

Urbanization trends and urban resilience in the Arab region

5.



A. Introduction

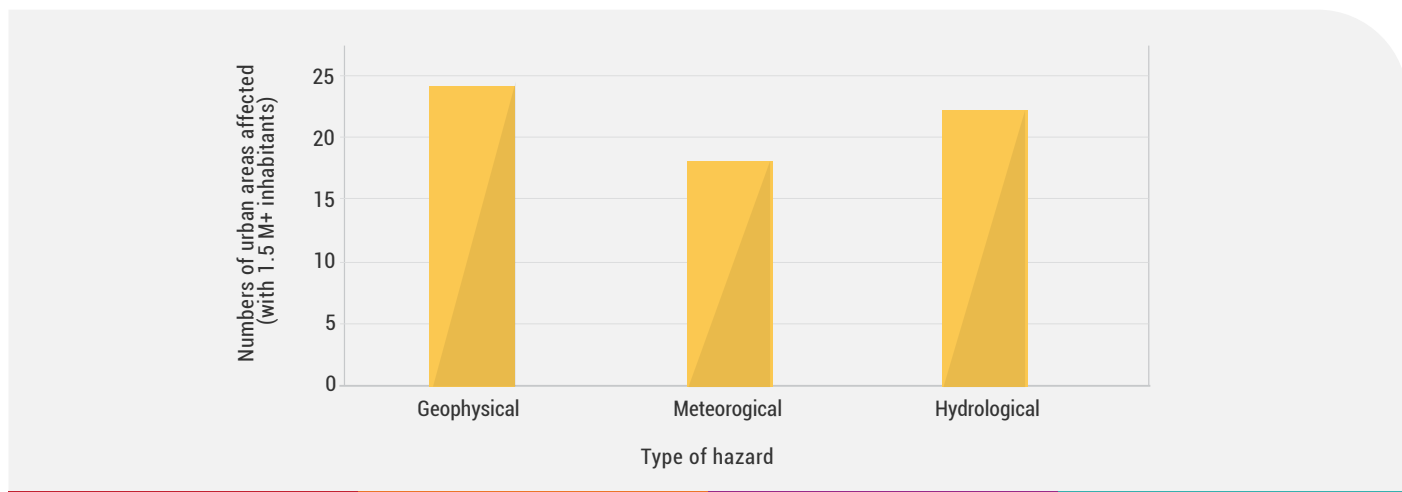
This chapter discusses the drivers of urbanization and the growing risks and vulnerabilities associated with the pace of urbanization and associated demands on infrastructure. Urbanization is reviewed from a DRR, climate change, sustainable development and urban resilience perspective. The extent to which cities in the region integrate DRR in their local urban development plans is considered, and the role of resilient urban infrastructure in DRR discussed.

B. Urbanization trends and drivers and their interaction with other disaster risk drivers

Cities and urban areas in the region are faced with unprecedented rates of population growth, concentration of socioeconomic activities and growing rates of environmental hazards and social problems. Arab cities provide an array of potential advantages for improving living conditions and access to job opportunities and services but they are

increasingly exposed to a wide range of risks triggered by natural and human-made disasters (figure 5.1). The region's population has grown exponentially over the past 40 years, according to the revised 2019 World Population Prospects by the United Nations Department of Economic and Social Affairs (UN DESA). The total population was 165 million in 1980 and projections show that it had reached 428 million in 2020.³⁷² By 2050, the number of people is expected to rise to 676 million,³⁷³ with 80 per cent of them projected to live in cities.³⁷⁴

Figure 5.1 Urban areas with populations exceeding 1.5 million exposed to hazards



Source: UN DESA, 2018.

The definition of what constitutes an urban area is not unified across the region. Many countries define cities in terms of their population threshold through statistical data coupled with their economic base and administrative significance in a national context. Cities are also classified in terms of the concentration of utilities, infrastructure, and goods and services. In Egypt, for example, the definition of urban areas is purely administrative, while Bahrain, Jordan, Kuwait, Lebanon, Mauritania, Qatar, Saudi Arabia, Somalia, the Syrian Arab Republic and Tunisia define them according to the administrative area and population size. In Algeria, the definition is based on population size, prevalence of non-agricultural activities, infrastructure and services. In the Sudan, it is based on population size, administrative area and localities of commercial importance.³⁷⁵

The region is characterized by significant urban growth in its major cities over the past few decades, including in Algiers, Amman, Baghdad, Cairo, Damascus, Jeddah and Riyadh. Many governments, in Egypt and Morocco, for example, have invested in new cities to absorb the increasing population and decongest overcrowded urban areas. Several countries have adopted national urban policies in coordination with multiple actors to guide future growth and spatial urban development, and develop a long-term vision for sustainable urbanization.

1. Urbanization rates

Generally, over the next few decades the region will continue to witness a major and rapid increase in urbanization. According to the United Nations Population Division, just over 58 per cent of the population lived in urban areas in 2016,³⁷⁶ with this proportion expected to reach 80 per cent by 2050,³⁷⁷ bringing new opportunities and challenges, including sustaining inclusive, resilient and safe settlements. The rapid pace of urbanization is underpinned by several factors, including continued population growth, economic transformation, increased encroachment on agricultural land, and rural-urban and international migration. There is a correlation between rapid – and often uncontrolled – urban growth and the increased exposure to vulnerabilities and urban risks, especially for the poor.

