it holds are being lost or damaged. Areas such as this are important to the culture of Jeddah and should be preserved and protected.

The area surrounding Al Balad presents a very peculiar traditional urban pattern with 4-5 storey buildings. Because of their central position, some of these neighbourhoods are at risk of redevelopment. In general, redevelopment practices in KSA do not maintain original urban layouts but transform them to accommodate gated compounds of condominium

towers. In case of Jeddah, the Qasr Khozam Development Project invades a large portion of vernacular fabric, including the buffer zone of Al Balad Heritage Site. It is very important that the Jeddah Plan points out which areas are going to become the CBDs of the future and sets limits on building heights to regulate the city's skyline.

In order to analyze the impact of new development on an historical urban layout, three key development typologies were selected and observed. The criterion for this categorisation are based on the integration (or lack thereof) with historical neighbourhoods by recently developed areas. This examination defined three types of relationship exemplified by three case studies.

The first case highlights the contrast between the vernacular urban pattern, and recently built governmental buildings. These institutional neighbourhoods are completely disconnected from the surrounding fabrics, and the newly established street pattern does not align or connect to that which precedes it.

The second case demonstrates the typological disconnection between vernacular neighbourhoods and "formalized" housing. This further builds on the above mentioned superior climactic performance of vernacular fabric and historic neighbourhoods.

The third case highlights the effects of new infrastructure, specifically highways, crossing the city centre that are

1. Vernacular pattern and Institutional / industrial development

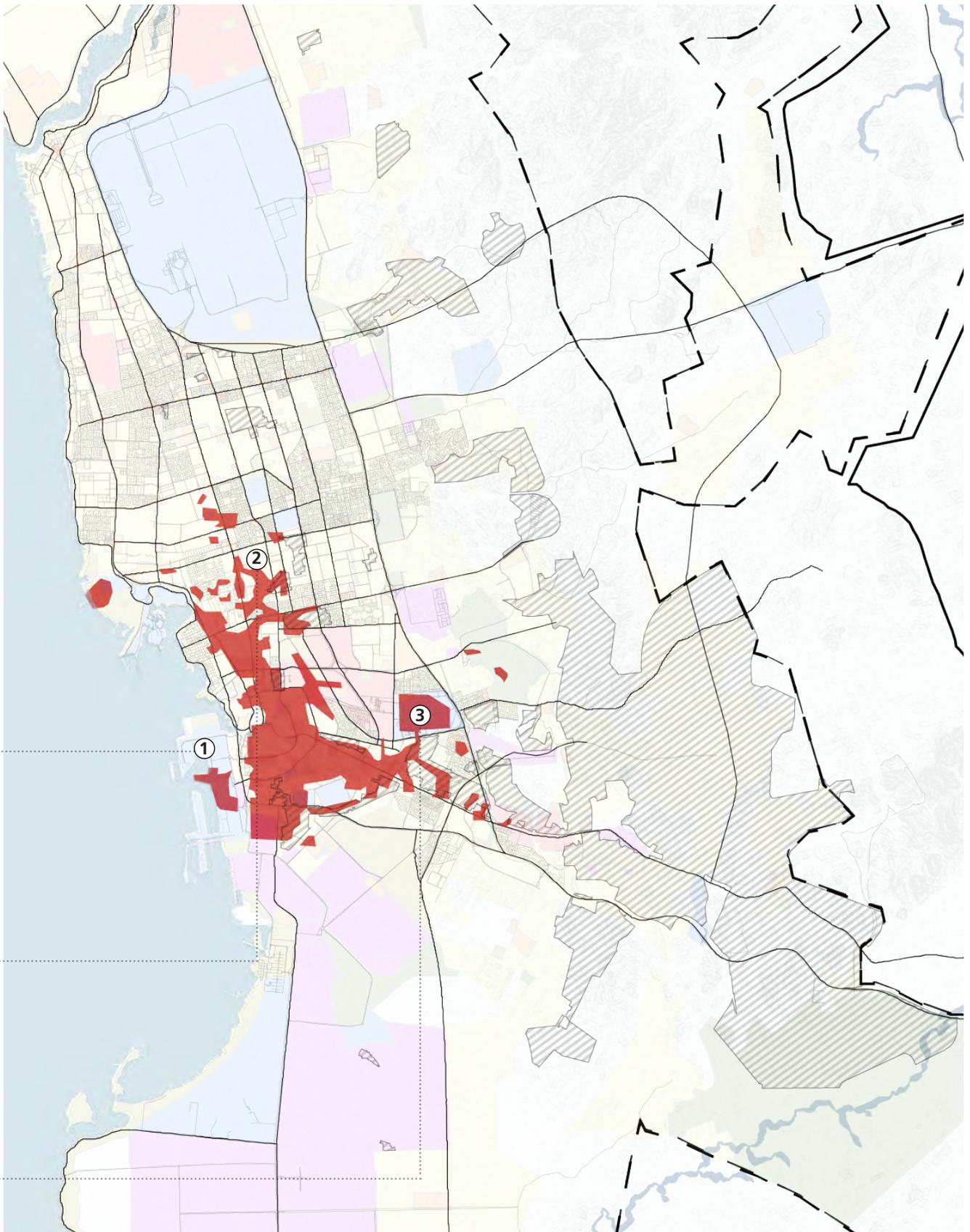


2. Vernacular pattern and new residential development



3. Vernacular pattern and new infrastructure





-  Unplanned settlements
-  Areas with historic value

0 12.5 25 50 Kilometers

Fig. 49. Endangered historic / vernacular urban pattern in Jeddah



surrounded by a series of new residential towers. Here, not only does the highway become a barrier between neighbourhoods, but the new towers, that are detached from the pre-existing neighbourhoods and have no relationship to the street level, negatively impact overall streetlife and pedestrian connectivity.

6.2.3 Jeddah's socio-ecological and economic imbalance

The city of Jeddah and the surrounding lands to the east witnessed severe flooding in November 2009 and January 2011 when 94 and 120 mm of rainfall respectively, was registered as falling within a two hour period. These flooding events resulted in high levels of damage to both the human and natural environment, and emotionally impacted inhabitant security in each rainfall period. Two tunnels in the highways crossing Al Rawda were flooded and traffic in the city was paralysed for days.

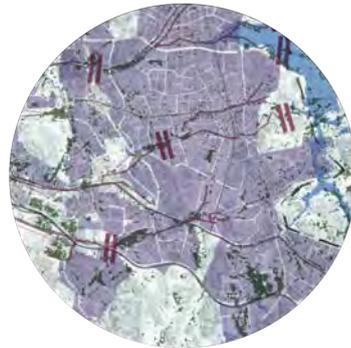
The surface water drainage network in Jeddah, covers only 40% of the city. As a result, large parts of the city's highway network become inaccessible due to standing water during the rainy periods. The drainage network includes 11 wadi catchments that lie to the east of the city. To collect the stormwater runoff from the wadis, three large channels have been installed. These drainage channels do not currently connect directly to the sea and therefore rely on pumping to reach discharge points. Their design as open channels is considered as a health hazard during periods of low flow. The Municipality of Jeddah has initiated a programme to convert these channels to subsurface culverts. The first phase of this programme will address the Northern Drainage Channel.

Continued urban expansion has become one of the most serious environmental issues in Jeddah, and is often linked with exacerbated damage from natural hazards. The population growth rate of the Saudi Kingdom is considered to be among the top-ranking countries worldwide and as such, exemplifies difficulties associated with sustainable management of such growth, pertaining to sprawl, low density, poor connectivity and equitable distribution of basic services in the urban environment. Jeddah City has witnessed the highest rate of population growth in Saudi Arabia.

A notable expression of these difficulties that is specific to Jeddah is the unplanned expansion of the urban footprint towards the steep hills in the east of the city. Steep, rugged slopes lead to problematic development with increased cost and low accessibility. Development on steep slopes, creates accessibility challenges to service personnel in events of emergency and citizens with low mobility and are therefore a challenge to sustainability. Informal settlements located on steep slopes, are particularly vulnerable to the risk of landslides due to a prominence of unstable construction methods lacking appropriate foundations. City regulations and management should be more prescriptive and proactive in preventing new

developments over mountainous terrain and steep slopes, in cases of both legally approved and informally established sites.

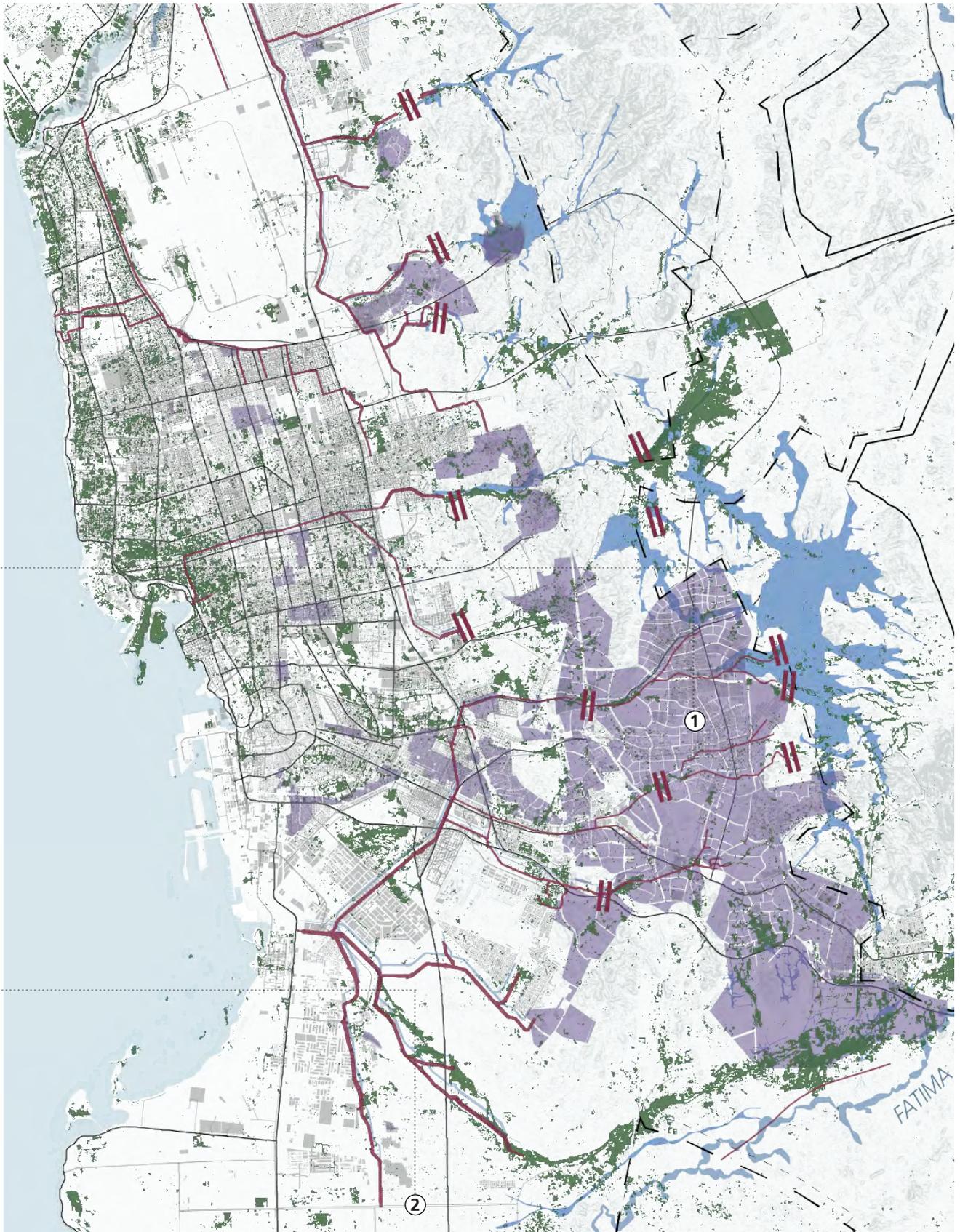
The city is additionally characterised by an inconsistent green network. The waterfront is the sole green area that consistently attracts a large catchment of the population. Availability of green and open public space in the central area is scarce in quantity and poorly distributed. The lack of green spaces and the misalignment between green and blue networks, together with the above mentioned risk factors, need to be taken into delicate consideration.



