Water scarcity is a key issue increasingly affecting people living in MENA cities due to multiple factors. Women and girls are among the worst affected by water scarcity because of their social roles and responsibilities. Although they play a key role in supplying livelihoods and food security, their ability to act on the management of water resources often remains very limited. This brochure aims at better understanding this issue, identifying approaches for inclusive and gender-sensitive water management, and promoting women’s empowerment in water resources governance. This document includes key data and excerpts from interviews carried out with regional experts, activists and practitioners from Lebanon, Jordan, Morocco, Palestine and Egypt.

**WATER SCARCITY IN CITIES IN THE MENA REGION**

What we are witnessing nowadays at an alarming rate is an increasingly urgent demand for a scarce resource: water. Although it is a global emergency, the phenomenon is concentrated in certain regions. Recent research points out that 11 out of the 17 most water-stressed countries in the world are currently located in the Middle East and Northern Africa (MENA) region: Bahrain, Israel, Kuwait, Lebanon, Oman, Palestine, Qatar, Saudi Arabia, and the United Arab Emirates (UAE) are all heavily dependent on groundwater and desalinated water and currently figure among the least water-secure in the world.

The future looks equally grim for other MENA countries. Morocco and Tunisia are subject to high water stress with a withdrawal of 40 per cent to 80 per cent of freshwater resources, while Jordan is one of the world’s driest countries. As its namesake river progressively runs dry, available evidence shows that Jordan’s renewable water supply only meets two thirds of the population’s needs, with groundwater used at twice the rate of replenishment. To complete the list, water supplies are alarmingly low in Egypt and could reportedly dry up by 2025.

Water scarcity, combined with pre-existing factors such as displacement, conflict, weak governance, and political and civic unrest, will necessarily amplify other issues affecting the region.

The implications will be the harshest for the marginalised, impoverished, and least resilient members of society – particularly the elderly, children, women and young girls.

According to the World Bank, in the 1960s, 35 per cent of the population in the Middle East was estimated to be living in urban centres. Today, this figure has almost doubled, reaching 65 per cent. In a report recently published by the Organisation for Economic Co-operation and Development (OECD), Northern Africa is the most urbanised region on the African continent, with 78 per cent of its population living in cities. The interconnection between water security and fast-paced urbanisation in developing countries is clear. Urban dwellers are especially concerned by the issue, and the OECD predicts that by 2050 water demand will increase by 55 per cent.

To compensate for the lack of water infrastructure in unplanned urban areas, people are developing informal practices to access drinking water. Such precarious solutions often lead to drastic health and sanitation problems. Urban centres in the MENA region are forecast to be at the epicentre of an impending water crisis, as 60 per cent of the population lives in severely water-stressed conditions, with an average water availability estimate of only 1,200 m³ per year. According to the World Bank, 82 per cent of the water in the region is not used efficiently, and water wastage and misuse are main factors contributing to water scarcity.

The issue, however, is more complex and cannot be reduced to mere mismanagement. Fast-growing urban centres have not kept pace with unrestrained population growth, and consequently, the increasing demand for water considerably outweighs the available supply. This includes the need to have clean water for sanitation purposes to maintain up-to-standard health conditions.

According to Nadim Farajalla, Program Director at the Planetary Security Initiative, in Beirut, unplanned urban growth after the war has outpaced water infrastructure investments and contributed to increased water demand:

“*In Beirut, […] buildings with four stories and circa eight apartments were replaced by towers with ten or 20 floors and 80 apartments. The water demand passed from 8 m³ of water per building daily to 80 m³, and the sewage discharge passed from 90 m³ per building to 900.*”
The circumstances in which continuously expanding urban sprawls and informal settlements are growing create even more challenges. Vulnerable communities living in the spreading outskirts or the urban cores in the MENA region are severely at risk of natural disasters such as floods, sea level rise, tsunamis, and droughts, to name a few.