372 UN DESA, 2018.

373 AFED, 2017.

374 UNDP, Bahrain Center for Strategic and International Studies and Energy and UN-Habitat, 2020.

375 ILO, 2018b.

376 UN DESA, 2018.

377 UNDP, Bahrain Center for Strategic and International Studies and Energy and UN-Habitat, 2020.

2. Urban informal settlement rates

The spread of informal settlements has become a clear manifestation of inequalities in cities. Informal settlements are characterized by substandard physical structures, often in hazardous or unsafe locations in central areas, or on the outskirts of urban areas and lacking access to basic urban services, or in areas of unplanned urban expansion. The urban poor and vulnerable groups frequently suffer from compounded deprivation as they settle on land unsuitable for development, leading to tenure insecurity and enhanced vulnerability to eviction. The vulnerability of people living in informal settlements is associated with several factors, including socioeconomic inequality and marginalization, urban poverty, poor building standards, location in unsafe areas, exposure to environmental hazards, vulnerability to climatic shocks and stresses, and limited access to basic services.³⁷⁸ Moreover, a large number of internally displaced persons find refuge in informal settlements in urban areas as an alternative to unaffordable formal housing.

The spread and growth rate of informal settlements varies across the region and the definition of informality is not standardized. For example, in large urban agglomerations such as the Greater Cairo area, informal areas in 2009 accounted for 65 per cent of the total urban area; in Jeddah, 35 per cent of the total population resided in informal settlements.³⁷⁹ In Iraq, the proliferation of informal settlements is a relatively recent phenomenon, emerging after the 2003 Iraq war and increasing dramatically during the period 2013–2016. This was mainly as a result of the large influx of internally displaced persons, triggered by widespread security issues and the lack of affordable serviced land in urban areas. The population living in informal settlements in Iraq accounted for 12.9 per cent of the total population in 2017.³⁸⁰ In Sana'a, Yemen, 35 informal areas were established in the 1990s, which by 2008 were home to 16.5 to 20.5 per cent of the city's total population.³⁸¹ Following the Syrian crisis, the number of people in informal settlements in Lebanon has increased enormously; for example, in the Bekaa governorate in 2018, some 197,000 inhabitants were living in 34,550 tents in overcrowded conditions.³⁸²

Poor living conditions and limited access to basic services and utilities continue to affect the well-being and health of those in informal settlements. The outbreak of COVID-19 in 2020 highlighted the entrenched inequalities in the region, exposing the vulnerability of dwellers to compound health risks. Informal areas are largely overcrowded and characterized by high population densities and poor access to adequate water and sanitation services. These challenges have made physical distancing impossible in many cases and accelerated the virus spread. Further, irregular incomes and unstable livelihoods, in tandem with the absence of social safety nets, have worsened the living conditions of many people amid lockdown policies.³⁸³

3. Interaction of rapid urbanization with other urban disaster risk drivers

a. Poverty as an urban disaster risk driver

Across the region, some 18 per cent of the population lives below national poverty lines, with 38.2 million people experiencing acute poverty.³⁸⁴

There are wide disparities in the poverty rate across the GCC countries, and alarmingly high rates in LDCs. In 2016, a survey in 10 countries showed the number of people living in poverty was 116.1 million, or 40.6 per cent of the total population.³⁸⁵ The percentage of people living in urban areas under the designated national poverty line varies in cities across the region; for example, in Jordan, 57 per cent of citizens living below the national poverty line are concentrated in Amman, Irbid and Zarqa.³⁸⁶

b. Environmental degradation as an urban disaster risk driver

The connection between rapid urbanization rates in the Arab region and environmental degradation is clear, particularly with regards to biodiversity loss, water and air pollution, desertification, water scarcity and coastal erosion. Inadequate

378 UN-Habitat, 2020.

379 United Nations Human Settlements Programme, 2017b.

380 UN-Habitat, 2020.

381 Yemen, Government of Yemen, 2016.

382 United Nations Resident and Humanitarian Coordinator for Lebanon and UNHCR, 2018.

383 Wahba and others, 2020.

384 Acute poverty is defined as severe deprivation, and measured through indicators on education, health and living conditions, see UNESCWA, 2017b.

385 The 10 countries surveyed were Algeria, Comoros, Egypt, Iraq, Jordan, Morocco, Mauritania, the Sudan, Tunisia and Yemen, see UNESCWA, 2017b.

386 UN-Habitat, 2012.

management of solid waste and improper waste disposal contribute to environmental degradation in addition to increasing exposure and vulnerability to health risks. For example, Bahrain is one of the highest per capita municipal solid waste generators in the world, with an estimated 1,400 tonnes of waste generated every day.³⁸⁷ The population increase and limited land available for disposal sites has made solid waste management a highly problematic challenge for decision makers and municipalities.

c. Weak urban governance as a disaster risk driver

Good urban governance is characterized by decentralization, sustainability, equity and participation. Limited coordination between central and local governments and urban development institutions in the region has resulted in a lack of effective urban planning and governance. The situation is compounded by fragmented and complex legal and institutional structures that hinder inclusive, sustainable urban growth in Arab cities. Further, urban governance remains highly centralized. It is often the urban poor who are disproportionately vulnerable to disasters because of their physical location and poor housing. This is compounded by their limited capacity and necessary resources to prepare, cope with and recover from disasters.

4. Rural-urban migration and climate change

Rural-urban migration is a main driver of urbanization in the Arab region, fed by multiple so-called push and pull factors.³⁸⁸ These include discrepancies in development between rural and urban areas, economic development through investment in urban activities and industries, and the livelihood opportunities offered by cities. The absence of efficient rural development policies, endemic water shortages, and intensifying natural resource constraints and droughts continue to push many rural residents to abandon agriculture-based livelihoods. As urban-rural disparities persist, large numbers of rural people, especially the young, move to large and medium-sized cities seeking a better quality of life, including greater access to employment opportunities and better services.