Lack of green spaces increasing flood risks in highly populated areas during rainy season and urban heat island effects during dry season.



Discontinuity of green-blue network increasing evaporation factor



- Unplanned settlements
- Built-up areas
- Agricultural land
- Water management systems + dams
- Rainwater paths
- Wadis

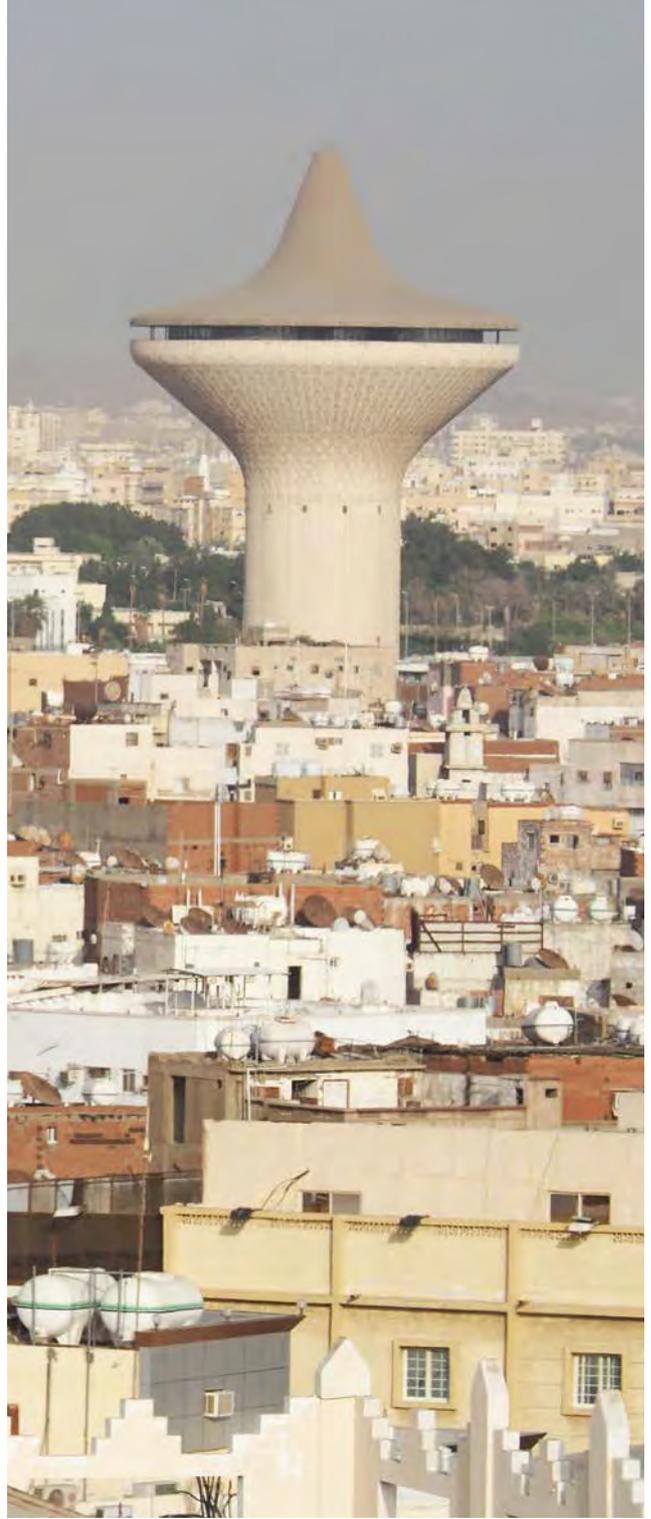


0 12.5 25 50 Kilometers

Fig. 50. Jeddah's socio-ecological and economic imbalance

6

THE FUTURE CITY



7.1 Strategic Responses

After performing a strategic diagnosis, and identifying three main issues affecting the urban development of Jeddah, three strategic recommendations were identified in response. Akin to the three strategic issues, the above-mentioned three strategic recommendations define the conceptual framing for a systemic and strategic level of solutions. Once defined in their conceptual nature, they are developed into a more detailed description, spatially interpreted and contextualised in Jeddah, at the various scales. This is followed by a roadmap to implementation, in the form of an articulated Action Plan.

7.1.1 The Compact City

According to the UN-Habitat principles, cities need to encourage spatial development strategies that take into account the need to guide urban extension, prioritising well-connected infrastructure and services. A Compact City is envisioned as a high-density urban settlement, characterised by mixed-use development, dense and vibrant urban areas, and well-distributed services and facilities, (like hospitals, parks, schools). Establishing spatial and legal mechanisms to consolidate a Compact City can increase the accessibility and walkability, therefore increasing the number of people who would use public transport and public space, reducing congestion, boosting the local economy, and increasing interactions across society. Policies to promote urban compaction involve the promotion of urban regeneration, the revitalisation of town centres, restraint on development in rural and peripheral areas, promotion of higher densities and mixed-use development, and the concentration of urban development around public transport nodes.



7.1.2 The Historic City

A Historic City is defined as an active human settlement, strongly conditioned by a physical structure that originates from its past, and recognisable as representing the evolution of its people.³⁸ Following this definition, it is fundamental for historic areas to be inhabited and form a live cultural nucleus, with a strong urban identity. Over the last few decades, inner-cities and their historic districts all over the world have been deteriorating. Saudi cities are facing high-pressure from development, and often, in historic cities, architectural heritage has been allowed to deteriorate or eradicated to make space for new development, in place of conservation in historic areas. Responding to this scenario requires firstly the establishment of categorisation of these areas, followed by precise regulatory systems for their preservation, restoration, rehabilitation, and revitalisation, aiming not only at protecting the heritage buildings but the entire historic urban fabric, inclusive of all its elements, from streetscapes to residents.



7.1.3 The Resilient City

A Resilient City takes into consideration appropriate built form, and physical infrastructure to increase resilience to the physical, social, and economic challenges that arise from depleting carbon-based fuels, and climate change. A Resilient City can be defined as “a sustainable network of physical systems and communities.”³⁹ These physical systems consist of both the constructed and natural environmental components of the city. They include roads, buildings, physical infrastructure, communications facilities, soils, topography, physical features, geology, waterways, population density, etc. In sum, the physical systems act as the body of the city, its bones, arteries, and muscles. Resilient cities are cities that are capable of withstanding severe shock and stress without either immediate chaos/damage or permanent deformation or rupture. This is particularly important for Jeddah, as the flood risk puts the urban system under tremendous stress. Rebalancing the urban system, to consider stress conditions, is therefore key for Jeddah.





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Streets of old Jeddah



7.2 Appropriate Models for Jeddah's Urban Development

7.2.1 *The Compact City: Consolidating and densifying Jeddah's development*

Jeddah's population density is higher than many cities in the Kingdom with an equivalent car dependency. The urban areas surrounding the city centre, especially between the airport and the Makkah Road, have a population density of 100 p/ha and above. This has important advantages for the future transformation of city transport infrastructure as high densities provide high numbers of population within walking distance of key local services and typically support more effective and compact public transport systems that can be complemented by pedestrian priority neighbourhoods. However, a large proportion of the urban area remains composed of very low density residential neighbourhoods. These low density areas within the existing urban fabric should be addressed by re-developing, in-filling and introducing higher density mixed-use areas, where possible.

In order to achieve further compaction, new development outside the urban footprint should be limited, while dense new and revitalized developments should be promoted within the city by utilising the available vacant land. In this strategy, vacant land gains a vital role for consolidating development and increasing the current density, providing additional opportunity for the introduction of public space in strategic places throughout the existing urban fabric.

In line with the Transit Oriented Development principle in the Structural Plan of Jeddah, the city should adopt a polycentric model by promoting high density mixed-use centres to be developed around major public transport stations or interchanges. This principle of TOD allows easy pedestrian access from public transport to jobs and employment. The present concentration of mixed land use in Jeddah is relatively weak with the exception of the main city core. Though clusters are emerging along the main axes, they are loosely structured. Previous plans have attempted to encourage the introduction of mixed land use along key corridors suitable for future public transport systems. However, these have been only partially achieved in select areas of the city, such as Tahliyah Street. In many cases, the designated corridors are too long to sustain commercial demand resulting in fragmentary development. In addition, many corridors are neither aligned to appropriate highway types nor to future public transportation plans, limiting access to the services and employment uses along them.



King Abdulaziz International Airport



Jeddah City characterised by high car dependency



Jeddah's low density residential neighbourhoods

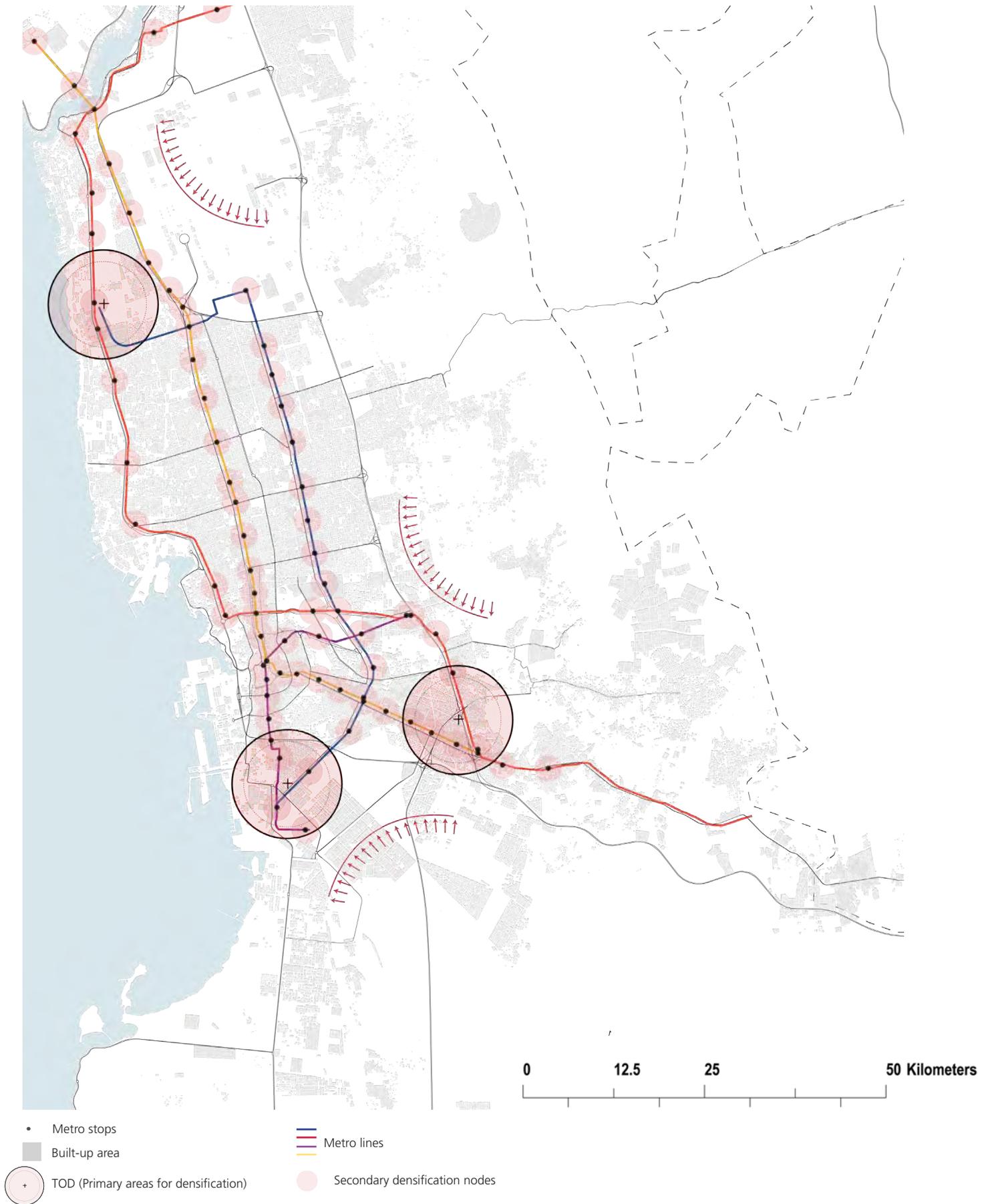


Fig. 51. The Compact City: Consolidating and densifying Jeddah's development



7.2.2 *The Historic City: Preserving the historical identity of Jeddah*

Jeddah is losing much of its historic and vernacular built form under the pressure of speculative development, particularly in the oldest areas surrounding the Al Balad neighbourhood. A new regulatory system should be installed and actively upheld to protect historic and vernacular neighbourhoods and preserve the historic identity of the city. The streetscapes and the urban patterns of these areas, together with the building typologies and associated social dynamics, reflect the history of the city, its people, and simultaneously past and present ways of life.

