



Water Crisis and Rural Women: Insights from Moroccan Oases

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Summary

In many arid and semi-arid regions, rural women are at the heart of water-related dynamics – and therefore greatly affected by its scarcity. This scarcity affects their daily lives, farming activities, economic initiatives and solidarity networks, which are directly dependent on the availability of this resource. These women are often more vulnerable to climate change because of the difficulties they sometimes experience in accessing public services, land, water and institutions. At the same time, they play a central role in the rural development of the oases, in particular through their know-how, initiatives and ability to adapt.

This policy brief analyses the experiences of women in the oases of south-eastern Morocco. It shows that water stress acts as a multidimensional factor which redefines women's domestic tasks, agricultural practices, economic opportunities and forms of sociability, as well as their contribution to development. It highlights three major challenges facing women in vulnerable rural areas: (a) limited access to resources (land, credit, infrastructure and education); (b) training that is often ill-suited to rural realities and their needs; and (c) social norms that restrict their participation in decision-making bodies and spaces. The heterogeneity of the women encountered and of their needs underlines the necessity for targeted and diverse approaches.

The example of Moroccan oases also shows the importance of considering water in all its dimensions: domestic, agricultural, economic and institutional. This would provide a better understanding of both women's vulnerabilities and their contributions to sustainable development. The lessons learnt from the Moroccan oases provide a benchmark for other arid countries,

highlighting four action areas for Moroccan institutions and development policies:

1. Produce and disseminate gendered data

- Collect information disaggregated by gender, age, socio-economic status and other factors.
- Map women's vulnerabilities, resources and skills.
- Ensure better circulation of these data between the field and decision-makers to provide appropriate support.

2. Support women's access to public services, land and credit

- Promote access to health and education services according to specific needs, as well as access to credit and land.

3. Support women's initiatives

- Support collective and individual initiatives through appropriate training, access to finance, and product development and marketing.

4. Support changes in social norms and institutional representation

- Integrate the cultural and social dimensions into development policies and programmes.
- Promote changes in the social representations of women's roles and abilities.
- Promote the diversity of women's initiatives and facilitate the participation of women in governance institutions, including water governance, through training and awareness-raising.

Introduction: rural women facing water stress

Throughout the world, women in arid rural areas are particularly affected by the effects of climate change and water availability, mainly because of their responsibilities in the home, in agriculture and in their communities. These women are often at the heart of adaptation activities and local development dynamics. The example of Moroccan oases illustrates the dynamics observed in other Saharan and Sahelian contexts. It provides a better understanding of what is at stake in these transformations, and it puts forward concrete recommendations to Moroccan and foreign development actors concerning targeted support for these women and, through them, for rural development.

Moroccan oases, like other rural areas, are affected by climate change and water-related hazards. Morocco has just undergone six years of drought. Although the impact of water scarcity on the economic situation and agricultural production is often discussed in the media and in policy circles, the effects on rural women are much less well known, despite their importance for the future of rural regions and populations, particularly in vulnerable areas such as oases.

Women in the oases have a close relationship with water. They are generally responsible for many domestic, agricultural and livestock-related activities that are directly dependent on the availability of water. These responsibilities are even greater in areas with high levels of male migration, where women must take on a greater role in farm management and irrigation work, traditionally the preserve of men. Water scarcity also affects agricultural production and related cooperatives, with negative impacts on income and respective development activities.

Rural women may be experiencing these changes, but they are also shaping them through initiatives for adaptation, innovation and solidarity. Yet, public policies are proving insufficient in addressing these issues in a cross-cutting

manner. Although Morocco has adopted a strategy for gender mainstreaming in the water sector (Secrétariat d'État Chargé de l'Eau & UN Women, 2019), the complex links between gender and water (scarcity) are still not sufficiently understood or being taken into account, particularly in oasis areas.

This policy brief analyses the effects of water stress on rural women using the example of Moroccan oases. It highlights women's central role in the management of natural resources, the specific constraints they face – particularly in terms of access to water – their participation in local governance and economic opportunities, and their resilience in the face of climate change. These dynamics have a profound influence on the experiences and future prospects of oasis areas and their inhabitants, including women. However, the authors are fully aware that the issue of water availability cannot be tackled in isolation: It is part of a complex system in which agricultural activities, market relationships, public policies and social structures come together. Based on this diagnosis, the policy brief formulates recommendations that illustrate ways to provide better support for women, including – but not limited to – water management.