Migration to cities is also a response to environmental issues. Climate change has severely affected rural livelihoods, exacerbating rates of land degradation and water scarcity and weakening agricultural productivity and food security. This is highlighted in the previous chapter in the case of the Syrian Arab Republic that suffered prolonged drought from 2006 to 2010, leading to the large-scale migration of more than 200,000 people from rural areas to cities.³⁸⁹ Moreover, the Arab region is vulnerable to sea level rise, which will have implications for major coastal cities already experiencing rural migration, including Alexandria, Algiers and Tunis, and some 43 port cities.³⁹⁰

Somalia is at risk from several natural hazards and climate change challenges, including drought and flooding. The Sima drought in 2016 and 2017 resulted in massive displacement, causing almost 1 million people to move from their homes.³⁹¹ Drought impact is exacerbated by violence and conflict, with internal displacement acting as a driver of rapid and unplanned urbanization. About 80 per cent of Somalia's 2.6 million internally displaced persons live in precarious conditions in urban and peri-urban settlements and camps. Some 642,000 new displacements were recorded between January and July 2018, with flooding the primary reason in 43 per cent of cases, followed by drought (29 per cent) and conflict (26 per cent).³⁹² In this regard, climate change is a significant characteristic inducing rural-urban migration, increasing the proliferation of informal settlements in cities and in many instances acting as both disaster risk driver and conflict driver.

5. Conflict, internal displacement and environmental hazards

Multifaceted humanitarian crises, conflict and political turmoil in several Arab countries have led to large-scale displacement of people within and across borders. According to the Internal Displacement Monitoring Centre (IDMC), there were 15 million internally displaced persons in the region in 2017 (calculated for the period 2012–2017), 37 per cent of the world total, and mainly in Egypt, Iraq, Lebanon, Libya, Somalia, the State of Palestine, the Sudan, the Syrian

387 Hoornweg and Bhada-Tata, 2012.

388 According to the OECD, the push represents the state of things at home, such as the strength of the economy; the pull is the situation in a migrant's target country, see OECD, 2009.

389 UNDP, 2018a.

390 UNDP, 2018b.

391 Figure includes people who had to move several times.

392 IDMC, 2020c.

Arab Republic and Yemen.³⁹³ According to a 2020 report by UNESCWA and the International Organization for Migration, the Arab region, as a place of origin, transit and destination, is “witnessing unprecedented levels of migration”.³⁹⁴ The massive influx of internally displaced persons into already overpopulated cities places pressure on service delivery systems. They move in search of security and to avoid camp settings that lack employment opportunities and access to services but struggle to integrate into host communities and often find themselves living in deepening poverty.

Conflict in the region has changed the demographic landscape dramatically. As well as conflict and instability in Libya, Iraq, Somalia, the Sudan and Yemen, a decade of war has led to the large-scale migration and displacement of more than 5.4 million Syrians, while Palestinians constitute the largest refugee population in the world.³⁹⁵ The scale of displacement is a major stress on governments and local authorities and impedes their ability to manage sustainable growth in host cities, including DRR efforts.

6. Migrant workers

The region, considered a major destination for labour migrants, has been characterized in recent years by increasingly large flows of migrant workers to cities and urban areas. A large proportion is low skilled workers in the construction and hospitality sectors, who often live in substandard conditions.³⁹⁶ In 2017, 23 million migrant workers were in the Arab region, 39 per cent of them women.³⁹⁷ The GCC countries have more than 10 per cent of all migrants globally. Saudi Arabia is considered to host the third largest migrant population in the world, and the United Arab Emirates the fifth.³⁹⁸

C. Conflict and climate change pressures on urban infrastructure and basic public services

The multiple humanitarian emergencies and protracted conflicts have led to the physical destruction and deterioration of infrastructure, creating unprecedented pressure on basic services delivery. The cost of material destruction in the Syrian Arab Republic is estimated at \$67.3 billion.³⁹⁹ Further, in 2011 the crisis led to a large influx of refugees to Jordan that has increased dramatically the demand for housing in camp and non-camp settings. In Lebanon, the government estimates that more than a million Syrian refugees live in rented accommodation or in informal settlements across 1,000 municipalities, accounting for 25 per cent of the total population of host communities.⁴⁰⁰

A large number of refugees and internally displaced persons live in unsafe conditions with no access to sustainable shelter solutions, posing challenges to social cohesion and integration in their urban settings in view of their limited resources and capacities. Building resilience is becoming a priority for national and local governments as they respond to mounting demands for adequate and durable housing solutions and services, and to create an enabling environment to reduce the vulnerabilities of displaced populations, strengthen capacities for restoring damaged infrastructure and facilities, and secure resources to meet the needs of host and displaced populations.⁴⁰¹

Concentrated urbanization and socioeconomic development in areas prone to climatic shocks and stresses make Arab cities among the world’s most vulnerable to the effects of climate change, including: (i) sea level rise threatening coastal communities; (ii) urban areas and settlements situated in flood-prone areas; (iii) exacerbated extreme weather events; (iv) water scarcity and extreme drought; and (v) increased temperature levels and exacerbated frequency of extreme heatwaves, where changes in land surfaces caused by urban development, land use and concentration of human activities have resulted in “urban heat island” effects. Studies have shown the region is especially vulnerable

393 UNESCWA and IOM, 2020.

394 UNESCWA and IOM, 2020.

395 United Nations Human Settlements Programme, 2017b.

396 ILO, n.d.

397 Ibid.

398 Ibid.

399 UNDP and Syrian Centre for Policy Research, 2016.

400 Ibid.

401 Kirbyshire and others, 2017.

to such effects, with major risks for the public health of urban populations.⁴⁰² Climate change is exerting additional pressures on the already weakened urban infrastructure and public services, and widening the financing gap needed to develop sustainable and climate-resilient infrastructure networks. Addressing the urban resilient infrastructure gap, including financing, is becoming increasingly central to building urban resilience in the region.