Among climate hazards, droughts are a reality increasingly causing tensions between Moroccan communities, said Daniele Rossi Doria, Ph. D. Researcher from Erasmus Rotterdam University, during an interview:

“If 15–20 years ago, in the Al Haouz plain in Morocco, there would have been one year of drought each five. Now the area experiences one year of drought each two.”

He also added how droughts contribute to aggravate an already intense water usage for purposes including tourism and agriculture:

“Inclusive tourism and agricultural activities for export purposes have also caused an overexploitation of groundwater, with aquifers that are now found deeper and deeper”.

Non-existent or severely leaking water infrastructures that are prone to pollution and misuse will not support vulnerable communities in the aftermath of a natural disaster. Unsustainable water consumption and loss of freshwater in agricultural and food supply chains reportedly cause an annual loss of 80 to 177 m$^3$ of freshwater per capita in the MENA region, with 57 per cent of collected untreated wastewater dispersed in the environment. Circumstances vary across the region, but a vast majority of the population is under life-threatening pressure due to water scarcity.

**GENRE INEQUALITY AND WATER SCARCITY**

In the future, all of us will have to cope with water stress. However, vulnerable populations will be the first to be impacted by higher water-related insecurity and scarcity. Women are particularly affected by the issue; they are key actors in supplying livelihoods and play a major role in securing food. Women are also often responsible for fetching water. When water becomes less available, the journey to fetch this precious commodity can become longer, more tiring, and time-consuming, sometimes even increasing the risk of predatory behaviours and violence, including Gender-based Violence (GBV).

Women and girls also have specific water-related needs: menstrual hygiene requires clean water and sanitary products, which then require safe disposal. Infrastructures – and the way they are designed, built and located – also play a role if not conceived in a gender-sensitive way. For example, if toilets are situated outside the settlements or are shared with men, there is a greater risk of GBV.

As the World Bank reports, the MENA region has one of the world’s highest levels of forced displacement, which may grow even further with water insecurity and lead to the outbreak of new climate-related conflicts. As the main caregivers in traditional communities and households, female migrants, internally displaced women, and refugees in the MENA region often face compound threats, with women in refugee camps dealing with reduced access to clean, potable water and a heightened risk of sexual GBV.

Water quality, access and cost are a complex issue in Palestine, with women bearing the brunt of the situation. situation, as explained by Professor Gül Özerol from the University of Twente:

“In Palestine, while the conflict with Israel sidelines the gender issue, intersectionality still plays an important role in exacerbating the effects of water scarcity on women. In areas where both tap and ground water resources are contaminated (96.4 per cent in Gaza), women and girls have to buy and carry water from trucks or desalination plants, which can be also five times more expensive.”

Women are the community building agents, main water bearers, and family caregivers in traditional households. Although they play a key role in supplying livelihoods and food security, they often have a limited ability to act on water management, due to social, economic, and cultural factors. Women need to be central actors in this process.

Countries in the region should provide equal access, participation, and opportunities to women in the management of water, and include them in decision-making. When women are stakeholders and decision-makers in steering committees and leadership positions in the water infrastructure sector, they can shape the agenda, establish priorities and craft objectives that can positively influence communities and households in the region.

At present, data from several countries paints a picture of gender imbalance in the water infrastructure sector. In Palestine, only 4.5 per cent of water, sanitation, and hygiene workers are women, while in the Water Authority of Jordan (WAJ), only 12 per cent of staff members are female. In Morocco, the public service infrastructure is strongly male-dominated; between 2011 and 2020, only 11.8 per cent of women were appointed to decision-making positions, and the female presence in the workplace is just 34.5 per cent. In 2019, a woman led Lebanon’s Ministry of Energy and Water for the first time, but a Global Water Partnership Report on Women in Water diplomacy revealed that most women in the Lebanese water sector are not promoted, despite their professional responsibilities and relevant academic titles.