The Strategic Plan for Jeddah establishes the following objectives for Culture and Heritage by 2033. Jeddah Municipality will work collaboratively with public and private sector partners and local communities in achieving these objectives:

- Ensure that all residents of Jeddah have access to high quality and accessible cultural services.
- Fulfil Jeddah's role as a principal gateway to the two Holy cities
- Reinforce Jeddah's role as a diverse cultural centre and international meeting place for the Islamic world
- Foster strong, inclusive communities and neighbourhoods within Jeddah and celebrate their diversity
- Ensure the preservation and enhancement of Jeddah's unique heritage and cultural traditions.

In addition to this, differences across diverse types of settlements need to be acknowledged, and as such, a diversified approach to preservation, upgrading, and revitalisation needs to be set in place following their systematic categorisation. Following characteristic study of Jeddah's urban fabric, three typologies of settlements requiring distinct approaches were identified:

- The area of the Al Balad, where an accurate system of municipal finance should trigger the economy of this neighborhood;
- The zone surrounding the Al Balad (including its buffer zone) and other neighborhoods with vernacular urban pattern and perfect climatic performances;
- The third area pertains to the informal settlements on the city fringe that are largely characterised by poor living conditions vulnerable to natural hazards due to low construction quality and topographic locations (steep slopes, etc.).



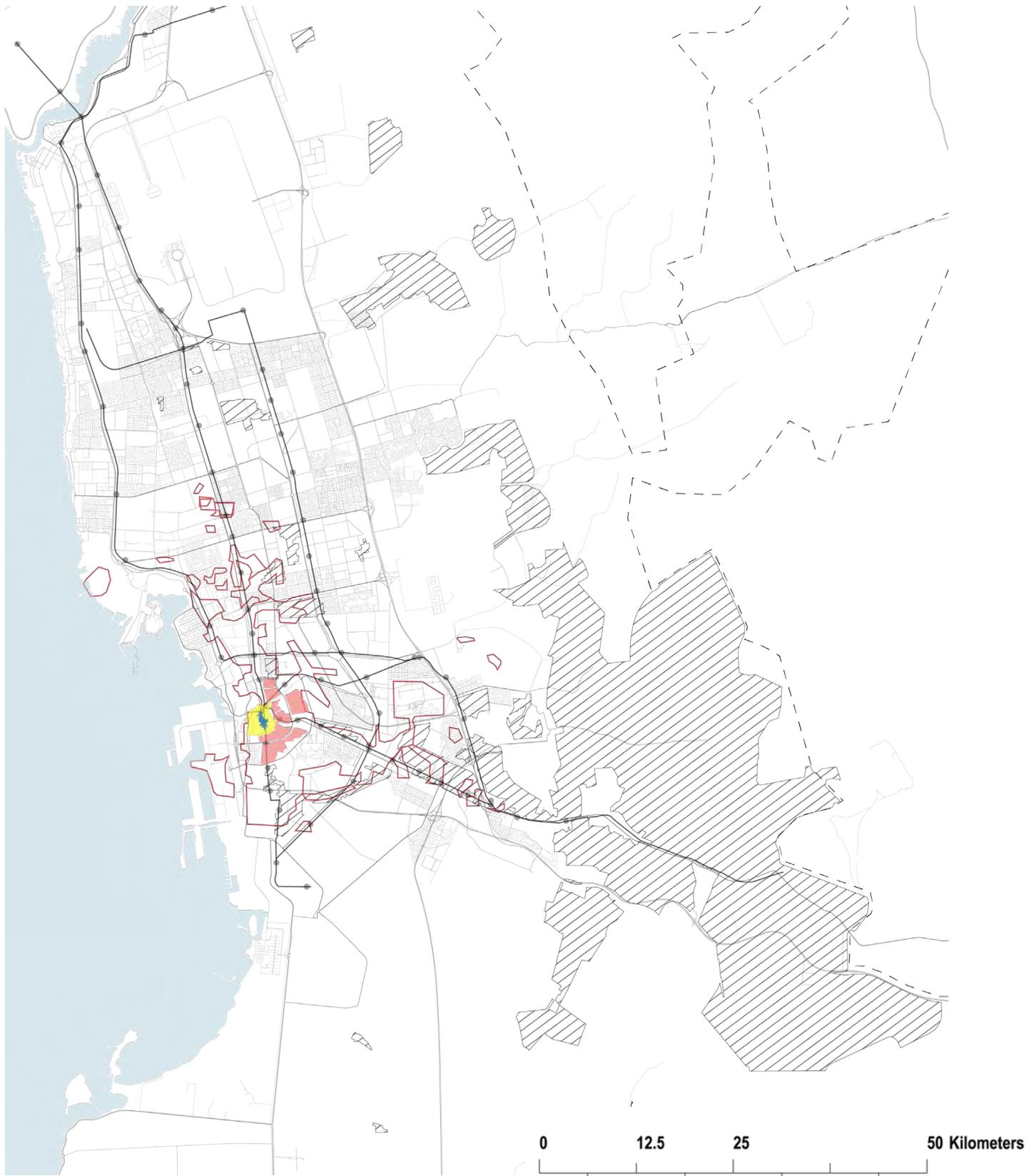
Al Balad - the historic centre of Jeddah



Vernacular areas built before 1973



Unplanned neighborhoods with vernacular urban pattern



- Urban fabric with varnecular patterns
- UNESCO World Heritage Site
- Unplanned settlements
- Historic areas built before 1973
- Areas with historic value
- Proposed metro lines
- Metro stops

Fig. 52. The Historic City: Preserving the historical identity of Jeddah



7.2.3 *The Resilient City: Rebalancing Jeddah's socio-ecological and economic systems*

This strategy aims to promote the synthesised development of urban spatial frameworks that support sustainable management, the sustainable use of natural resources and land, appropriate compactness and density, polycentrism and mixed-uses, and should include urban planning and design instruments. This can be strategised through infill or planned urban extension strategies, as applicable on a case by case criteria, that will be determined as able to trigger economies of scale and agglomeration, strengthen food system planning and enhance resource efficiency, urban resilience, and environmental sustainability.

Currently, the surface water drainage network covers only 40% of the city. This network requires extension to cover the entire built-up area, which can be achieved by utilizing the existing wadi system. Primary wadis, which carry the main water flows toward the city and have the capacity to replenish underground water tables, will require protection from development encroachment, and should be reopened and re-naturalised where possible.

A well-maintained wadi system could provide opportunities for the establishment of new linear parks and public spaces across the city. Currently Jeddah's primary open space is the waterfront. The remainder of green public spaces in the city are disconnected from each other and exist in isolation from the blue network of wadis crossing the city. The acute lack of green spaces requires urgent address, in order to reduce the disconnect and imbalance between the social, ecological, and economic dimensions of Jeddah, and therefore, increase resilience.

Furthermore, the issue of expansion in urban areas towards the steep lands on the eastern perimeter requires address to reduce vulnerability to natural hazards. Informal settlements in this area are vulnerable to landslides and floods due to unsafe construction techniques and insufficient drainage infrastructure. Drastic measures must be taken to prevent new developments over mountainous terrain and steep slopes. Future developments should be designed in harmony with the natural blue-green features to maintain a symphony between infrastructure networks and future visions.



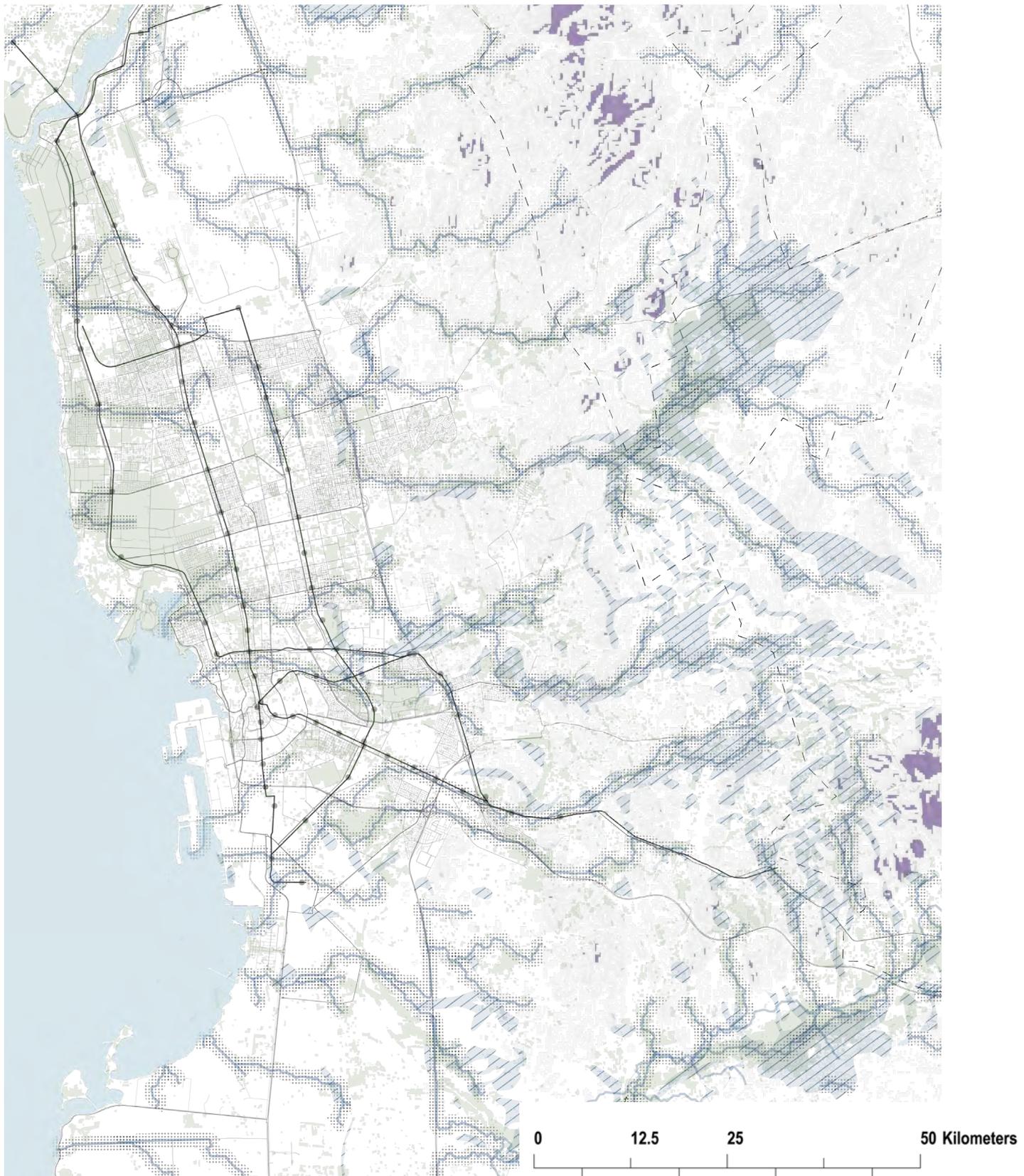
Jeddah's green spaces along the waterfront



Jeddah Corniche



Existing open public spaces across the city



- Agricultural land
- Areas with flood risk
- Metro lines
- Metro stops
- Areas at risk of land-slope (above 30% slope)

Fig. 53. *The Resilient City: Rebalancing Jeddah's socio-ecological and economic systems*

7.3 An Action Plan for Jeddah

Transforming conceptual recommendations into concrete implementation strategies requires detailed systemic actions, that can incrementally trigger the envisaged spatial, economic, and social transformations. As such, an action plan that is rooted in the three strategic recommendations and grounded in a series of systematically scaffolded interventions for Jeddah, serves to guide the development of an integrated and resilient city.