This brief is based on several years of research carried out by a multidisciplinary team of authors in various oases in south-eastern Morocco's Drâa-Tafilalet region (Dades, M'Goun and Todgha valleys) (Bossenbroek & Ftouhi, 2024; Bossenbroek, Ftouhi, Berger, & Kadiri, 2024; Ftouhi, Saidani, Bossenbroek, Hamamouche, & Kadiri, 2021). It is also based on the results of a workshop held in December 2024 that brought together representatives from academia, public institutions, international development cooperation, and civil society and women project leaders from oasis communities.

Water stress in the oases of south-eastern Morocco: an example of rural women's challenges in arid zones

Characterised by an arid climate and limited natural resources, the oases of south-eastern Morocco are increasingly affected by climate change, the effects of which are exacerbated by unsustainable water use, salinisation and falling water tables (Kaczmarek et al., 2023). Irrigated agriculture plays a central role in the oases – it is mainly for self-consumption and often combined with other sources of income, such as remittances, tourism, small-scale trade and handicrafts.

Water makes it possible to grow a wide range of agricultural products, helps preserve biodiversity and slows the advance of desertification. However, the prolongation and intensification of drought cycles, rising temperatures and decreasing rainfall – combined with certain water allocation choices – have led to a gradual deterioration of water resources and arable land. This has reduced agricultural productivity and led to the partial or total abandonment of agricultural land. In some villages, such as on the Jbel Saghro mountain, farming is no longer possible at all. This particularly affects households whose food and income depend mainly on agriculture, against a backdrop of rising food prices. The production and quality of dates – a key product in the oasis economy – has also been affected in many cases. Furthermore, livestock farming, which is important for both food security and the financial security of farmers, is sometimes abandoned in areas where fodder is no longer available.

The challenges facing rural women in this context are structural, but they are also amplified by hydrological conditions. Not all women are affected in the same way. Our fieldwork revealed a wide range of living circumstances for women, linked in particular to their social and marital status, level of education and age. Our analysis focuses on women from oasis communities whose households are largely dependent on agriculture.

In addition to the water situation, women from oasis communities face challenges relating to public infrastructure: Despite some progress, several oasis territories remain isolated and lack basic services (education, health and transport), particularly for women's specific needs. This situation limits opportunities, especially for rural women and girls, who face the combined effects of poverty, informal work and persistent obstacles in accessing land and finance (Haut-Commissariat au Plan [HCP], 2025).

Effects of water-related hazards on women's daily lives

Women in oasis communities are particularly exposed to variations and constraints linked to the availability of water, which affect their daily lives, their domestic and agricultural activities, and the knowledge they transmit.

As far as *drinking water* is concerned, women's challenges are connected to the varying availability of infrastructure and resources, but they also apply to their specific tasks. Despite a significant improvement in access to drinking water in the Drâa-Tafilalet region, disparities remain between urban areas (96.5 per cent coverage) and rural areas (86.5 per cent) (HCP, 2024). In addition, some villages still rely on wells or boreholes for their drinking water supply; these sources are generally managed by private individuals or associations whose technical, financial and management capacities vary widely. The effects of prolonged droughts and, locally, the over-exploitation of groundwater have significantly reduced access to water. In some places, this threatens the availability and quality of drinking water, which is sometimes insufficiently monitored. As the drinking water supply is often entrusted to women, this adds considerably to their daily burdens, especially when the source is far away.

Male migration, driven in part by drought and combined with limited employment opportunities beyond agriculture and limited access to education, also affects the situation of women. They generally stay to cultivate the land and take care

of family members who live there. In fact, 37 per cent of women provide all of their household's income, and 24 per cent contribute towards at least half of it (FAO [Food and Agriculture Organization], 2023). In the absence of the men, these women often take on agricultural tasks, including irrigation.