D. Urban resilience, climate change, SDGs and disaster risk reduction

1. Definitions of urban resilience

The notion of resilience is related to the capacities of individuals and institutions to cope and adapt to different shocks and stresses. UNDRR defines resilience as “the ability of a system, community or society exposed to hazards to resist, absorb, accommodate, adapt to, transform and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions through risk management”.⁴⁰³

The IPCC defines resilience as “the ability of a system and its component parts to anticipate, absorb, accommodate, or recover from the effects of a hazardous event in a timely and efficient manner, including through ensuring the preservation, restoration, or improvement of its essential basic structures and functions”.⁴⁰⁴ Resilience has become an integral and essential part of sustainable urban development and a prerequisite of sustainable urbanization. Urban resilience is defined by UN-Habitat as “the ability of any urban system, with its inhabitants, to maintain continuity through all shocks and stresses, while positively adapting and transforming toward sustainability”.⁴⁰⁵

2. The New Urban Agenda

The New Urban Agenda (NUA) adopted in 2016 is an action-oriented road map that mobilizes governments and key stakeholders to drive sustainable urban development at local level. In line with the 2030 Agenda and the SDGs, it contributes to implementing and localizing SDGs, including Goal 11 on making cities and human settlements inclusive, safe, resilient and sustainable. The NUA outlines a shared vision of adopting DRR and management for cities and human settlements to reduce vulnerabilities, and build resilience and responsiveness to natural and human-made hazards. The NUA sets goals for fostering mitigation and adaptation to climate change⁴⁰⁶ and commits to supporting the development of DRR strategies and periodical assessments of disaster risks caused by natural and human-made hazards through environmentally sound urban and territorial planning, infrastructure and basic services.⁴⁰⁷

3. Building urban resilience and DRR in cities in the Arab region

Arab cities and urban areas are increasingly becoming natural disaster hotspots. But they also have great potential for reducing risks and improving risk management. Further, disasters provide opportunities for sustainable recovery and reconstruction based on building back better principles.⁴⁰⁸ This would ideally necessitate an enabling environment for DRR at local level and an efficient urban governance system for resilience building in cities and urban areas. Multi-stakeholder engagement is needed for building urban resilience, including central and local governments, city leaders, local communities, the private sector, civil society, NGOs and academic and research institutions.

402 UNDP, 2018b.

403 United Nations, General Assembly, 2016a.

404 IPCC, 2012a.

405 UN-Habitat Disaster Risk Management, Sustainability and Urban Resilience, 2018.

406 UN-Habitat, 2016b.

407 United Nations, 2015.

408 UNDP, 2018b.

Box 5.1 Building resilience through spatial planning interventions, the State of Palestine

While growing at a rapid pace, Palestinian urban centres are reeling under immense environmental, socioeconomic, and geopolitical pressures. Almost 77 per cent of the population is urban, living in less than 40 per cent of the territory effectively under direct Palestinian jurisdiction. The rest are living under full Israeli control in semi-urban and rural communities in the West Bank, including Area C and Hebron H2, at the heart of the city. East Jerusalem has been occupied by Israel since 1967, and the Gaza Strip is besieged. The high urban growth rate is accompanied by random spatial development; cities and communities have expanded in a poorly planned manner, encroaching on surrounding agricultural land, with weak infrastructure and growing demand for jobs, services and housing.

Significant progress has been made by UN-Habitat in supporting participatory spatial planning for Palestinian communities in occupied East Jerusalem and Area C that contributed to freezing the eviction and displacement process for 55,000 Palestinians, provided shelter for more than 700, with a specific focus on vulnerable and disadvantaged women in Hebron and Gaza, and prepared 56 multilayered plans with communities, fostering a sense of resilience and community cohesion. UN-Habitat also supported spatial planning processes to build back better in the Gaza Strip, especially after the many cycles of conflict. The spatial planning interventions included establishing de facto planning committees in Area C, such as Barta' area (Jenin), to ensure Palestinians are represented during the planning processes. UN-Habitat also supported urban-rural linkages in six city regions (Qalqiliya, Tubas, Jericho and Northern Jordan Valley, Ramallah and Al-Bireh, Hebron, and Jerusalem), critically linking governors and mayors, and benefiting more than 1.9 million Palestinians. UN-Habitat continues to support the National Spatial Plan, focusing now on the preparation and adoption of the National Urban Policy.

4. Urban resilience frameworks

Several tools have been introduced to assess the resilience of cities around the world. For example, The City Resilience Index, developed by the engineering firm Arup and supported by the Rockefeller Foundation,⁴⁰⁹ serves as a tool for cities to understand and respond to urban challenges in a systematic way. The Disaster Resilience Scorecard for cities, developed by UNDRR with the support of the European Commission, technology company IBM and infrastructure consulting firm AECOM, is an assessment tool for local governments to measure their disaster resilience. The Balanced Scorecard, introduced by the Torrens Resilience Institute (TRI) for local communities, is a tool for assessing community disaster resilience using an all-hazards approach (figure 5.2).⁴¹⁰ The Urban system Model Approach developed by the UN Task Team on Habitat III identifies hazards and the main urban systems necessary for building and sustaining urban resilience (figure 5.3).⁴¹¹ The City Resilience Profiling Tool developed by UN-Habitat assesses urban shocks and stresses and prioritizes actions allowing cities to capitalize on existing data.⁴¹²