The action plan outlines four systemic actions, developed specifically for Jeddah. Although all the strategic actions target specific interventions, (that can trigger a structural change in Jeddah's development trajectory), there are conceptual differences in the way that they were conceived. The four actions are defined as:

- **ACTION 1: Implement the foreseen public transport system**
- **ACTION 2: Foster densification around main nodes and transport lines (TOD);**
- **ACTION 3: Preserve, upgrade and integrate historical and vernacular areas;**
- **ACTION 4: Relink natural elements to each others and to the city, establishing a well-integrated green public space network.**

Actions 1 and 2 address the need for a system of distributed interventions that address the issue of sprawl and segregation in the city. The implementation of TOD will provide key intermodal hubs and densification along a well considered public transportation network at the metropolitan scale. Simultaneously, action 3 and 4 will focus on micro-scale interventions that will foster socio-ecological rehabilitation through the development of a public space network and heritage preservation. These actions will change and diversify economies at neighbourhood scale, through a timely and specific programme of conservation and restoration in the historical and informal settlements of Jeddah.

The action plan therefore, creates synchronised impact at two scales: the Jeddah Metropolitan Area and the neighbourhood. It supports the retrofitting of existing infrastructure with multiple purposes, rebuilding the relationships between different city users, improving integration of the urban outskirts with the inner city, improving transport and mobility networks, development of heritage preservation programmes for vernacular and historical settlements and expanse of financing and legal instruments that support all of these transformations.



An historical neighbourhood in Jeddah

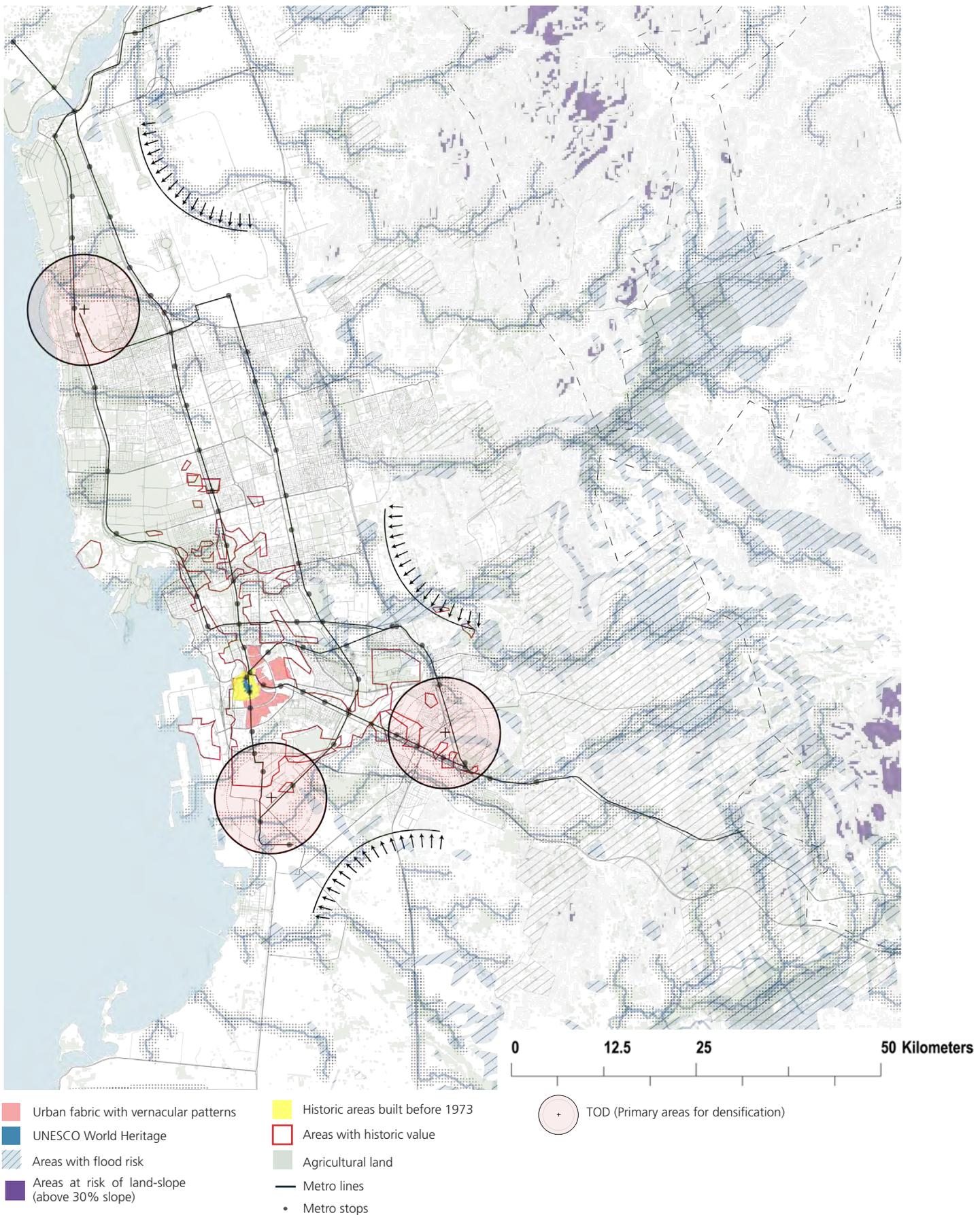


Fig. 54. Strategic recommendations for Jeddah

7.4 Four Systemic Actions for Structural Change

7.4.1 Action 1: Implement the foreseen public transport system

The first action addresses the need to restructure the city starting from its mobility patterns, which represents the first step toward compaction and integration. Action 1 acknowledges and builds on the intermodal public transport system envisaged by the 2015 Jeddah Plan. Increased efficiency of the public transport network will be a necessary condition for promoting higher urban density and a consolidated system of new centralities around the emerging transport nodes. Following this rationale, Action 1 emphasizes the immediate importance of a comprehensive and intermodal public transport system, which, over time, can open up large parcels for transformation into high-density, mixed-use hubs. Action 1 can be summarised in the following steps:

1.1 Implement the public transport network starting with the four metro lines and the Commuter Rail

Based on the catchment and accessibility analysis for the proposed public transportation system, it was confirmed that implementing the four lines of the proposed metro system, beginning with the Express Metro Line, would make significant progress in reshaping the city's mobility patterns. The proposed metro lines, together with the Commuter Rail, would strategically connect important nodes, such as the Al Haramain Train Station, King Abdulaziz International Airport, Jeddah Islamic Port, and the CBD to each other and to the rest of the city. All four metro lines would significantly decrease the pressure on vehicular mobility from these areas to the centre.

1.2 Complement the metro line network with local networks of express bus and BRT lines to establish feeder systems

The metro network should be complemented with BRT Lines, which would connect centres to the Metro and Regional Commuter Rail interchanges. These feeder lines are important for the overall functionality of the public transport network; to support East-West directional movement in the city, and to form connections between parallel metro lines operating in the North-South direction. The alternative public transport links, together with the capillary feeder system, will facilitate the intermodal exchanges, allowing for better integration of the public transport system with disparate neighbourhoods, incrementally reconnecting the city.



Implementation of public transport network starting with the metro lines



Implementation of the commuter rail



Establishing feeder systems by implementing local networks of express bus and BRT lines

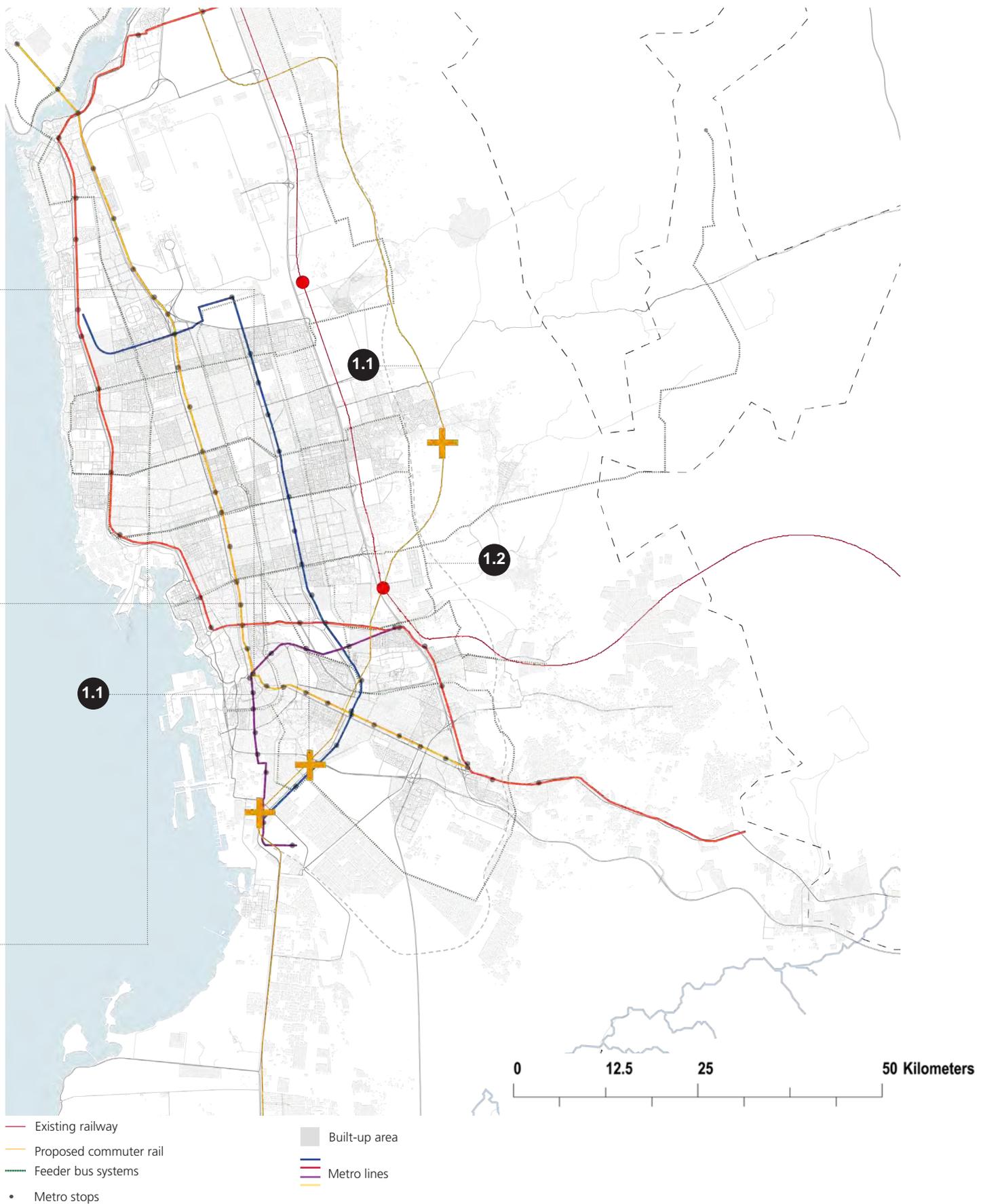


Fig. 55. Action 1: Implement the foreseen public transport system

7.4.2 Action 2: Foster densification around major nodes and transport lines (TOD)

Jeddah's public transport system based on the 2015 Jeddah Plan and Vision 2030, has already entered the implementation phase, and the city will have 3 metro lines by 2020. The Jeddah Plan promotes a TOD strategy that should be implemented around the core metro stations and major interchanges. This strategic intervention would decrease the pressure on the CBDs of Jeddah, and reduce car-dependency for people living on the outskirts of the city. An important contribution to the metro lines should entail the redesign of adjacent street sections to accommodate BRT lines that can provide East-West connections between the North-South metro lines. Following the installation of a public transportation network, the city should promote residential densification in the selected major nodes to define new centres. This can be achieved by incentivising mixed-use development and concentrations of services and facilities around them. The city should start actively promoting TOD development, concentrating incentives on residential densification in the areas with walkable access to public transport. Unplanned settlements of poor infrastructure distribution and low density could be prevented by planning for the accommodation of future population growth within the current urban footprint. As such, Action 2 suggests what areas to prioritise in operationalising a Transport Oriented Development approach to Jeddah's strategic densification:

2.1 Promote mixed-use around the main public transport nodes identified

A hierarchy of dense mixed-use centres should be developed around the public transport network, particularly at interchange points. Introduction of mixed land use must be focused primarily on the above defined centres to enhance the TOD approach. Secondary nodes should be distributed to rebalance access to services, facilities, and jobs across the city. Public facilities such as health, education and social services, will need to be located proximately to these new centres to counteract polarisation and attract population concentration in these new urban nodes.