However, women are *poorly represented in water management institutions*. This marginalisation is particularly visible within the Water User Associations (AUEA) and the Jemâa, which is the assembly of community members responsible for managing matters of collective interest, often including water allocation.

Women's *forms of socialising and the transmission of knowledge* are also affected by drought and water-related hazards. Working in the *jnans* (literally "gardens": the often small agricultural plots in the oases), for example, is a special time for women to exchange information and ideas. But these moments are becoming rarer with the shortage of water, and in some cases they are disappearing altogether.

The effects of water-related hazards on women's initiatives

Water-related hazards also affect the women's initiatives that depend on water, with wide-ranging direct and indirect effects on their living conditions. As elsewhere in the country, the oases of south-eastern Morocco are home to a growing number of women involved in individual income-generating projects and collective initiatives in the form of associations, cooperatives and "economic interest groupings". These collectives are working to meet a wide range of development challenges, often in conjunction with public policies such as the National Human Development Initiative (INDH) and the Generation Green strategy, a national strategy designed to structure agricultural and rural development between 2020 and 2030. They are also important places for socialising, training and disseminating information (see Box 1).

Box 1: The Rosa Damascina cooperative: promoting roses to empower women

The Rosa Damascina cooperative reflects the development of women's initiatives in the region and the emblematic career of its leader. In 2003, after an initial experience in a mixed-gender association, she founded a women's association together with four women from her neighbourhood. They began by organising training courses in embroidery, sewing, weaving and couscous preparation, as well as literacy classes. In this way, they created a space for sharing knowledge and solidarity between women.

To create sustainable sources of income and enhance the value of women's work, in 2017 the leader founded the Rosa Damascina cooperative. With 7 members, and benefiting 20 other women, it specialises in the distillation of rose water and the manufacture of by-products sold locally and exported. Obtaining Moroccan certificates has enabled the cooperative to gain credibility and attract other women.

In addition to production, the head of the association takes part in scientific events, shares her knowledge at national and international trade fairs, and oversees the creation of other women's cooperatives – five of them by 2024. She states: "My aim is to encourage women to become producers, to move away from the position of recipients and take their place in economic life." The cooperative is also a place of solidarity: Its members help each other in the event of illness or other difficulties. Despite a drop in production during the drought and following Covid-19, rainfall in 2025 has enabled an encouraging recovery. Today, Rosa Damascina embodies a collective success story, an inspiring role model for young rural women, and a transmission of the oasis heritage by the women themselves.

Our experiences in the field confirm the findings of studies conducted elsewhere, namely that women's involvement in these activities contributes to their social, political and economic empowerment (Didi & Attouch, 2021; Gillot, 2016). As Kabeer (1999) points out, access to income and resources can strengthen women's agency

by increasing their ability to make strategic choices in their lives, in particular by giving them more power in decisions relating to expenditures and household management. As we observed during our fieldwork, even modest incomes can have considerable transformative potential.

The emergence of these initiatives is not necessarily dictated by water shortages, but their long-term viability is closely linked to the availability of this resource. As women become less involved in farming and livestock rearing, they turn to these initiatives to generate income. However, these projects are based on the manufacture, development and marketing of agricultural products and their by-products (dates, bread, cakes, semolina, walnuts, almonds, roses and related cosmetics), and thus directly depend on irrigation water. The lack of water can hamper their operations and compromise the very basis of their business, affecting their daily lives on several levels.

Firstly, at an individual level, the initiatives contribute to the empowerment of the women who undertake them, encourage them to leave the domestic sphere and offer opportunities to transform their daily lives. As one woman of a local development initiative put it: “Before, we stayed at home, we were shy, we couldn’t talk to anyone, but today, the cooperative has given us the confidence to talk to people, and to go and do the paperwork at the *caïdat* [local administrative district run by a representative of the state] for example, we can go everywhere now.”

Secondly, the income, even if it is sometimes moderate, helps the family to support itself and cope with economic contingencies. This income becomes even more important for women living alone, as they are responsible for the household and are the main source of the household’s income. Sometimes it also allows them to renegotiate their position within the household. One of the women we interviewed, aged 39, explained how, despite being the youngest, she “keeps the key to the room where the family’s food supplies are stored”.