409 Rockefeller Foundation and Arup, 2016.

410 Ramsey and others, 2016.

411 UNDP, 2018b.

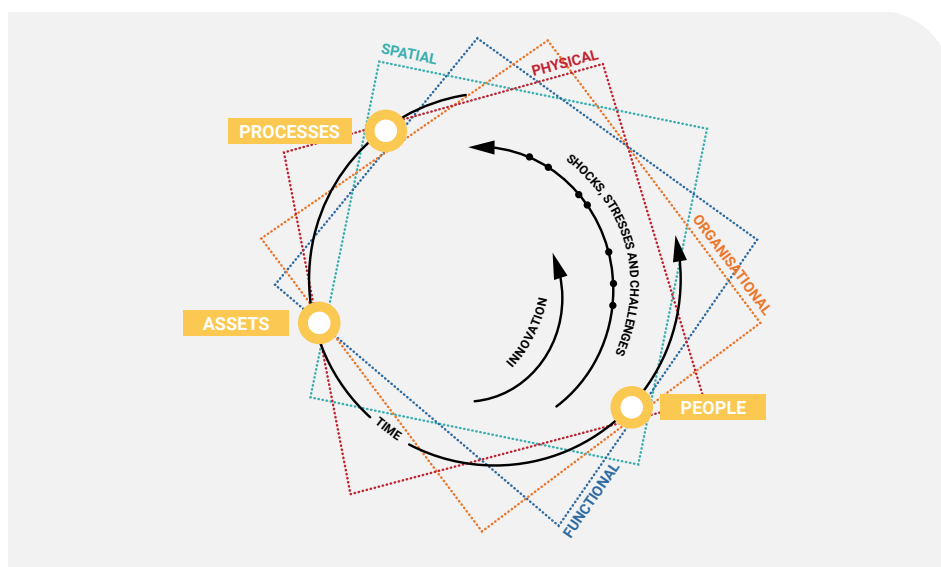
412 UN-Habitat, 2017a.

Figure 5.2 The four pillars of resilience assessed by the TRI* scorecard



Source: Ramsey and others, 2016.

Figure 5.3 The five critical, interdependent dimensions of the urban system approach



Source: UN-Habitat, 2017a.

UNDRR developed the Ten Essentials for Making Cities Resilient to expedite local implementation of the Sendai Framework to build and maintain urban resilience as part of local DRR and urban development strategies. The essentials are: organizing for disaster resilience; identifying and understanding current and future risk scenarios; strengthening financial capacity for resilience; pursuing resilient urban development; safeguarding natural buffers to enhance the protective functions offered by natural ecosystems; strengthening institutional capacity for resilience; strengthening societal capacity for resilience; increasing infrastructure resilience; ensuring effective disaster response; and expediting recovery and build back better.⁴¹³ Over the past 10 years, the Making Cities Resilient Campaign has advocated the need for local government authorities to reduce risk and develop urban resilience. More than 4,350 cities have demonstrated their commitment by signing up.

413 Ibid.

Making Cities Resilient 2030 (MCR2030) Programme builds on the success and lessons of the previous work under the campaign. New partnerships and delivery mechanisms will be leveraged to gradually shift from advocacy to implementation support. MCR2030 will be a global partnership of actors with expertise in urban resilience, DRR, climate change and the SDGs. It will provide a resilience road map for cities, with defined commitments over time on how to improve local resilience. A suite of tools and knowledge guidance will be available from an existing pool with partners that cities can use to better reduce risk and build resilience. MCR2030 will promote regional networks of partners with strong links and implementation experience so cities are connected in a movement that can support resilience measures. By 2030, MCR2030 aims to have increased the number of cities committed to reducing local disaster/climate risk and building resilience.⁴¹⁴

Despite significant progress in urban resilience frameworks and assessment tools, Arab cities are yet to localize and contextualize global frameworks and identify the set of indicators most relevant to their local context and specific risks.

E. Urban governance and city resilience

UN-Habitat defines urban governance as: “The sum of the many ways individuals and institutions, public and private, plan and manage the common affairs of the city. It is a continuing process through which conflicting or diverse interests may be accommodated and cooperative action can be taken. It includes formal institutions as well as informal arrangements and the social capital of citizens.” With the range of systemic risks facing Arab cities and urban areas, enhancing governance is crucial for building urban resilience and addressing the growing challenges. There is a correlation between effective urban governance and the ability of cities to manage emerging risks, build their resilience capacities and recover from different shocks and stresses. The efficiency of the urban governance systems differs across the region, dependent on multiple factors, including the availability of resources and degree of fiscal autonomy, and the extent of accountability and inclusive participation in decision-making processes, authority and the capacity to provide and maintain public services.⁴¹⁵

1. Centralization, lack of fiscal autonomy and associated local capacities

Urban governance systems vary widely. The most predominant management pattern is characterized by centralization, led by national governments and public institutions, with fiscal, administrative and political autonomy remaining limited at municipal level. This has limited the capacity of cities to identify and assess emerging risks and undertake the necessary precautions.⁴¹⁶ There is a growing need for local governments to prioritize DRR and resilience as part of their development agenda. UNDRR has identified 13 DRR actions that reflect local government powers and capacities, namely: developing a city vision or strategic plan following the concepts of resilience; establishing a single coordination point for DRR; undertaking risk analysis for multiple hazards; developing financial planning for resilience; developing urban plans with up-to-date risk information; updating building codes and standards and enforcing their use; protecting, conserving and restoring ecosystems for resilience; developing a critical infrastructure plan or strategy for resilience; strengthening institutional capacity for resilience; identifying and strengthening societal capacity for resilience; developing a disaster management and/or emergency response plan and protocols; developing or ensuring connections to early warning systems; and developing a strategy for post-disaster recovery and reconstruction that ensures building back better.⁴¹⁷