2.2 Define new urban centres at strategic points along the public transport system to promote densification

The second step focuses on the strategic identification of public transportation nodes to develop as new high-density urban cores. Three strategic densification areas have been identified to pilot this process. The first of these is the waterfront development (corniche) in the North West of the city, where the Metro line I will increase accessibility and connect the area to the central neighbourhoods of the city. The second selected area is located along the Makkah Highway towards the eastern outskirts of the city, serviced by Metro lines I and II. Lastly, the third densification node lies in the south of the historical city centre where Metro Lines III and IV terminate. In these selected nodes, densification process must be promoted simultaneously with the implementation of public transport network. This can be achieved by prompting development on the vacant land within these areas which can be facilitated by the White Lands Act.

2.3 Promote dense and mixed-use development along the entire public transport system (TOD)

Densification should be accelerated around the entire public transport system by utilising the available vacant land. The metro lines and their envisioned future connections with BRT lines should act as a definitive cartography for densification and mixed-use development corridors, providing public services and facilities (educational, healthcare, and commercial areas). Powerful incentives should be developed for promotion of multi-functional land use programs targeting the consolidation of available developable land with particular reference to these areas.



Developing a hierarchy of dense mixed-use centres



Mixed-use development along public transport system



TOD strategy applied around major interchanges

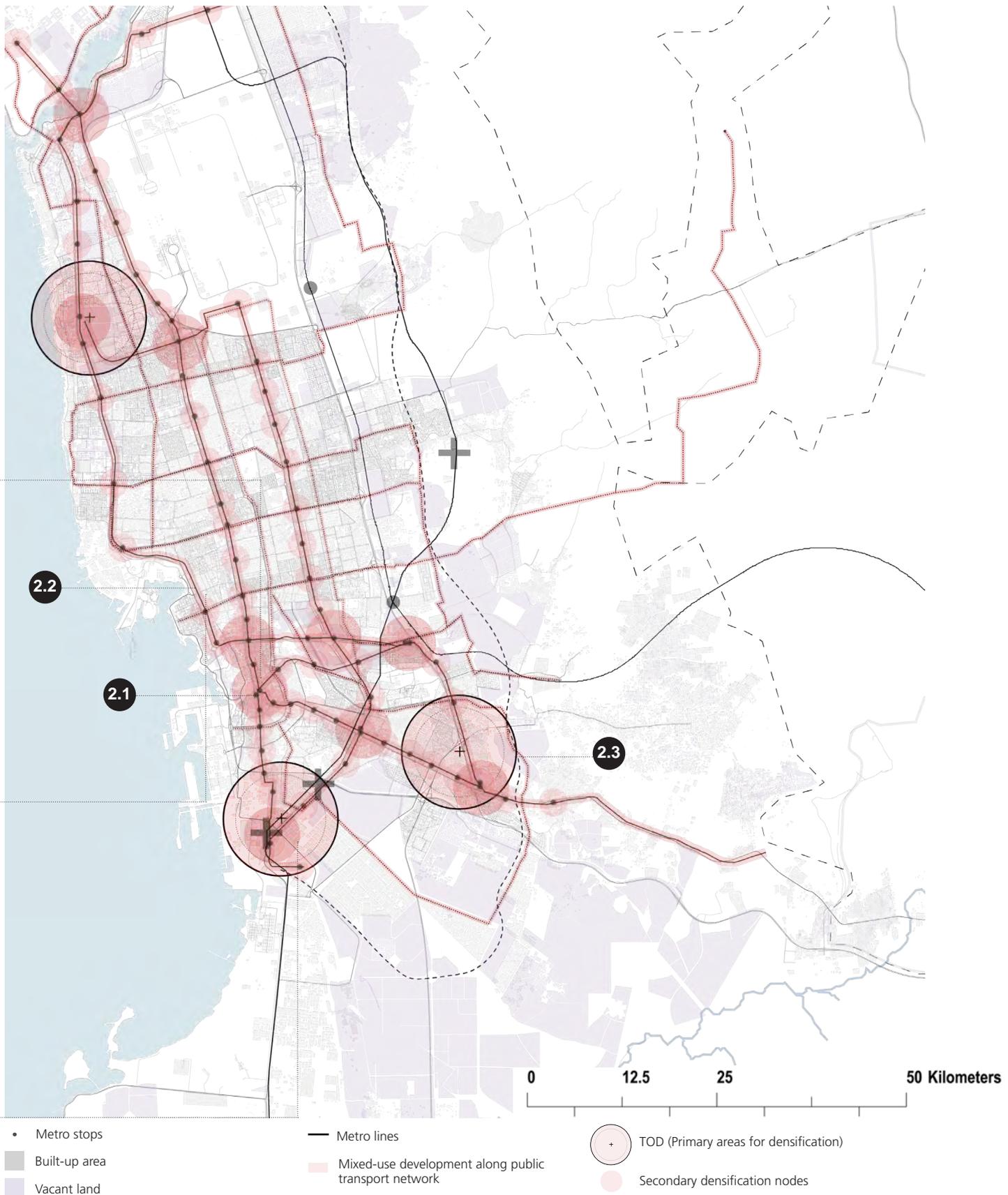


Fig. 56. Action 2: Foster densification around major nodes and transport lines (TOD)

7.4.3 Action 3: Preserve, upgrade and integrate historical / vernacular areas

The rich history of Jeddah that has been reflected in the development of the city through centuries is at risk of disappearing as the city develops and modernises. To mitigate the loss of its history and culture, a comprehensive regulatory system should be set in place to first assess and to subsequently formulate an appropriate strategy to frame the preservation, rehabilitation and upgrading, as well as the integration, and revitalisation of different kinds of neighbourhoods in Jeddah. The rehabilitation of physical historical assets, and a strategy to re-link them to public transportation, facilities and commercial activities would have an impact not only on Jeddah's cultural identity but also on its economic sustainability. The upgrading, integration, and revitalisation of both historic and vernacular areas would generate enormous touristic potential, creating and redistributing economic benefits to a wider population.

3.1 Develop guidelines to protect and preserve historical sites

A system of highly restrictive regulatory controls should be applied to historic sites. This should include not only the UNESCO Heritage Site but also surrounding historical areas where the vernacular urban pattern presents. Identifying and setting boundaries and buffer zones around these historical sites of unique character would facilitate the protection and management of cultural assets. Furthermore, building regulation codes should be reinforced to preserve the peculiarity of vernacular urban fabric and street layouts, as well as to prevent the proximate construction of high-rise buildings in these sites, preventing further disruption to the historic urban patterns. A buffer zone regulating development surrounding the historical areas should be set in place, limiting high-rise development to preserve existing skyline alignment. Simultaneous to the preservation measures, adequate and modernised infrastructure for water distribution, electricity supply, and sanitation measurement, must be provided in the historical zones, to revitalise and integrate these areas to the rest of the city.

3.2 Identify and protect historical assets within the city

Locate and classify the historical and cultural assets for improved maintenance and management across the entire city. These assets may not always be located in protected sites, but can be identified independently throughout the city where vernacular architecture or historical monuments are observed. Guidelines enforcing development boundaries around assets, restriction of modification and reconstruction must be enforced. Preserving and upgrading these historical sites would enshrine the identity of the city in the crossroads of the past and future.

3.3 Link historical sites to create a heritage trail

Create a comprehensive, connected network of all historical areas, heritage sites and points of interest, including Al Balad Heritage Site and the historical fishermen port, which, if appropriately upgraded and connected to the close historical areas, has great value and touristic appeal as testimony to the city's economic history and connection with the Red Sea. This network should be pedestrian-friendly and connected to the other attraction points in the city.

In cases where heritage areas and historical sites are not within walkable/bikeable distance, they should be connected by the public transportation network. This connected network will enable visitors and residents to navigate the city's history with ease. This trail could be extended to include modern cultural activities and points of interest. Additionally, linking the heritage trail with small and disparate public spaces would revitalise the socio-economic vibrancy of the affected neighbourhoods, increasing the quality of life for residents.



Urban fabric with potential historic value



Area with potential historical value, built before 1973



UNESCO World Heritage Site

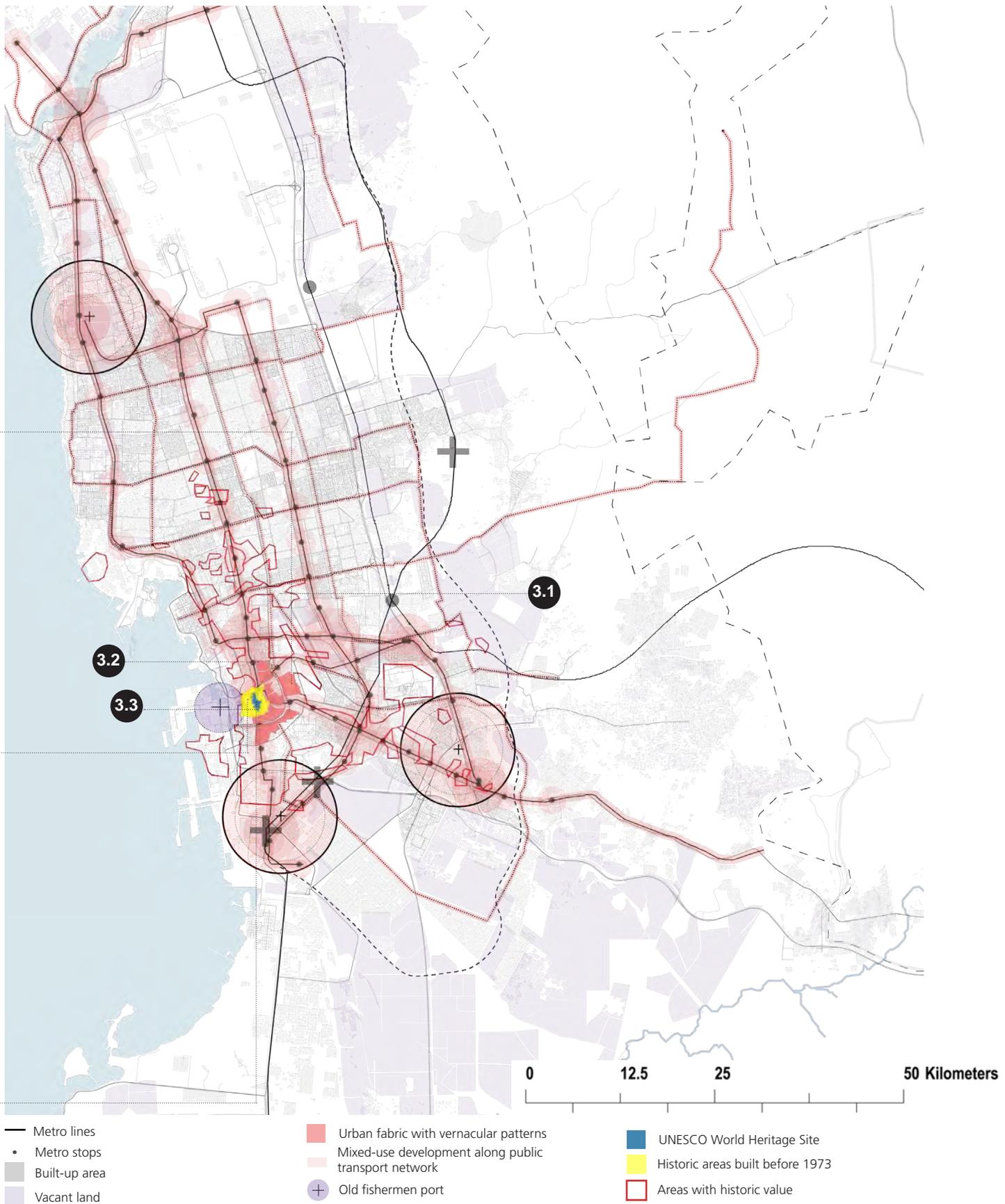


Fig. 57. Action 3: Preserve, upgrade and integrate historical and vernacular areas

7.4.4 Action 4: Relink natural elements through a well-integrated green public space network

The fourth action is broken down into four steps, each of which builds on the previous actions. The focus of Action 4 is to promote the development of urban spatial frameworks that support sustainable management and use of natural resources. This action will trigger economies of scale and agglomeration, urban resilience, and environmental sustainability. Added benefits are connectivity and reduced financial, environmental, and public health costs of inefficient mobility, congestion, air pollution, urban heat island effects, and noise. To address the relationship between the urban structure and its hydrological system, a network of public spaces should be installed where the natural hydrological system or the drainage system overlays with vacant land. This network should be complemented by pedestrian-friendly streetscapes and a planting plan, connecting public spaces and urban life with the system of wadis. The wadis should be considered as a defining attribute in the city's character. The following outlines the four steps of Action 4:

4.1 Establish a natural water-management infrastructure by protecting and integrating the wadi

The existing surface water drainage network must be extended to cover the entire built-up area, by utilizing the existing wadi system. All open drainage channels should be converted to subsurface culverts to prevent health hazards during periods of low flow.