Thirdly, these initiatives are spaces for learning and collective action. By joining marketing

networks and taking part in training courses, these women are developing new management, negotiation and communication skills. Moreover, these projects strengthen intergenerational links, with young people contributing their knowledge of digital marketing and innovation, while older women pass on their know-how and experience of resilience in the face of rural challenges. Getting informed, networking and developing solutions to common challenges enables these women to create shared identities, build social capital and achieve common goals on the basis of mutual support.

These collective dynamics can initiate a genuine process of social transformation in which women redefine their places in their communities and play an active part in local development. They also help to promote local products, highlighting the potential of regions that are often marginalised.

Three major constraints on adaptive capacities

In what follows, we highlight three major constraints on rural women’s empowerment in the context of water stress: their vulnerability and unequal access to resources, the inadequacy of available training and the social norms that limit their participation in decision-making.

Women’s adaptive capacities are limited by their vulnerability to water stress and the structurally greater difficulties that they experience in accessing certain resources. Their vulnerability can also be explained by the gendered division of roles and tasks. In addition to their own responsibilities, women often take on those that previously fell to men, particularly in cases where there is male migration. As a result, they are the first to face the consequences of water stress, whether in terms of access to drinking water or of the effects on agricultural activity.

In addition, maintaining farming activity requires investment, but credit is generally reserved for landowners, who are rarely women, despite recent changes in the legal framework. Finally, a high level of education can facilitate employment

that is less dependent on water, but women in the Drâa-Tafilalet region have higher rates of illiteracy than men (37.4 vs. 18.6 per cent) (HCP, 2024).

Available training does not always correspond to women's needs, even though it could play a key role in launching or developing income-generating and development activities. The women we met said that the existing programmes are often standardised and do not address the specific features of the rural world and their specific needs. For example, training courses on marketing may focus on e-commerce or online platforms, even though some women cannot read or write. They must therefore deal with these challenges, for example by recruiting young people who are more at ease with these new technologies. Furthermore, training courses take little account of women's domestic and professional responsibilities and are sometimes offered far from where they live. The lack of post-training follow-up can also prevent the skills acquired from being put into practice. Finally, training courses do not always consider the specific socio-economic characteristics of women from oasis communities or their native language.

In the regions studied, certain gendered socio-cultural norms limit women's access not only to resources, but also to certain decision-making spaces related to water management. For example, when they encounter difficulties in accessing or managing water, women must often go through male relatives to get their needs heard. Moreover, they cannot always access the information exchanged in these spaces. Our interviews also revealed that certain social norms hinder the direct sale and marketing of agricultural products by women. This finding is corroborated by other studies in the region (FAO, 2023).

Conclusions and recommendations

This policy brief highlights the effects of water-related hazards on rural women in the oasis areas of south-eastern Morocco. These effects are often overlooked and therefore rarely taken into account. The brief highlights the structural chal-

lenges facing women from oasis communities, while emphasising their capacity for organisation, entrepreneurship and collective action. These dynamics are assets for improving living conditions and adapting to climate change in these areas. To meet the specific needs and diverse aspirations of these women, the support offered to them needs to be better adapted to the diversity of their profiles and take into account the multiple functions of water. With this in mind, we present the following four recommendations to Moroccan institutions for rural development and natural resource management, and to international development cooperation:

1. Produce and disseminate gendered data to better guide water-related development initiatives

- In order to better understand the distribution of responsibilities between women and men – and thus target development programmes and actions effectively – it is essential to have gender-disaggregated data on the roles and contributions of women and men in water-related activities. However, these data also need to be sensitive to other intersecting vulnerabilities (e.g. ethnicity, age and socio-economic status). It is also essential to encourage better circulation of this information between the local level and decision-makers, as field staff often have invaluable expertise on gender-related issues and solutions.
- At the local level, it is essential to map not only women's vulnerabilities (access to water, land, credit, infrastructure), but also their specific resources and skills (agricultural know-how, solidarity networks and digital skills). This approach enables the design of support measures that are based on women's actual capabilities rather than offering generic training disconnected from their experiences.