In Palestine

**ONLY 4.5% OF WATER, SANITATION, AND HYGIENE WORKERS ARE WOMEN**

In Water Authority of Jordan

**ONLY 12% OF STAFF MEMBERS ARE FEMALE**

In Morocco, between 2011 and 2020,

**THE FEMALE PRESENCE IN THE PUBLIC SERVICE INFRASTRUCTURE WAS JUST 34.5%**
**EXAMPLES OF MAINSTREAMING GENDER IN THE WATER SECTOR**

Women should have a seat at the decision-making table, whether they are policymakers, leading figures spearheading the water agenda, or crafters of locally owned projects that benefit vulnerable communities. Deyala Tarawneh, Assistant Professor at the University of Jordan, highlighted the importance of women’s participation and leadership in this male-dominated sector:

“Climate justice and water management require women leadership because of representation matters. If you have more women in leading positions, they can take more gender-sensitive decisions.”

Countries such as Egypt, Morocco, and Tunisia are adopting measures and long-term strategies to enhance water quality, rationalise water use, and create an enabling environment. Key entry points for women to become part of long-term plans are lacking, however, leaving them with no voice and no say in how water scarcity will affect them in the short and long term.

Some key examples from the MENA region of bottom-up, grassroots initiatives that are enabling women to play a role in water management are progressively emerging. Governments in the region should be inspired by such initiatives and actively promote them, combining policymaking and gender-budgeting resources with investments to improve the gender-sensitive approach of cities and communities towards water management.

In Jordan, the government has supported the Water Wise Women (WWW) project, which trains local women, including refugees, to be plumbers. In this way, women feel empowered to be on the front line of water mismanagement, able to intervene and repair water leakages, and act promptly to save precious resources.

In Egypt, the Women and Water Diplomacy in the Nile (WIN) Network established by the Stockholm International Water Institute supports transboundary efforts for a cooperative approach towards water scarcity, especially in conflict areas. The platform connects women decision-makers and builds their capacities; women stand front and centre in peace-related agreements, creating durable solutions and attenuating instances of conflict.

In Palestine, the Palestinian Women Water Practitioners Network (PWWPN) unites women and water professionals. Members of the network are active in the field of water and sanitation as well as more broadly in the growth and empowerment of women. The network promotes their profiles, supports their capacity building, and endorses them as change-makers and leaders in society. Members of the network come from grassroots and non-governmental organisations located throughout Palestine, but they are also active on a regional basis. The network has significantly advanced the work towards more gender-sensitive water management and has improved women’s access to Water Sanitation and Hygiene (WASH).

In Morocco – where the population experiences water scarcity, drought, and irrational management of resources – women in different sectors and positions organised a water-centred women’s leadership event on International Women’s Day that attracted considerable attention. Before the event, a widespread awareness-raising campaign mobilised as many people as possible to promote collective, sustainable action and the virtuous management of water resources.
INVOLVING, EMPOWERING, AND GRANTING WOMEN ACCESS TO WATER MANAGEMENT

There are several ways to make sure that women are not only benefitting from programmes that broadly target access to water in given communities, but that they are allowed to handle the tools to shape the agenda. In turn, there are also ways for governments, organisations, and institutions to magnify women’s voices, amplify their needs, and bring their concerns into the spotlight.

Collecting sex-disaggregated data on water access and usage can provide a better understanding of women’s needs and ensure they are considered when designing and implementing dedicated projects. By mapping such gender inequalities, the root causes can be identified and investigated, and a path towards gender transformative results can be created. In the same spirit, gender mapping and landscaping need to be conducted to have a clear picture of how many women are in the water and sanitation (and related) sectors, and in which roles.

Awareness-raising and capacity-building activities should target women, since they are mainly responsible for water management at the household and community level. The leadership and participation of women in water governance and city management should be at the forefront of WASH activities. Designing and implementing water management initiatives that focus on women’s participation can take time but is the only way to build trust and ownership. We discussed this approach with May al-Ibrashy, founder of the Megawra-Built Environment Collective that has been implementing the Athar Lina conservation initiative in old Cairo for circa 10 years:

“In Cairo, as the Athar Lina initiative built trust in the community, local women were more and more interested in not only participating in the assessment process or events, but also on working on the coordination of the initiative.”