Primary wadis, which carry the largest water flows, should be protected from development encroachment, reopened and re-naturalised where possible. Connection of the wadi network to the sea must be re-established to reduce the flood risk in the vulnerable areas of the city. The system should be utilised for natural water management during the wet season, with potential for alternative recreational uses during the dry season. A revitalised natural hydrological system on the outskirts of the city would enhance the natural setting by defining a development boundary and should include a system of water retention ponds to protect the city from flash floods. These measures should collectively constitute a water sensitive urban design strategy to be studied and implemented on the city scale.

4.2 Re-link the blue and green network along the wadis

The reopened and re-naturalised wadi network should be carefully re-integrated into the urban pattern of Jeddah. The wadi system should be transformed into a multi-functional linear park and serve as open spaces for the residents, improving quality of life. The wadis, if restored to their natural state to a reasonable extent, would boost the economy of Jeddah. The 2015 Jeddah Structural Plan should also be adjusted to integrate the blue and green network with complementary uses. This network should be respected

and preserved from the threat of the urban development plans that may engulf or disrupt the natural ecosystems.

4.3 Establish a network of green public spaces within the city linked to larger ecological systems

A systemic approach is required to establish a green network that would relink urban and territorial ecosystems. The Jeddah Structural Plan aligns itself with this assertion in identifying an integrated open space and green infrastructure network. The municipality will work with public and private partners to ensure the implementation of this network, which aims to increase public open space from 2 m²/p to 18 m²/p. In addition to these measures, efforts must be made to connect the city to its waterfront in areas in both the North and the South, where access is private or industrial. To summarise, an extensive green network, linking public spaces with the wadi network, needs to be established within the city, and linked to the wider territory. Economically, the impact of such a network would ultimately stimulate increased property value through re-functionalization and valorization of abandoned land.

4.4 Complete the green network by greening streetscapes and linking major spaces to the public transport system

A design standards addendum that connects the core green network to the streetscape through natural shading should complement the implementation of the above strategies. Planting trees along major and minor transportation corridors, focusing on shading pedestrian areas, reducing heat island effect, and the evapotranspiration phenomena, will be essential in mitigating the urban microclimate. Use of local species in this measure will both conserve resources and reduce cost. Surface vegetation applied to either ground or wall surfaces will aid the reduction of surface temperatures, provide transpirative cooling and increase permeability.

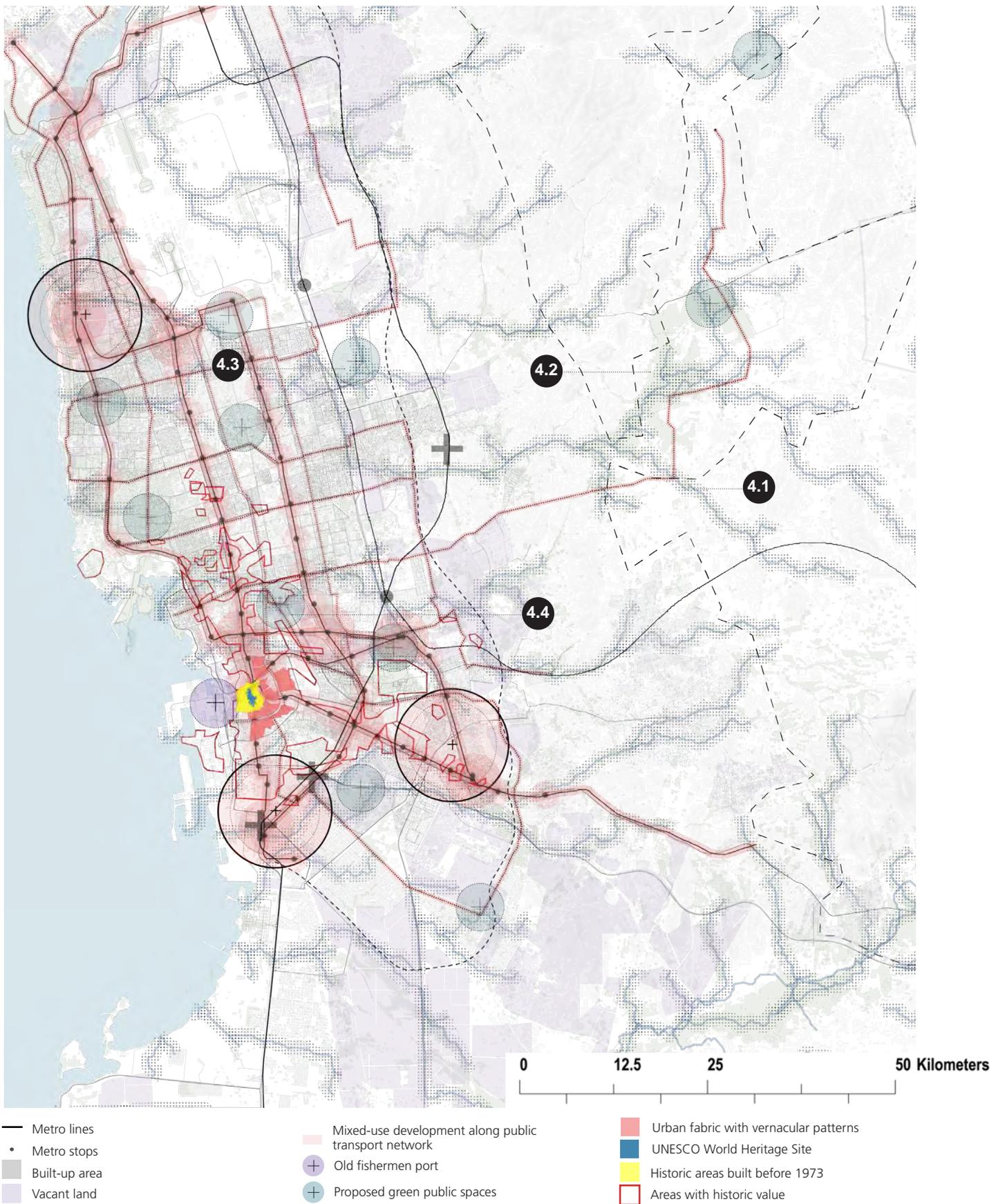


Fig. 58. Action 4: Relink natural elements to each other and to the city, establishing a well-integrated green public space network

FINAL RECOMMENDATIONS: THE THREE-PRONGED APPROACH

7



8.1 Spatial Recommendations

8.1.1 A strategic view for the Makkah Region

Makkah Region has an unbalanced hierarchical system of cities. If rebalanced, this could create the basis for regional growth, as cities that are well serviced, well distributed and of varying dimensions, have the potential to act as drivers for gradually redistributing development from major to smaller urban centres. Though prioritisation of the scattered and marginalized smaller cities in the region is necessary to improve the geographical redistribution of economic activities, this should not happen at the expense of major urban centres in the region, such as Jeddah, Makkah, and Taif, which are driving growth in the region's economy.

These three economically interdependent cities, are currently witnessing development beyond their legislative boundaries, showing potential to form a larger conurbation that could constitute a mega-region. While this expansion is a possible driver for economic growth, if not carefully planned for and managed, it could lead to more uncontrolled sprawl, further regional imbalance and rising inequalities. This means that planning efforts for the cities of Jeddah, Makkah and Taif can no longer ignore these spatial and economic dynamics, but rather should provide appropriate consideration to a future as a mega-region urban corridor.

This consideration should enhance and strengthen connectivity between these three cities. Implementing the suggested train connection between Taif and Makkah will contribute to this and will be strengthened by the opening of the planned airport in Taif, transporting high numbers of pilgrims traveling to Makkah. There is already a strong emphasis on connectivity in the Makkah Region via sea, land and air, with Jeddah providing the primary gateway via the King Abdulaziz Airport and the Al Haramain Railway. The entire Hejaz region is connected through Jeddah before branching into Makkah and Taif, reaching as far as Madinah.

Diversify the economic base in the region

Jeddah is regional hub for advanced economic activity and Makkah as a global religious centre, is the main contributor to the regional and national economy for religious tourism. Taif is the only medium-sized city in the region and is overshadowed by the two more major contributors to national economy, remaining untapped despite considerable growth potential. Taif city shows great potential as a tourism and leisure centre. It is currently the most popular destination for domestic tourism, as it has a milder year-round climate. Highlighting its cultural and non-religious touristic function can strengthen its role within the Makkah Region city system. City systems are considered one of the most important means by which development can be transferred, and there is no doubt that the Makkah Region, in its current condition, suffers from a highly disrupted system of cities.

The King Abdullah Economic City, which is proposed as including a sea port, is being developed north of the city of Jeddah in an effort to boost economic activities in Makkah Region in line with vision 2030. This port is meant to alleviate the current freight load in Jeddah's existing port, which in turn, should contribute to efforts to reduce congestion in the city. When this transition is complete, the shift in functional focus to the new city seaport, will open possibilities for refunctionalising and reactivating the old port and its related facilities. These underutilised and neglected areas could be revived to host more density with mixed land use.

Over the next 20 years, the total population in the Makkah Region will increase to nearly 10,000,000 people. This means that it will be necessary to provide close to 2,500,000 job opportunities, an increase of 1,000,000 from the current requisite. The real challenge for the Regional Development Plan will be focused in the creation of job opportunities in different economic sectors, that can absorb the expected workforce during this period of growth. It is, therefore, necessary to diversify the economic base in the region, through the introduction of new economic activities and expanding existing activities in selective sectors. As an example, regional agriculture and fishing are currently contributing very low job creation in comparison to the national average at 7.71%. This is less than half the national rate of employment in these sectors. There is no doubt that modernisation of the agricultural sector in areas with comparative resource advantage in smaller cities, with particular reference to the regions of Laith, Qundalfa, Jumoom, and Turba, will have a positive impact in sectoral job creation and will encourage settlement and development in these cities.

8.1.2 Towards Jeddah, An Eco-coastal Historic City

The strategic vision for Jeddah's future aims to promote the development of urban spatial frameworks that redistribute appropriate compaction and density around a polycentric constellation of mixed-use hubs. A more compact urban form, structured along public transport networks, will support sustainable management of natural resources and land, urban greening and improved resilience. New policy and regulatory frameworks will guide the preservation of historic areas and enhance Jeddah's unique identity.

