

From Burden to Agency: The Gendered Dynamics of Water Governance and Climate Resilience in Rural Morocco

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Abstract

This study analyzes the gendered management of water within the Amazigh rural communities of the Oulmès Circle (Khémisset) and the Arab communities of Sidi Kacem, examining how drought and male emigration have expanded women's traditional roles from domestic water to include agriculture and broader water management. Grounded in a feminist political ecology approach and fourteen months of ethnographic fieldwork, including participant observation, the research reveals that women's increased engagement stems primarily from necessity. However, their resulting empowerment remains constrained by deeply entrenched gender norms. These findings underscore the importance of inclusive, culturally adapted policies, such as microcredit and education, in strengthening community resilience and promoting gender equity.

Keywords: Gendered water management, male emigration, gender equity.

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Introduction

In rural Morocco, agrarian societies are being fundamentally restructured by the intertwined crises of severe climate change-induced droughts and male out-migration. Historically, water management in these regions has been strictly gendered: men are the gatekeepers of agricultural irrigation and productive water, while women are relegated to managing domestic and reproductive water. As climatic patterns continue to shift and threaten rural livelihoods, these changes have led to increased male exodus to urban centers or abroad. Consequently, a demographic shift emerges, with women becoming the primary stewards of the land.

While previous Moroccan studies have frequently highlighted the "feminization of agricultural labor" triggered by climate-induced male out-migration (Abdelali-Martini, 2011), and established that customary governance systems historically marginalize women from formal irrigation councils (Bossenbroek et al., 2015), a critical gap remains in the literature. Specifically, what remains unknown is whether the "labor-management gap", the crucial distinction between shouldering the physical burden of farming and acquiring actual decision-making authority over vital irrigation water, is actively closing for women facing severe contemporary environmental pressures. This study fills that gap by directly comparing two distinct socio-ecological contexts (the Amazigh communities of Oulmès Circle and the Arab communities of Sidi Kacem) to systematically investigate whether women's expanding agricultural roles represent a true transfer of authority or merely an unsustainable increase in their physical burden

Drawing on a Feminist Political Ecology (FPE) framework, this study interrogates how entrenched gender norms and institutional supports shape women's roles and outcomes in agricultural water management across two contrasting Moroccan contexts: the Amazigh communities of Oulmès Circle (Khémisset) and the Arab communities of Sidi Kacem. Based on fourteen months of ethnographic fieldwork, the analysis reveals that women's expanded engagement in agricultural water management, driven by necessity amid a rural crisis, does not inherently lead to empowerment; instead, their ability to achieve equity and resilience depends on local social expectations and access to institutional resources.

I. Literature Review

The intersection of climate-induced migration, water scarcity, and gender has emerged as a critical frontier in agrarian studies. This study is anchored in Feminist Political Ecology (FPE), a framework pioneered by Rocheleau et al. (1996), which posits that access to, control over, and knowledge of natural resources are fundamentally gendered and mediated by intersecting power dynamics.

1.1. The Feminization of Agriculture vs. Management

Scholarship on North African agrarian transitions frequently highlights the "feminization of agricultural labor" precipitated by male out-migration (Abdelali-Martini, 2011). However, a critical distinction remains between labor and authority. As Zwarteveen (1997) argues, women often shoulder the physical burden of farming without acquiring the decision-making power over vital resources, particularly irrigation water. This study seeks to investigate whether this "labor-management gap" is closing in rural Morocco.

1.2. Gendered Water Rights and Customary Governance

In the Moroccan context, traditional water governance, specifically within customary *Jmâa* systems, has historically marginalized women from formal irrigation councils (Bossenbroek et al., 2015). While men are socially constructed as "rightful irrigators," women's roles are often confined to domestic water provisioning. This study interrogates how contemporary environmental pressures are challenging these traditional constructs.

1.3. From Vulnerability to Resilience

Recent literature advocates for a paradigm shift from viewing women as "victims of climate change" to "agents of resilience." Najjar et al. (2018) demonstrate that when women access formal institutional support, such as microcredit and agricultural extension services, their adaptive capacity to drought increases, subsequently transforming traditional gender relations.

II. Methodology

2.1. Theoretical-Methodological Alignment

To operationalize the Feminist Political Ecology (FPE) framework, a perspective examining power, gender, and environmental change, this study adopts a mixed-methods approach. FPE requires a dual focus: capturing the nuanced, subjective "lived experiences" (personal narratives and meaning-making) of individuals while simultaneously mapping broader, quantifiable demographic and power shifts. By synthesizing these perspectives, the research moves beyond a simple inventory of water use to analyze the intergenerational transformations of gender relations within rural communities.