Institutions, municipalities, townships, and cities must invest in gender-responsive initiatives and programmes. The capacities of local and national authorities should also be developed and strengthened with a view to reinforcing gender-sensitive urban water infrastructures and services, protecting and improving those that already exist, and enhancing inclusivity in such contexts. Cities are gradually adapting to water scarcity, piloting new systems and working to ensure inclusive water access. As explained by Radhouen Bouden, Mayor of Kairouan in Tunisia:

“Kairouan is a region that suffers from water shortage. We have implemented two pilot projects to reduce the use of drinking water in the irrigation of green spaces and use another alternative, such as a rainwater basin.”

Transboundary and regional projects, especially in conflict settings, should promote the role of women in water diplomacy and cooperation, mainstreaming gender sensitivity in peace processes.

Cities Alliance supports local authorities and communities in the MENA region to narrow the gender gap in leadership at all levels of the water sector, and to ensure water security for all. It does so by enhancing their capacity in designing and implementing gender-sensitive water management policies and supporting the implementation of women-led water solutions. Within this framework we have developed the Her4Climate tool to better understand the link between women’s empowerment and climate hazards.

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1. Collect sex-disaggregated data on water access and usage.
2. Map gender-related roles, needs, and inequalities in the water sector.
3. Raise-awareness and enhance women’s capacities in water resources management.
4. Promote the role of women in water diplomacy and cooperation.
ANNEX WATER SCARCITY AND WOMEN’S EMPOWERMENT: EXPERTS’ VIEWS AND EXPERIENCES FROM THE MENA REGION

LEBANON

URBAN GROWTH AND UNPLANNED INFRASTRUCTURE SYSTEMS RESULTING IN INCREASED WATER SCARCITY AND SOCIO-ECONOMIC VULNERABILITY.

EXCERPT FROM INTERVIEW WITH NADIM FARAJALLA, PROGRAMME DIRECTOR FOR CLIMATE CHANGE AND THE ENVIRONMENT AT THE PLANETARY SECURITY INITIATIVE.

There are four major stressors on water resources in Lebanon: Population growth, urban expansion, climate change, and natural scarcity, since it rains only three or four months a year.

In the last years, the urban sprawl development has outpaced the infrastructure investments. Especially in Beirut, after the war ended and there was an increase in reconstruction investments, buildings with four stories and circa eight apartments were replaced by towers with 10 or 20 floors and 80 apartments. The water demand passed from 8 m$^3$ of water per building daily to 80 m$^3$, and the sewage discharge passed from 90 m$^3$ per building to 900. This increase was not followed by an upgrade of the water and sewage infrastructure systems, and, due to a lack of integrated planning at the national level, new pipelines and treatment plants were developed only in specific municipalities with not enough capacity – resulting in a lack of operational efficiency and also groundwater pollution from the sewage.

In the region of Bekaa, in 2010 the water authority was servicing circa 500,000 people. Due to the refugee crisis in Syria, the amount of people in the area practically doubled in a very short time. This caused a lot of stress on the water resources and an overexploitation of groundwater. If in the past you could find water within 10m from the surface, now you need to dig more than 50 or 100m. In urban areas, water scarcity is very related to socio-economic class. During summer, when the distribution of water becomes less frequent, lower-income families living in buildings that don’t have access to a well and cannot afford to buy drinking water have to rely on lower quality water. Water, sometimes contaminated, is treated domestically through different methods that are not always effective, with the result of spreading waterborne diseases. Many of the low-income families are also day laborers that don’t get paid if they cannot work due to illness. This creates a vicious cycle of insecurity, with families getting poorer and poorer and affording lower and lower quality of water. Contamination and the resulting diseases affect women disproportionally since they are the first to be exposed to the water for consumption and domestic use, while their partners usually working outside the house might have access to better quality water. They are also the one that have to care for sick relatives and children in case of contamination, thus limiting their job possibilities.