2. Support women's access to public services, land and credit

- Based on the mapping of their access to services and their specific needs, promote access to health and education.

- Promote women's access to bank accounts and credit to facilitate savings and independent investment.

3. Provide better support for women's initiatives through training

- Support forms of collective organisation initiated or led by women (cooperatives, associations and informal groups) through appropriate training, access to finance, support for product development and marketing, and appropriate follow-up.

4. Support changes in social norms and institutional representation

- Public policies and development programmes would benefit from going beyond strictly technical or economic approaches in their support

programmes towards integrating the cultural and social dimensions that influence women's trajectories and choices.

- Encourage changes in the social representations of women's roles and abilities by using communication tools adapted to local contexts: community radio stations, stories of committed women acting as role models, videos in local languages promoted on social networks. Avoid imposing a single model (like cooperatives), but recognise the diversity of women's aspirations, whether individual or collective.
- Support women who wish to participate in water management institutions or other governance bodies through training and awareness-raising among other members of these institutions.

References

Bossenbroek, L., & Ftouhi, H. (2024). Altering water flows in the Drâa Valley, Morocco: A feminist analysis. In T. Acevedo-Guerrero et al. (Eds.), *Routledge handbook of gender and water governance* (pp. 298-313). Routledge.

Bossenbroek, L., Ftouhi, H., Berger, E., & Kadiri, Z. (2024). Femmes oasiennes au Maroc: actrices de la survie des oasis. *Cahiers Agricultures*, 33, 1-12. <https://doi.org/10.1051/cagri/2024030>

Didi, K., & Attouch, H. (2021). Action publique et dynamique des coopératives au Maroc. *International Journal of Accounting, Finance, Auditing, Management and Economics*, 2(6-1), 379-397.

FAO (Food and Agriculture Organization). (2023). *Évaluation genre des secteurs de l'agriculture et du développement rural – Maroc. Rapport 2023*. Rabat.

Ftouhi, H., Saidani, M. A., Bossenbroek, L., Hamamouche, M. F., & Kadiri, Z. (2021). Entre vulnérabilité et résilience: le vécu de la pandémie de Covid-19 dans deux sociétés oasiennes du Maghreb. *Cahiers Agricultures*, 30, 1-14.

Ftouhi, H. (2024). La loi est là mais qu'en est-il de mon droit ? Devenir du Mouvement des Soulatiyates. In : S. El Kahlaoui & H. Sqalli (Eds.), *Repenser l'agir collectif. Economia Book* (3ème édition, pp. 219-249). <https://www.economia.ma/fr/Travaux-de-recherche/la-loi-est-l%C3%A0-mais-qu%E2%80%99en-est-il-de-mon-droit-devenir-du-mouvement-des>

Gillot, G. (2016). Les coopératives, une bonne mauvaise solution à la vulnérabilité des femmes au Maroc? *Espace Populations Sociétés* (3). <https://doi.org/10.4000/eps.6800>

HCP (Haut-Commissariat au Plan). (2024). *Résultats RGPH 2024*. <https://rgphapps.ma>

HCP (Haut-Commissariat au Plan). (2025, March). *Étude sur l'estimation des coûts d'opportunité économique de l'autonomisation économique des femmes rurales*. <https://www.hcp.ma>

Kabeer, N. (1999). *Resources, agency, achievements: Reflections on the measurement of women's empowerment*. Development and Change, 30(3), 435-464. <https://doi.org/10.1111/1467-7660.00125>

Kaczmarek, N., Mahjoubi, I., Benlasri, M., Nothof, M., Schäfer, R. B., Frör, O., & Berger, E. (2023). Water quality, biological quality, and human well-being: Water salinity and scarcity in the Draa River basin, Morocco. *Ecological Indicators*, 148, 110050. <https://doi.org/10.1016/j.ecolind.2023.110050>

Secrétariat d'État Chargé de l'Eau & UN Women. (2019). *Stratégie d'intégration du genre dans le secteur de l'eau*. Royaume du Maroc. https://www.equipement.gov.ma/eau/genre-eau/Documents/Integration_genre_2019.pdf

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