

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 m³ of water per building daily to 80 m³, and the sewage discharge passed from 90 m³ 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 disproportionately 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.

GENDER INEQUALITY AND WATER SCARCITY AS A RESULT OF SOCIO-POLITICAL FACTORS AND GENDER BLINDNESS.

EXCERPT FROM INTERVIEW WITH **GÜL ÖZEROL**, ASSOCIATE PROFESSOR AT THE UNIVERSITY OF TWENTE IN THE NETHERLANDS.

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.

PLANTING RESILIENT PLANTS FOR GROUNDWATER RESTORATION AND WOMEN'S JOBS.

EXCERPT FROM INTERVIEW WITH **DEYALA TARAWNEH**, ASSISTANT PROFESSOR OF THE ARCHITECTURE DEPARTMENT AT THE UNIVERSITY OF JORDAN AND FOUNDER OF WADI.

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 m³ 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 m² 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 m³ per day, and what is needed for the park is 10 m³ 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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