2.2. Research Design and Data Collection

I conducted 14 months of ethnographic fieldwork to achieve thorough engagement and data saturation. The study has two parts:

- **Qualitative Dimension:** Centers on participant observation and semi-structured interviews to uncover deep-seated cultural narratives, localized "situated knowledge" (context-specific understanding), and inter-gender perceptions.
- **Quantitative Dimension:** Uses a structured questionnaire to systematically measure the extent and socioeconomic impact of women's expanding roles in resource management, enabling the triangulation of ethnographic insights.

2.3. Comparative Site Selection and Sampling

I compare two different Moroccan regions to trace these dynamics across socio-cultural contexts:

1. Oulmès Circle (Khémisset) is mountainous and mostly Amazigh. Water management relies on longstanding local traditions.
2. Sidi Kacem is an agricultural plains region with a mostly Arab population. It has different ecological and social conditions.

The study uses purposive, gender-disaggregated sampling by age, targeting 16 households in Sidi Kacem and 25 in the Oulmès Circle. This approach helps map gender shifts and track changes in women's authority across groups.

Table 1: Fieldwork Results - Oulmès Circle vs. Sidi Kacem

Sex	Question / Statement	Oulmès Circle (Amazigh)	Sidi Kacem (Arab)
F	1- Do you independently manage agricultural irrigation, or strictly domestic water provision?	20%	90%
F	2- Have your agricultural and broader water management responsibilities expanded due to male emigration?	30%	80%
M	3- Do you accept women taking over primary irrigation and agricultural duties in the absence of men?	40%	100%
F	4- Do you have access to formal water management councils, education, or microcredit?	0%	100%
F	5- Perception of role: "Necessity/Exhaustion" vs. "Empowerment/Autonomy"	20% (Necessity)	100% (Empowerment)
M	6- Male perception: "Male domain" vs. "Women have proven capacity"	90% (Male domain)	100% (Proven capacity)
F	7- Expertise vs. Burden: "Heavy burden" vs. "Central to resilience"	30% (Heavy burden)	100% (Central to resilience)
F	8- Migration intent: "Move to city" vs. "Adapt and stay"	70% (Move to city)	100% (Adapt and stay)

(Note: Questions 5, 6, 7, and 8 represent community-specific qualitative statements where the percentage indicates the proportion of respondents who strongly agreed with the localized sentiment).

III. From Burden to Agency: Gendered Water Governance and Climate Adaptation in Oulmès and Sidi Kacem

3. 1: The Divergence of Empowerment – Autonomy vs. Exhaustion

A central tenet of FPE is distinguishing between an increased workload and true empowerment. The data reveal a stark contrast between how women in the two communities experience the feminization of agriculture. In Sidi Kacem, a vast majority (90%) of women independently manage agricultural irrigation, and 80% acknowledge this expansion is tied to male emigration. Crucially, 100% of the surveyed women in Sidi Kacem reported that taking over these duties increased their sense of empowerment and autonomy.

In contrast, the transition in Oulmès Circle is marked by more constraints. Only 20% of Amazigh women manage irrigation independently. These women describe their work as exhausting and necessary. Thirty percent say agricultural labor is just another heavy burden added to fetching domestic water. This shows that, without support, male out-migration does not empower women. It instead increases their workload to an unsustainable level.

3.2: Patriarchal Gatekeeping and Male Perceptions

Women's success in new roles depends on men's social acceptance. In Sidi Kacem, there has been a major shift. All surveyed men (100%) accept women taking over irrigation. They say women have proven they can adapt and manage water resources well.

Oulmès Circle shows strong patriarchal gatekeeping. Despite drought and emigration, most men (90%) say irrigation is a male domain, upheld by traditional gender norms. Only 40% accept women handling irrigation duties. This ideology stops women from taking management roles. As a result, they work without authority and cannot make major irrigation decisions.

3.3: Institutional Scaffolding and Community Resilience

The divergence between Oulmès and Sidi Kacem is explained by institutional access. The data shows that support from water management councils, education, or microcredit directly enables climate resilience. In Sidi Kacem, 100% of women report having this access, which equips them with irrigation knowledge, fosters their central role in community adaptation, and anchors their commitment to staying and adapting locally.

In Oulmès, no women reported having access to institutional mechanisms. Without financial capital, education, or representation in council, the community's resilience declines. As a result, 70% wish to leave their land, indicating that the absence of support directly undermines their ability to adapt to climate challenges.

IV. The Complex Topography of Agricultural Feminization and Climate Resilience

The phenomenon of agricultural feminization, driven by climate-induced male out-migration, compels a nuanced critical evaluation. Using Feminist Political Ecology (FPE), this process reveals

that shifting agricultural responsibilities to women is a renegotiation of power, labor, and ecological survival. Crucially, simply lacking male labor does not dismantle historical gender hierarchies. This transition can result in either genuine female autonomy or exacerbate women's vulnerability and exhaustion. The main argument is that understanding these divergent outcomes is fundamental to moving past simplistic narratives and recognizing the complex variables that shape community resilience or collapse under climate stress.