Box 5.2 *Local financing and partnerships for riverbank filtration units, Egypt*

UN-Habitat is championing an innovation aimed at providing water to vulnerable populations. One project, supporting innovation in water and sanitation in Egypt, explores, pilots and scales up solutions that complement ongoing efforts and extend water, sanitation and hygiene (WASH) services to all marginalized and vulnerable communities. Egypt has been suffering from water scarcity and, with a current yearly shortage



414 UNDRR, 2020d.

415 UNDP, 2018b.

416 Ibid.

417 UNDRR, 2019a.

of 23 billion m³, is considered water poor. Climate change is expected to cause significant variations in the flow of Nile water, the country's main renewable water resource.

Any change in the rainfall pattern in the Upper Nile countries will affect the annual Nile flood. This in turn will negatively affect the livelihood of millions of people, with an expected fall in agriculture production and drastic socioeconomic impacts in Egypt.^a

Limited cooperation on transboundary water management, and the filling and operation of the Grand Ethiopian Renaissance Dam, threatens water flow and quality, particularly during prolonged periods of drought. Pollution of the Nile River with municipal and industrial waste, leakage of wastewater, inefficient use in households and irrigation systems, leakage from infrastructure networks due to poor maintenance and the uneven distribution of water in urban and rural areas further exacerbate the challenges.

Due to population growth, demand is expected to increase 60–75 per cent by 2050. Infrastructure coverage and access to potable drinking water has grown steadily over the past decades, reaching approximately 96.97 per cent of Egyptian households, but is not distributed equally in rural and urban communities; up to 98.1 per cent of Egyptian households in urban communities are covered compared with 95.52 per cent in rural communities.^b Many diseases are linked to the consumption of untreated canal water or contaminated water from ground pumps. In Egypt, diarrhoea is the second leading cause of death among children under five. As a consequence of the COVID-19 emergency, water provision has become crucial to maintain basic hygiene and reduce the spread of the disease, especially in rural settings or informal areas.

Innovative technologies are used to enable clean water provision, improved sanitation services and increased capacity to address water and sanitation needs, based on a strong knowledge foundation and with the partnerships necessary to institutionalize models for long-term sustainability. At local level, green riverbank filtration (RBF) is a promising innovation that complements large-scale, costly and centralized water provision systems. Each unit is 5 per cent of the cost of a traditional water purification plant serving the same number of people. Further, water quality is not affected by river accidents (leaks of hazardous materials from tanks) and natural crises (flooding and water-level falls).

In 2017, UN-Habitat, in partnership with the Holding Company for Water and Wastewater, successfully implemented RBF technology in 10 sites across al-Minya governorate in Upper Egypt, providing access to clean water for more than 180,000 vulnerable inhabitants, with replicated implementation by the Minya Drinking Water and Sanitation Company. UN-Habitat also conducted national capacity building workshops and a feasibility study to explore potential implementation sites elsewhere in Egypt, which would benefit an estimated 500,000 inhabitants. Financing was also mobilized for a second phase to reach 400,000 additional inhabitants, funded by the Coca-Cola Egypt and Replenish for Africa initiative.

Partnerships have been established with research and academic institutions, such as the Faculty of Engineering at Ain Shams University (ASU) and the Housing and Building Research Center (HBRC), to ensure experts are involved and research and development available in a local context, and that the technology is included in national codes of practice.^c

a Smith and others, 2013.

b Central Agency for Public Mobilization and Statistics, "Percentage of Housing Units Connected to the Public Water Network", 2017.

c UN-Habitat and Minya Drinking Water and Sanitation Company, 2017.

2. Enabling conditions for private sector participation

Financing challenges have created a gap in service delivery and infrastructure development that in many cases is filled by the private sector and CSOs. A growing number of PPP initiatives have also emerged in the region for infrastructure delivery and investments. Their success depends largely on an enabling environment and an institutional framework for such mechanisms. GCC countries, including Kuwait, Saudi Arabia and the United Arab Emirates, have achieved considerable success implementing resilient infrastructure projects in the water and energy sectors through PPP models.⁴¹⁸ Other countries, with more challenging fiscal space, often require capacity-building, at all levels, to improve the enabling conditions for multi-stakeholder engagement with the private sector, vulnerable communities and civil society.

Box 5.3 *Building disaster risk governance capacity in Ain Draham, Tunisia*

Tunisia is among the most disaster-prone climate change hotspots in the Mediterranean region, with increasingly frequent and severe floods leading to loss of lives and damage to infrastructure. Over the past three decades, Tunisia has reported about 2,495 disasters, with 1,075 deaths and \$756 million in economic losses. Ain Draham city is highly vulnerable to recurrent floods given its high annual rainfall rates and snow falls, while lacking proper DRR capacities for effective, inclusive, urban resilience.

UNDP supported Ain Draham to join the Making Cities Resilient campaign to encourage 12 other cities in Tunisia to replicate the DRR best practice it had initiated. UNDP also helped enhance the city's risk governance capacities, including through a city-to-city exchange programme with Dutch cities. Exchange visits helped provide exposure to international experiences of flood monitoring, forecasting and management, including early warning systems for urban resilience, and enabled officials to design disaster risk governance arrangements with designated roles and responsibilities for effective prevention, preparedness and response at the municipal level.