The Action Plan provides fundamental principles to structure urban growth and ensure the long term sustainability and competitive success of Jeddah. Both the strategic vision and the Action Plan strengthen three fundamental aspects, previously overlooked in Jeddah's development: unbalanced urban growth, the natural environment, and historic and vernacular

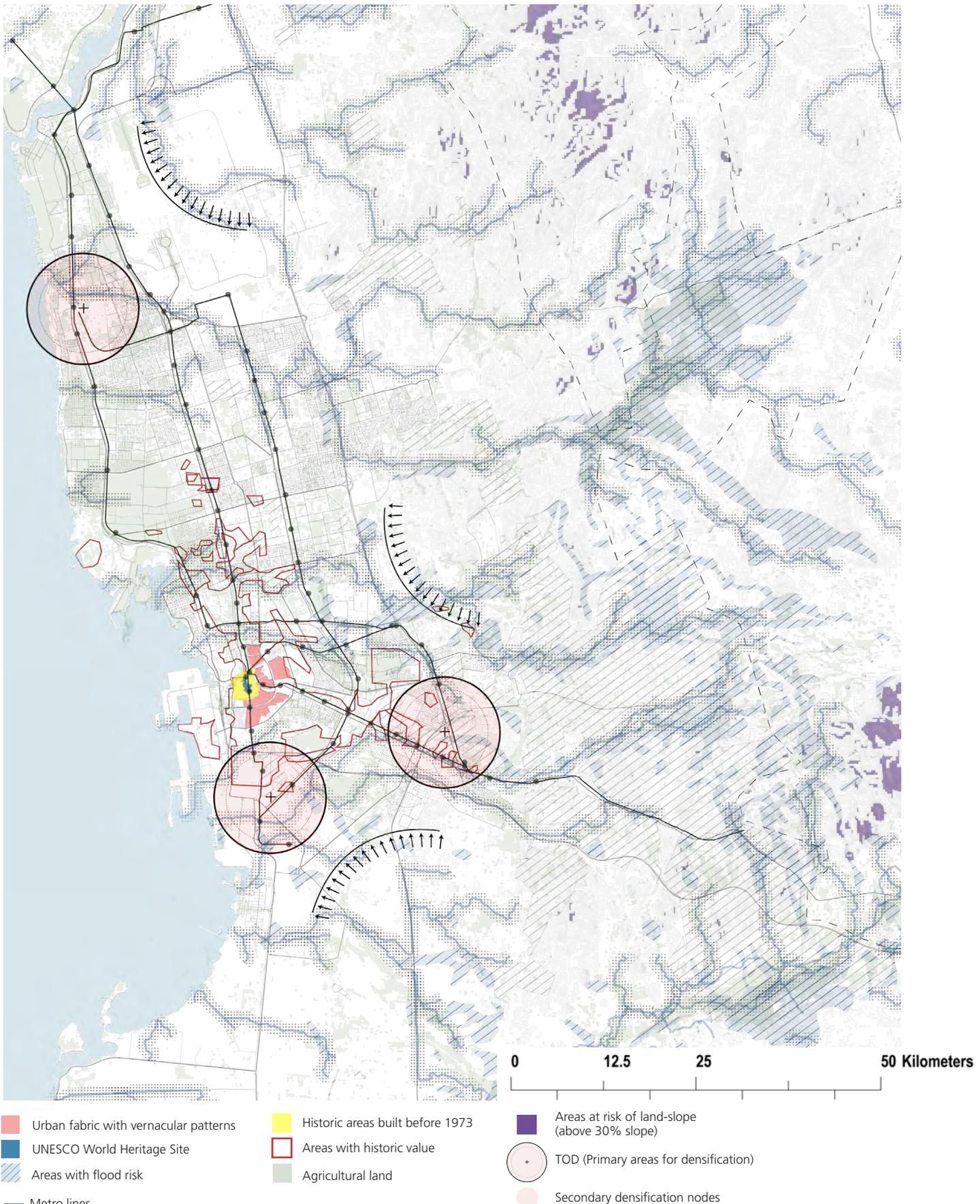


Fig. 59. Action Plan for Jeddah

areas. It translates the strategy into a sequence of systemic actions, which, if implemented, will enable the strategic vision to become a reality, ensuring the city is compact, historically nuanced and resilient.

A well-established public transportation network would support the densification of the urban fabric and increase accessibility and walkability within the revitalised central areas. Mixed-use nodes should be promoted at strategic locations along public transport lines that can boost the local economy and interactions. Alongside densification of existing built-up areas, incremental development of vacant land within the city's footprint should be heavily promoted and most importantly, the expansion of the urban area must be restricted to remain within the established development boundaries.

Historical sites and cultural assets spread across the city must be preserved and upgraded. Creating a network that links historical assets will not only lift touristic appeal but will positively impact the city's economic fortunes and sustainability. A connected heritage trail would reinforce the identity of the city of Jeddah as a bridge between rich history and the modern world. By preserving, upgrading, and revitalising historical and vernacular neighbourhoods, the city will be able to preserve its unique socio-spatial and historical identity, while increasing job opportunities, and distributing tourism-

related benefits across a wider sector of the population. To promote urban resilience and environmental sustainability, water management policies must be introduced, and the wadi system must be protected and integrated into the green network of the city. Vacant land should be utilised to connect the green network, and must be linked to major public spaces within the city. Punctual interventions on public spaces should be promoted, including a planting strategy on streetscapes. By incrementally greening the city, whilst re-establishing a healthy and functioning relationship between the built and the natural environments, Jeddah will be able to enhance and rebalance the ecological, social, and economic dimensions of its fabric, providing a healthy and productive urban environment for its inhabitants.

As such, Jeddah Dynamic Historical City is envisaged as a well-connected and well-balanced network of centralities and neighbourhoods, each with its own identity and accommodating a diversity of overlapping private and public spaces and activities that will shape a healthy and vital urban environment. It supports and completes the indications from the 2015 Jeddah Plan, guiding the progressive formation of an attractive urban environment, serviced by high-quality public transport and pedestrian facilities, supporting integration amongst all parts of the city.



UN-Habitat presentation in Jeddah

8.2 Institutional and Legal Recommendations

In terms of legal reform, Jeddah would benefit from both fiscal and jurisdictional decentralisation to facilitate independent and innovative solutions to urban social problems at the Amanah level. This should entail:

- The transfer of local planning power, authority and function from MoMRA to the Amanah, with provision for independent action without recourse, to effectively address community needs. This is supported by the New Urban Agenda, which specifies that territorial urban design and planning processes should be led by sub-national and local governments, but their implementation will require coordination with all spheres of governments as well as participation of the civil society, the public sector and other relevant stakeholders.
- Fiscal decentralisation, which gives autonomy to the Amanah to source funds to finance development activities. Revenue generation activities in cities may also include taxes and levies. Urban areas should be allowed to collect some form of property taxes to fund development activities. The recent White Lands Act that imposes fees on undeveloped plots in urban areas to tackle land speculation, housing shortage and indiscriminate land development shows that regulatory mechanisms can be leveraged to generate revenue, while fostering an

efficient development framework.

- Opening of avenues for actors, including the private and voluntary sector and the general community, to participate in decisions regarding projects that affect them.

The city of Jeddah would benefit from a quality legislative instrument that supports participatory city-wide slum upgrading. This legal reform process should be undertaken jointly with a strengthened implementation function by the Jeddah Development and Urban Regeneration Company to integrate residents of informal areas in key national plans, policies, mobility infrastructure and other mega-urban development projects.

Consolidation of the legal planning instruments would additionally support development intervention in Jeddah, along with review, update and modernisation of these laws to make them relevant to the current development paradigm. This should entail re-consideration of the lawmaking process to limit the number of actors. The mere existence of the laws in KSA will not guarantee sustainable urban development as they must be functionally effective, i.e. precise in achieving their intended results, clear, consistent and simple to understand. There is a need for a functionally effective urban planning law that, inter alia:



UN-Habitat workshop discussion in Jeddah with stakeholders and ministries

- Introduces incentives/requirements that will enable more compact city growth;
- Defines clear institutional roles and responsibilities at each level;
- Enforces linkage between all levels of plans (national-regional-local);
- Provides effective coordination and monitoring mechanisms;
- Increases meaningful public participation and engagement in planning.

The legal framework also needs to enshrine an acceptable mode of public participation in public decision-making to foster equality and inclusion. The consolidation of urban legislation would also lend legitimacy to the plans that Jeddah relies on.

Revising the Urban Growth Boundary Law to include clear criteria on how it is set would enhance technical and vertical accountability. The Law also needs to place more emphasis on the Development Protection Boundary as a no-development zone, not only to prevent haphazard development but also to prevent private interests from taking advantage of laxity in the legal text. These initiatives will strengthen policy formulation designed to make the city more sustainable, compact and dense. Primarily, a post-legislative scrutiny of the urban growth boundary law should be undertaken to assess whether it has met its policy objectives. This could, in turn, inform the legal reform process as well as planning policy options.

8.3 Financial Recommendations

In 2015, the KSA began implementing reforms aimed at creating sustainable local public finance. The central government continues to promote strategies to increase own-source revenue at the local level, through improved tax administration and economic diversification.

Jeddah’s public finance priorities are closely aligned with Saudi Arabia’s larger national development goals, which include supporting SMEs in key sectors such as logistics, tourism, trade, and manufacturing. Therefore, expanding the public sector’s capacity to finance essential local infrastructure and projects supporting development in these areas is imperative for Jeddah.

International experience with enhancing own-source revenue through a variety of tax mechanisms that harness local financial resources for public use are promising.⁴⁰ Although Jeddah has been implementing new property taxes such as the white land tax, exploring other tax instruments could generate a diverse income stream portfolio.⁴¹

Introducing land-based taxation establishes reliable own-source revenue for municipal governments. Moreover, the benefits of public development projects (e.g., public transportation), are

often multiplied by the positive externalities and value created by investing in sustainable and accessible urban spaces.⁴² UN-Habitat suggests that Jeddah makes use of land-based tax mechanisms (i.e., betterment levies) in public projects, including the new metro line that is under consideration.⁴³

Public infrastructures, such as transportation systems can spur adjacent residential and commercial development, enhance mixed land use and create jobs, (see figure 60). Local development driven by public projects can also result in increased land value and indirectly engender a number of other community benefits⁴⁴ (see figure 61).



Source: United Nations Human Settlements Programme (2018)

Fig. 60. Components of mixed land use

THE IMPACT OF INFRASTRUCTURE DEVELOPMENT ON LAND VALUES	
CASE EXAMPLES	KEY FINDINGS
London, England	The Crossrail Property Impact Study (2012) estimated that capital values in the areas around central London Crossrail stations would rise by 35% for residential properties and 27.5% for office properties; outperforming the baseline projections.
Dubai, United Arab Emirates	The impact of public transportation on property values for dwellings and commercial properties is about 13% and 76%, respectively, within an area of 1.5 kilometres
Dubai, United Arab Emirates	Urban development that included retail facilities resulted in a price premium of 15 – 20%
Cairo, Egypt	Schools increased residential land prices by approximately 13% Walkability within a residential community increases home values by up to 9%
Bogotá, Colombia	Research suggests that for every additional 5 minutes of walking time to a public transportation station, rental prices fell by 6.8 - 9.3%

Source: GVA (2018); Mohammad et al. (2017); Colliers International (2017); Rodríguez and Targa (2004)

Fig. 61. The impact of infrastructure development on land value



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Public spaces along Jeddah Corniche

While betterment levies are well suited for infrastructure projects, fiscal instruments such as parking fees and congestion fees are useful tools in the process of reducing vehicle dependency and increasing pedestrian traffic, particularly in commercial and leisure areas.⁴⁵

This is strategic for Jeddah and its plan to implement sustainable urban mobility system. During this progression, a set of fees, can support Government to lessen the massive vehicle dependency, increase use of public transportation and consequently, the improve profitability for financial contribution from the private sector in delivering public services, as recommended by the NTP.⁴⁶

In Jeddah, the private sector can meet a variety of needs through (1) investment in public infrastructures and services, (2) enhanced local revenue, (3) reduction in municipal dependence on intergovernmental transfers, and (4) economic stimulus for mixed land use.