MOROCCO

WATER SCARCITY IN RURAL AND PERI-URBAN AREAS AND SPILLOVER EFFECTS ON THE SOCIO-ECONOMIC VULNERABILITY OF URBAN POPULATIONS.

EXCERPT FROM INTERVIEW WITH DANIELE ROSSI-DORIA, PH.D. RESEARCHER AT THE INTERNATIONAL INSTITUTE OF SOCIAL STUDIES (ISS), ERASMUS UNIVERSITY ROTTERDAM, THE NETHERLANDS.

Water scarcity is a combination of factors, and climate change is definitely one of them, but not the only one. Industrial and agricultural activities as well as tourism also contribute to exacerbate the condition of already water scarce areas. The population of the Al Haouz plain, between Marrakesh and the High Atlas Mountains in Morocco, has for instance experienced increasing water stress due to an increase in touristic infrastructure demand in the nearby city, as well as a reduction of annual rainfall in the last years. If 15–20 years ago there would have been one year of drought each five, now the area experiences one year of drought each two. Increased agricultural activity for export purposes has also caused an overexploitation of groundwater, with aquifers that are now found deeper and deeper.

At the peri-urban level, the issue of water scarcity is felt more than in large cities, with towns such as Ait Ourir that periodically experience water shortages. However, the spillover effects of droughts in rural areas are also felt in Marrakech, where certain food prices have increased and where peripheral and vulnerable neighbours are also exposed to water shortages. For instance, in the past, farmers used to rely on rain-fed grazing land for their animals, and now they have to limit their productions with the consequent increase of prices for meat. This issue also linked to food and socio-economic security, with less water available meaning less crops produced.
In MENA, and in Palestine, water quality and scarcity is related to climate change, but also to infrastructure issues and socio-political factors such as corruption, inefficiency, and the Israeli occupation. In the country, there is a high degree of non-revenue water. Forty per cent of water that is put in the distribution system is unaccounted for due to leakages and other infrastructure issues. According to data from the Gender and WASH Toolkit for Palestine, 40 per cent of Gaza’s 1.9 million population receive just 5 to 8 hours of water supply every 3 days, and an estimated 85 per cent source their drinking water from 154 public or private producers. This supply chain and the household storage result in potential contamination, exposing around 60 per cent of the population to public health risks.

In Palestine, while the conflict with Israel sidelines the gender issue, intersectionality still plays an important role in exacerbating the effects of water scarcity on women. Women and girls are usually the managers of household water systems, making sure there are enough water resources for drinking and domestic use. In areas where both tap and ground water resources are contaminated (96.4 per cent in Gaza), they have to buy and carry water from trucks or desalination plants, which can be also five times more expensive. According to the Gender and WASH Toolkit, the average monthly outlay on water consumption per family in summertime is US$350 and 550 – as much as half of all monthly expenses.

At the same time, the water-related governance and job sector in the country are mostly male-dominated and gender-blind. This is true for managerial positions, but also for knowledge-production and research ones, with the women working on the theme often being limited to laboratory work due to family commitments or safety issues. Projects for the reuse of wastewater for irrigation purposes are also mostly not incorporating the needs and experience of women, who have knowledge on how different qualities of water would serve different types of crops.

Jordan is the second water scarce country globally. By 2030, 90 per cent of the Jordanian low-income population will be affected by this issue. The average households only gets access to 100 m³ of water. The country also has very limited access to surface water, and often this is also subject to contamination because of pollution exposure and lack of proper management. This is also connected to the fact that only 50 per cent of the households in urban centres are connected to the sewage system, with only five or six percent in rural areas.

Moreover, cities are located far from water resources that are positioned in the south of the country. Sometimes water is transported between 100 km to more than 300 km. This natural scarcity also combines with an increase in population. The population of Jordan has almost doubled since 2005 due to the regional political turmoil. In general, there is also a mismatch of priorities in the public administration, since 50 per cent of the country’s water goes to agriculture, but the sector contributes only to 5 per cent of the GDP.