UNDP assistance laid the foundations for a vulnerability assessment, which informed measures to build city disaster risk governance capacities to prevent loss of life and minimize economic loss. Stakeholder consultation forums were established, engaging the private sector and teams of volunteers, and land-use regulations were introduced to ensure risk-informed development and protect critical infrastructure. A vulnerability assessment of schools was carried out, and the city municipal department rehabilitated buildings deemed vulnerable. Activities to raise community awareness were designed and implemented to ensure effective preparedness and response to disaster risks.

3. Accountability and inclusive participation

Institutional responsibility and accountability for developing and implementing DRR strategies, in an inclusive participatory manner, is crucial for context-specific and local DRR planning. Effective risk governance mechanisms are lacking in Arab cities, with little reported progress on community participation at local level.

4. Downscaling local resilience and sustainable development through multiscale, multilevel holistic approaches

Development can only be sustainable if it is comprehensive, which necessitates that it is also local with the engagement of multiple stakeholders. Further, local resilience-building initiatives are most likely to succeed when they address the contextualized risks and development needs of communities, and where these risks and needs are assessed in a participatory manner. The human security approach, mainstreamed in the Sendai Framework, was used to promote such principles.

Box 5.4 *Enhancing community resilience and human security in urban settings through the Sendai Framework, Mauritania*

Mauritania is particularly vulnerable to natural hazards, which include drought, landslides, flooding, storms, silting and coastal and dune erosion, seawater infiltration, locust invasions and wildfires. With 77 per cent of the total land consisting of desert, and more than 60 per cent of inhabitants reliant on traditional agriculture and raising livestock,^a the population remains in a state of chronic vulnerability due to unpredictable seasonal rains and climatic conditions. The risk profile and rapid population growth, coupled with social and political vulnerability, puts Mauritania among the poorest LDCs in the world.

With UNDRR backing, beneficiary cities of the project "Enhancing community resilience and human security of vulnerable communities in urban settings through the implementation of Sendai Framework for Disaster Risk Reduction 2015–2030" undertook people-centred, multi-stakeholder, multisectoral local self-assessments to gauge resilience, human security and disaster risk drivers. In-depth risk assessments in Tervagh Zeina, Rosso and Kaedi identified various natural hazard risks, such as floods, overflow of ocean waters, fires, epidemics,



sandstorms and high winds, desertification, marine pollution, locust invasion, food/nutritional crisis and drowning, and industrial risks. Socioeconomic characteristics of the three cities were identified, including poverty and employment rates, health and education service quality, and information provided on rural-urban migration trends. Trade-offs were recognized between drought, food security and nutrition crises and between flood mitigation measures that may affect floodplain irrigation zones, which, in turn, will affect the poorest in the city and the country (for example, Oualo agriculture workers).

This innovative approach paves the way for addressing the long-term effects of hazards on human dignity, and the interaction of disaster losses and impacts with disaster risk drivers and violent extremism risk drivers (for example, the rise in displacements, potential forced relocations, chronic or multidimensional poverty, socioeconomic exclusion, inequality). The assessments analysed the linkages between categories of threat (political, economic, food and environmental). Alongside the results of UNDRR's Disaster Resilience Scorecard for cities, they also guided the development of three local resilience action plans that integrated the human security principles of being people-centred, multisectoral, comprehensive and context-specific, prevention-oriented and focused on protection and empowerment.^b

a FAO, "Family Farming Knowledge Platform". Available at <http://www.fao.org/family-farming/home/en/> (accessed on 5 May 2020).

b UNDRR and UNDP, 2020.

F. Disaster risk reduction and urban resilience in local development plans

Addressing the multiple risks and vulnerabilities facing Arab cities requires effective policies and planning strategies to foster resilient and sustainable urban development that enables cities to manage and reduce current risks and to strengthen their capacities to anticipate and address future ones.⁴¹⁹ This necessitates integrating DRR principles and urban resilience considerations in local development plans across all sectors, and investments in DRR activities.

The Sendai Framework calls for risk-informed urban planning and management "to promote the mainstreaming of disaster risk assessments into land-use policy development and implementation, including urban planning, land degradation assessments and informal and non-permanent housing, and the use of guidelines and follow-up tools informed by anticipated demographic and environmental changes".⁴²⁰ Capacities at local level to address and integrate DRR in development plans are limited but there are a number of cases where DRR considerations have been mainstreamed at city level. Lebanon has developed local-level resilience plans, and mainstreamed DRR considerations in local development plans,⁴²¹ and Jordan has directed significant attention to urban disaster resilience in a number of cities, especially Aqaba and Petra. The United Arab Emirates has also advanced resilience building at local level; for example, Dubai municipality has developed an institutional framework that enables different stakeholders to prepare a comprehensive risk assessment and mobilize resources for DRR.⁴²²

Box 5.5 Land-use planning for effective urban resilience, Aqaba, Jordan

Jordan is one of the world's most water-scarce countries, with drought and climate change threatening to accelerate long-term resource insecurity, intensify water insecurity, exacerbate ecosystem fragility and increase social vulnerability. Reports show that drought has devastated about 80 per cent of the Badyia ecosystem, affecting Bedouins, and rural farmers and pastoralists, with significant impact on their livelihoods. Flash floods are also increasing in frequency, given rapid urbanization trends and exposure to climate risks, with ineffective drainage capacities, particularly across wadis. Jordan also lies along the Dead Sea Fault, with major cities, including the capital Amman, plus Aqaba and Petra, located close by.