Several finance tools are available to local governments interested in expanding own-source revenue. Municipal governments can maximise the benefits of these instruments by:

- Coordinating and collaborating with different levels of government to connect national strategies to local priorities, for example, establishing a local liaison office,

or a local PPP unit linked to the National Centre for Privatisation in charge of proposing, implementing, and monitoring PPP projects,

- Investing in capacity building and improving tax administration,⁴⁷
- Tailoring fiscal instruments according to local needs, (e.g., fiscal cadaster in Bogotá, Colombia).⁴⁸

Lastly, coordination among planning, legal/regulatory frameworks, and local finance is crucial to create the necessary local conditions for sustainable and equitable development, as outlined in the New Urban Agenda.⁴⁹

CASE STUDIES AND BEST PRACTICES

WASTE MANAGEMENT

In the Tamil Nadu State of India, a waste management project proposed the central government (35%) and the state government (15%) to share 50% of the total project costs. A private entity (via a PPP) would provide the remaining 50% of project funding. The private concessionaire would be responsible for planning, designing, building, financing, operating, and maintaining the municipal solid waste management facilities for the concession period. Land would be provided by the municipality through an annual lease, as specified by the Government of Tamil Nadu.

PARKING FEES

Chicago leased 34,500 curbside parking metres to the bank Morgan Stanley for 75 years, trading metre revenues for an upfront payment of nearly USD \$1.16 billion. This type of PPP contract includes a fixed schedule of metre rate increases, which raised rates 2 to 4-fold by 2013. As a result, Chicago had the highest curbside metre rates in the United States. Metres were netting USD \$20 million annually, while Morgan Stanley managed pricing and maintenance of the metres.

CONGESTION FEES

In 2007, Stockholm introduced a cordon pricing-based scheme to reduce congestion, local pollution, and generate local revenue. Following the introduction of the cordon, traffic decreased by% in the first year, in addition to generating € 59 million annually. In Singapore, the implementation of an Area Licensing System (ALS) reduced traffic from 12,400 vehicles in May 1995 to 7,300 vehicles in August 1995 during restricted hours. Moreover, revenue from the sale of area licenses amounted to US\$ 47 million, while capital costs were US \$ 6.6 million in 1975, with an additional US \$17 million from ALS revisions in 1989.

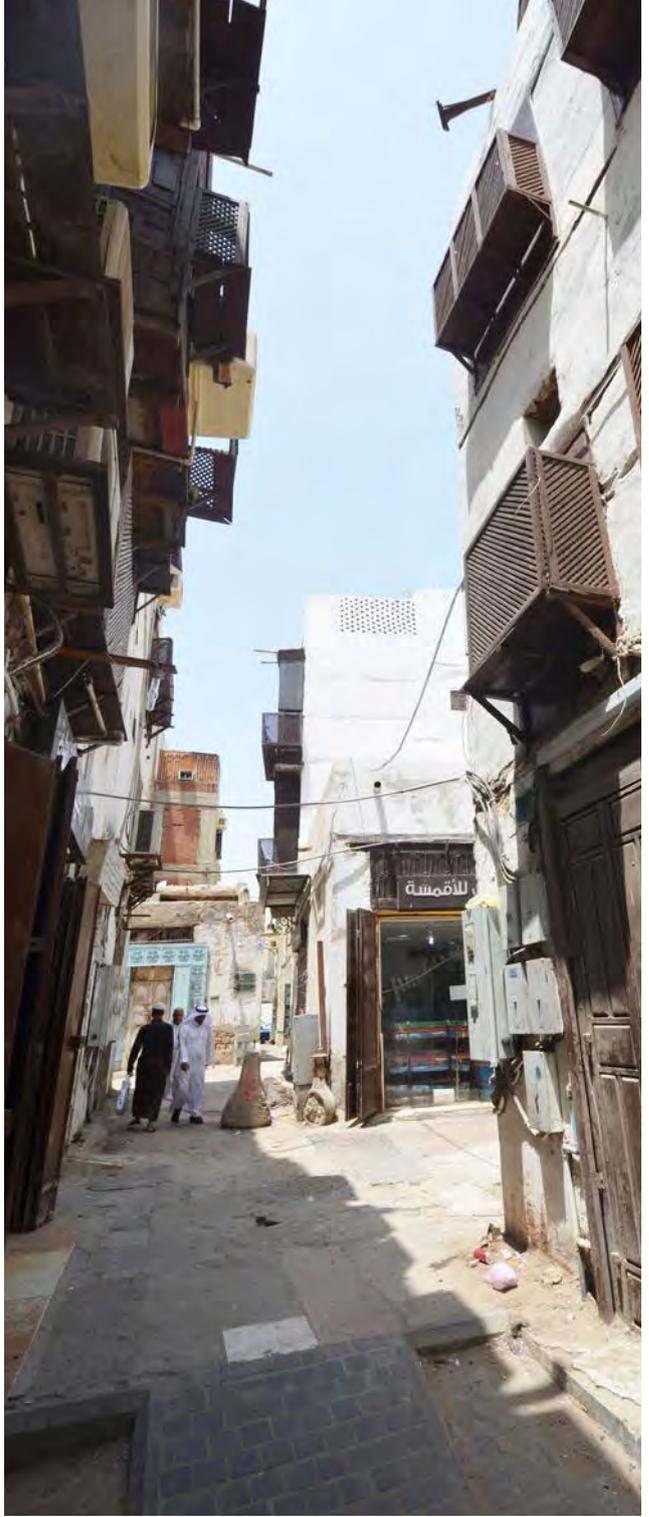
Source: Ernst and Young Pvt Ltd., Ministry of Urban Development of the Government of India, & the Confederation of Indian Industry. *Compendium on public private partnerships in urban Infrastructure: case studies.* (2017). World Bank. Washington, DC.; Weinberger, R., Kaehny, J., & Rugo, M. (2010). *U.S. parking policies: an overview of management strategies.* Institute for Transportation and Development Policy. New York, NY.; Croci, E. (2016). *The Canadian Council for Public-Private Partnerships, & PPP Canada.* (2011). *Public private partnerships: a guide for municipalities.* The Canadian Council for Public-Private Partnerships. Canada.



An alley located in the historical area of Jeddah

8

ANNEX



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9.3 Notes and References

- 1 Makkah Region Economic Report, 1434/1435 - 2014, SAGIA, 2014
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- 3 Taif Development Plan final report - Prepared by AECOM for Taif Municipality and Consortia - Dec. 2012
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- 10 Royal Decree No M/4 dated 24 November 2015 (the "Law") and Council of Ministers Decision No. 377 dated 13 June 2016 (the "Regulations").
- 11 Jeddah workshop, April 2018
- 12 Royal Decree of 1975.
- 13 See Royal Decree No. (1663) of 1976.
- 14 The other big four regional capitals (Riyadh, Jeddah, Madinah and Makkah) are also 1st Class Amanahs.
- 15 A line-item budget lists, in vertical columns, each of the city's revenue sources and each of the types of items such as capital outlays, contractual services, personal services etc. the city will purchase during fiscal year.
- 16 Chapter 5 of the State of Saudi Cities Report, "Managing Urban Transformation in Saudi Arabia - The Role of Urban Governance (2018)" pg. 16.
- 17 *ibid.*
- 18 See Article 5 of the Law of Regions to Royal Order No. A/92 (1993).
- 19 It consists of a) the Prince/Governor of the Region as president; b) Deputy Governor of the region as the vice president; c) Deputy Mayor of the Emirate/AMARAH; d) Heads of government authorities in the Region who are determined pursuant to a decision issued by the Prime Minister according to the directives of the Minister of Interior; and e) Ten citizens who are scholars, experts and specialists and are appointed by order of the Prime Minister based on the nomination of the Prince of the Region and the approval of the Minister of the Interior, for a renewable four year term.
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- 21 Makkah Emirate, 2018, The objectives of the Integration Development Centre <http://idc.makkah.gov.sa/ar/page/show/centreobjectives> accessed 05 July 2018.
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- 28 King Abdullah Economic City is one of the most ambitious development projects in Saudi Arabia. The area of the City is more than 100 million square metres, including the Sea Port, Industrial Zone, Central Business District, Educational Zone, Resort District, and Residential Communities. Saudi Arabian General Investment Authority. (2014). Makkah Region Economic Report 2014. The Kingdom of Saudi Arabia.
- 29 The number of business establishment in Jeddah represents the 13 percent of the Kingdom. General Organization for Social Insurance (GOSI). (2016).
- 30 Saudi Arabian General Investment Authority. (2014). Makkah Region Economic Report 2014. The Kingdom of Saudi Arabia.
- 31 Education is a priority input for local economic development and was an important topic discussed during the Rapid Planning Studio workshop held in Makkah (March 2018).
- 32 Each of the 13 regions is divided into governorates and the region capital. The capital of the region is governed by an Amanah (municipality), which is headed by a mayor.
- 33 In 2015, rental of land and advertising banners accounted for 62 percent of Jeddah's own-source revenue. Jeddah Amanah, The Kingdom of Saudi Arabia.
- 34 Approved 2016 Budget for Jeddah (Amanah), Ministry of Finance, The Kingdom of Saudi Arabia.
- 35 Approved 2016 Budget for Amanahs, Ministry of Finance, The Kingdom of Saudi Arabia.
- 36 NTP goal is to increase own-source revenue to 40 percent of municipal budgets by 2020. In 2016, intergovernmental transfers comprised 64 percent of the total budget for the Amanah of Jeddah. Approved 2016 Budget for Jeddah (Amanah), Ministry of Finance, The Kingdom of Saudi Arabia.
- 37 Jeddah Municipality, 2013.
- 38 Definition from UNDP/UNESCO, Quito Colloquium, 1977.
- 39 David R. Godschalk, 2003, "Urban Hazard Mitigation: Creating Resilient Cities", *Natural Hazards Review*, Vol. 4, Issue 3 .
- 40 Potential revenue contribution through immovable property taxation is 2.1 percent of GDP in high-income countries, while in middle-income countries it contributes an additional 0.6 percent to GDP. Norregaard, J. (2013). Taxing immovable property revenue and implementation challenges. (No. 13-129). International Monetary Fund. Washington, DC.; Walters, L. (2016). Leveraging land: land-based finance for local governments. United Nations Human Settlements Programme. Nairobi, Kenya.
- 41 Under the new law approved in 2015, owners of empty plots of urban land designated for residential or commercial use in towns and cities will have to pay an annual tax of 2.5 percent of land value. The land tax applies to a plot size equal to or greater than 10,000 square metres. It has been adopted in the cities of Riyadh, Jeddah and Dammam; United Nations Human Settlements Programme. (2016). Finance for City Leaders Handbook, Nairobi, Kenya: United Nations Human Settlements Programme.
- 42 UN-Habitat (2016). Leveraging land: land-based finance for local governments. United Nations Human Settlements Programme. Nairobi, Kenya.
- 43 This approach is based on the idea that individuals, businesses and landowners in the area benefits from government or private investments in high valued infrastructure, such as roads, railway, industrial infrastructures, or public services, like schools and hospitals. Landowners and beneficiaries of a specific area intervened by an infrastructure investment, can see an overall long-term land value gain of their properties, even after having paid the levy. United Nations Human Settlements Programme. (2016). Finance for City Leaders Handbook, Nairobi, Kenya: United Nations Human Settlements Programme.
- 44 Colliers International. (2017). The Impact of Social Infrastructure on Mixed-use Developments; Rodriguez, D.A., & Targa, F. (2004). Value of Accessibility to Bogotá's Bus Rapid Transit System. *Transport Reviews* 24(5), 587-610.
- 45 Favourable economic trend and cultural factors have encouraged the growth of car market and, in general car ownership, which accounted for 120 cars per thousand persons in 1980 and 299 cars per thousand persons in 2006. Al-Hathloul, S. & Mughal, M. (1991). Jeddah. *Cities*, 8 (4), 267–273; Aljoufie, M., et al. (2012). Spatial–temporal analysis of urban growth and transportation in Jeddah City, Saudi Arabia. *Cities*, 31, 57–68.

- 46 Public and Private Partnership (PPP) is effective financing tools that support urban productivity. In PPPs, the private sector can provide the public sector with much-needed expertise in the provision of high-quality public goods and services.
- 47 Walters, L. (2016). Leveraging land: land-based finance for local governments. United Nations Human Settlements Programme. Nairobi, Kenya.
- 48 Ruiz, F., & Vallejo, G. (2010). Using land registration as a tool to generate municipal revenue: lessons from Bogota. World Bank, Washington, DC.
- 49 United Nations. (2017). New Urban Agenda. United Nations Human Settlements Programme, Nairobi, Kenya. Retrieved from <http://habitat3.org/the-new-urban-agenda/>