During crises, the most vulnerable groups such as women and girls are always the most affected. This is no different for climate change and water scarcity. Women that live in poverty and female-headed households are most likely to suffer from the lack of resources and less likely to have the means to cope. Moreover, less than 30 percent of the public schools in Jordan have proper sanitation. This also affects women and girls in particular during their periods, exposing them to stress, discomfort, and school dropouts.

Climate justice and water management require women’s leadership because of representation matters. If you have more women in leading positions, they can take more gender-sensitive decisions. The majority of students, also in the engineering sector, are women. However, they don’t end up having the same jobs as men because of their care-related rules or due to gender-related roles.

At WADI, we use scientific tools to maximise the value and minimise the use of water. In water scarce areas of the country, we have introduced reusable containers and an irrigation system that allow nursed plants to become more resilient by having deeper roots. We have trained women – the first generation of working women in their families – to work in the plant nurseries and become more aware of water scarcity. At the same time, deeper roots allow water to better penetrate the soil, contributing to restoring groundwater resources and avoiding flash floods. Other initiatives in the country at the urban level, but also in refugee camps, contribute to improved access to food and water resources through community-based urban agriculture and the greening of rooftops for water retention.
COMMUNITY ASSIMILATIVE PARTICIPATION FOR HERITAGE CONSERVATION, WATER REUSE, AND WOMEN’S EMPOWERMENT IN CAIRO.

EXCERPT FROM INTERVIEW WITH MAY AL-IBRASHY, PROFESSOR OF PRACTICE (ISLAMIC ARCHITECTURE) AT SOAS UNIVERSITY IN LONDON AND FOUNDER OF THE MEGAWRA-BUILT ENVIRONMENT COLLECTIVE (BEC).

In 2022, Egypt entered a state of water poverty, with an availability of 560 m$^3$ of water per capita per year in the country. At the same time, in Cairo there is an estimate of 30 per cent of water loss due to leakages from pipelines carrying both water and sewage. This situation affects groundwater in multiple ways, including water contamination and wastage. In old Cairo, the leakages often cause the inundation of buildings’ foundations, risking damage to historical buildings and creating community health issues. Megawra-BEC has launched the Athar Lina initiative to identify solutions through research, community participation, and pilot actions that aim to preserve heritage and historical buildings, prevent the wastage of water resources, and empower local communities, with a focus on women and children.

The organisation has already piloted harvesting and reuse solutions in four buildings and areas in the community: the Al-Khalifa Community Centre Roof, the Roof gardens of al-Saliba House and al-Khalifa Community Centre, the potted plant garden in Kuhya Mosque yard and the al-Khalifa Park. Three of the projects extract water from within or around inundated buildings (the al-Khalifa Community Centre, the Kuhya Mosque yard, and al-Khalifa Park). The fourth one (al-Saliba House) extracts groundwater that has collected through differential pressure in a historic cistern under the house. The water is then used for gardening and cleaning purposes, depending on the quality and on the contamination process. The 3,000 m$^2$ al-Khalifa Park is also the base for an urban farming and gardening programme that targets women and children from the community. At the park, they are trained in urban farming, can harvest the products of the garden, and can also replicate this in their homes depending on space availability. The intervention doesn’t solve the issue completely – the amount of water that should be pumped out each day from the historical 13th century domes near the park is estimated at 200 m$^3$ per day, and what is needed for the park is 10 m$^3$ per day – but it increases the awareness of it and allows the citizens to acquire a sense of ownership over the intervention, while benefiting from it.

The project applied a method of assimilative participation, identifying benefits and synergies in different local sectors and areas. The assimilative participation process has been ongoing for circa ten years and started by focusing on heritage education for children and women. As the project built trust in the community, local women were more and more interested in not only participating in the assessment process or events, but also in working on the coordination of the initiative. The water issue as well as the urban gardening / farming component was identified together with the women and was followed up by the implementation of training and awareness sessions. Initially the women were interested only in cultivating and exchanging the produced goods to incentivise the community spirit. More recently, seeing the economic potential of community participation in other craft and tourism activities, they are planning to implement the production and sale of compost material.

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