419 United Nations Human Settlements Programme, 2017b.

420 United Nations, 2015.

421 UNDP, 2018b.

422 El-Kholei, 2019.

A comprehensive disaster risk assessment in 2011 identified earthquakes and floods as the main disaster risks in Aqaba. Supported by UNDP, with funding from the Swiss Agency for Development and Cooperation (SDC), Aqaba has built resilience against disaster risks. UNDP helped mainstream DRR into the city development and land-use planning process. A DRR Unit (DRRU) was established within Aqaba Special Economic Zone Authority (ASEZA), along with a disaster management committee to ensure appropriate stakeholder coordination for effective disaster preparedness and emergency response. The city has successfully integrated present and future disaster risks, including climate-related risks, into the city development plan. Major DRR infrastructure, including flooding diversion systems and bridges, were developed. Building and seismic codes were established by ASEZA along with licensing and construction permit processes to ensure risk-informed land-use planning. A partnership was established with the Jordanian Engineers Association to review permits and designs of new buildings, and to verify compliance with safety standards. Further, ASEZA has partnered with the private sector to ensure new infrastructure meets the specified building and seismic codes, conducted awareness-raising campaigns on DRR, and strengthened staff technical capacities for DRR. A network of community-level response volunteers has also been set up to ensure access to an adequate and effective disaster response.

Box 5.6 *Integrating resilience into city development plans, Saida City, Lebanon*

The coastal city of Saida and its centres of unique cultural heritage are at high risk of flooding, from riverbanks and flash floods, and from drought and earthquakes. Major economic sectors, including agriculture, and the industrial units that line the coast are exposed. A large percentage of Syrian refugees have also settled in disaster-prone areas, ill-protected against flash flooding and earthquakes, their vulnerability exacerbated by unplanned urban expansion and poor enforcement of building codes and land-use regulations. Like other Lebanese cities, Saida has weak DRR capacity. This is due to the lack of an effective coordination system and a deficient early warning system, and limited community awareness and preparedness to address the drivers of disaster risks. Managing disaster risks at local level remains weak, lacking in adequate institutional, technical and budgetary allocations.

UNDP has helped set up a dedicated DRRU to plan and manage disaster risks in Saida and to strengthen its technical capacities to coordinate mitigation, preparedness, response and recovery at city level. In collaboration with the SDC, and through the Arab Cities Disaster Resilience Project, UNDP supported the development of a DRR strategy and resilience action plan with its focus on protecting the old city and its cultural heritage. It has also helped integrate resilience into local development plans. The DRRU established a financial mechanism to implement the Resilience Action Plan (RAP) enhancing disaster response and recovery activities through the establishment of the Disaster and Solidarity Fund.

A vulnerability assessment of old buildings informed the development and implementation of restoration plans for historical sites. In addition, UNDP helped provide multipurpose small-scale equipment to improve the resilience of the old architecture against flooding along the riverbanks. With UNDP Support, the Saida DRRU initiated a partnership with the private sector and community-based organizations to mobilize community engagement in disaster response and recovery. The unit also worked with the Ministry of Health to conduct emergency and evacuation drills. Campaigns have been held to raise awareness and enhance local community preparedness against disaster risks.

Box 5.7 *Dubai resilience strategy 2020–2030*

Dubai faces many different types of risks corresponding to natural hazards that may challenge its development and prosperity. Further, substantial industrial activity, and the huge construction projects that extend throughout the city, result in various forms of industrial and technological risks. Like other cities around the world, Dubai is also exposed to unconventional forms of security risk, such as cybersecurity.



It developed a resilience strategy 2020–2030^a with the aim of becoming a model city in the field of resilience; a comprehensive concept towards reducing all types of risks and supporting capabilities to expedite recovery and building back better. The strategy was based on a resilience assessment conducted by multi-stakeholders within different sectors using the Ten Essentials criteria of UNDRR's Making Cities Resilient Campaign. Developed so its strategic goals and objectives are aligned with the relevant post-2015 global agendas, the strategy seeks to achieve many related international commitments stipulated in the Sendai Framework, the SDGs and Paris Agreement. The strategy's vision, mission and strategic goals are consistent with local and national plans and priorities, including the Dubai Plan 2021, Dubai Cyber Security Strategy (2017–2022), Dubai Health Strategy (2016–2021) and Dubai Industrial Strategy (2030).

The strategy ensures the engagement of all stakeholders, such as Red Crescent, the private sector and civil society, among others, in its resilience programme. More specifically, the plan outlines actions to be taken in coordination with multiple stakeholder groups, including (a) a comprehensive all-hazards assessment of the risks in the city and their likelihood, including long-term modelling and prognosis; (b) an analysis of budgets in local government and the main agencies involved in DRR and resilience; (c) assessment of the capabilities and capacity of critical infrastructure available and needed for prevention and mitigation; (d) development of a standard for comprehensive planning to meet the needs of post-event recovery and economic restart, and ensure development of the required plans; and (e) development of a standard model for evaluating the response and an in-depth investigation of root causes, and an assurance that lessons learned after each event will be implemented.

a Dubai Police Force, 2020.

G. Conclusion

Arab cities face numerous challenges and increasing vulnerabilities associated with patterns of urbanization and unprecedented population growth interacting with urban disaster risk drivers. Understanding the nature of urban vulnerabilities and building resilience to reduce disaster risks must take account of multiple factors and challenges, including: urban governance and political commitment to prioritize resilience and allocate resources to enhance it; support from many relevant stakeholders; local capacities for resilience-building, including vulnerable groups in DRR; and an enabling environment in which vulnerable groups can participate, including women, youth, the elderly, people with disabilities, and refugees and internally displaced persons.

The lack of urban risk-disaggregated information is a main impediment to advancing risk-informed, sustainable urban development in an efficient yet safe manner. Weak multi-stakeholder and multisectoral coordination hinders efforts to address the urban risk-disaggregated information gap. Securing finance for city resilience building remains a significant challenge, and stronger engagement by cities and international actors with private sector actors is clearly required.