A primary theoretical takeaway is the critical need to separate an increased workload from genuine empowerment. In many rural contexts, women assume control over vital resources, such as agricultural irrigation, out of sheer necessity rather than through a structural transfer of authority. When agricultural duties are simply stacked upon existing domestic responsibilities without a corresponding elevation in social standing or decision-making power, the result is profound time poverty and physical depletion. Managing water in climate-stressed environments is an inherently demanding task that requires specialized ecological knowledge and significant physical labor. When this labor goes unrecognized or is viewed merely as an extension of a woman's domestic duties, it acts as an invisible tax, stretching women's capacities to the breaking point without offering them the tools to meaningfully improve their circumstances.

Conversely, the discussion must also acknowledge the contexts in which agricultural feminization serves as a legitimate catalyst for female emancipation. When the departure of male heads of household creates a vacuum that women are permitted to fill with full authority, their relationship to the land and the community fundamentally transforms. Controlling resources like water, a historically guarded domain, shifts from being an added chore to a mechanism of self-determination. In these scenarios, women transition from invisible laborers to recognized farm managers. This paradigm shift validates their ecological knowledge and fosters a profound sense of identity and attachment to the land. This suggests that true empowerment in agrarian transitions relies entirely on the quality of the agency afforded to women, rather than just the quantity of the labor they perform.

Moreover, it is essential to consider the implications of male perception and entrenched customary laws, which cannot be overstated. The physical absence of men due to out-migration does not equate to the absence of patriarchy. Ideological rigidity among the remaining male population acts as a formidable barrier to climate adaptation. When customary norms dictate that natural resource management is exclusively a male domain, women are actively prevented from fully stepping into leadership roles. They are forced to operate in the shadows of agricultural production, carrying the physical burden of maintaining the farms but lacking the recognized authority to make critical, time-sensitive decisions regarding irrigation or crop management. This patriarchal gatekeeping actively suppresses the adaptive capacity of the entire community, prioritizing the preservation of archaic gender norms over ecological survival.

On the other hand, dismantling these traditional barriers demonstrates that social flexibility directly enhances environmental resilience. In settings where the remaining male population and community elders actively endorse women's newly acquired authority, a collaborative environment is fostered. This social acceptance is not merely a matter of gender equity; it is a critical component of agricultural innovation. Without the community's validation, women cannot effectively implement new farming practices or negotiate resource allocation during periods of scarcity. When men accept and support female leadership in water management, gender norms evolve in tandem with environmental realities, creating a cohesive, agile community response to the pressures of drought and climate change.

Beyond local social dynamics, the most decisive factor in determining the outcome of agricultural feminization is the presence or absence of institutional scaffolding. Adaptive capacity is intrinsically linked to systemic inclusion. When women are integrated into formal water management councils, provided targeted agricultural education, and given access to microcredit, they are equipped with the capital they need to succeed. This formal support network legitimates their roles and provides a safety net that buffers against the shocks of climate variability. It proves that targeted interventions by the state and non-governmental organizations (NGOs) are indispensable in transforming the burden of male out-migration into a sustainable avenue for female empowerment and community stability.

Absent this institutional support, the stark alternative is a rapid descent into climate maladaptation. Bereft of financial capital, education, and representation in formal governance structures, agrarian communities face fractured resilience. When women are forced to shoulder the dual burdens of an ecological crisis and patriarchal suppression without state or institutional backing, survival becomes untenable. The resulting exhaustion and disenfranchisement strip away women's attachment to the land, transforming them from potential agents of climate resilience into climate refugees. The desire to abandon agricultural livelihoods for urban centers is not necessarily a failure of female resilience, but rather a rational response to an unsupported and unmanageable socio-ecological burden.

Conclusion

This Feminist Political Ecology analysis demonstrates that the agricultural feminization sweeping rural Morocco is fundamentally shaped by localized contexts of necessity, social acceptance, and institutional support. While climate-induced male out-migration forces women into agricultural roles across both studied regions, the socio-ecological outcomes diverge sharply. In Sidi Kacem, the combination of male acceptance and full institutional access facilitates genuine female empowerment and strengthens community resilience. In stark contrast, the entrenched patriarchal norms and severe lack of systemic support in the Oulmès Circle leave women exhausted, highly vulnerable, and desperate to migrate. These localized realities reinforce that

agricultural feminization does not inherently dismantle historical gender hierarchies; rather, its success depends entirely on systemic and cultural variables.

Furthermore, these findings emphasize that adapting to climate change in agrarian societies is impossible unless female labor is structurally supported and recognized. To ensure rural survival and food security. Therefore, policymakers and NGOs must urgently prioritize inclusive, culturally adapted interventions. Guaranteeing women formal decision-making power in water governance, coupled with targeted access to agricultural education and microcredit, is essential for transforming survival-driven necessity into genuine gender equity.

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