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ARTICLE

Women's Water Stewardship: Linking Agency, Islamic Environmental Ethics, and Intergenerational Sustainability Through Social Reproduction

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Abstract

Climate change has intensified the water resource crisis, threatening environmental sustainability, community well-being, and the welfare of future generations. Previous studies have largely portrayed women as vulnerable groups, domestic water managers, or participants in water governance, while the role of everyday practices and religious values in sustaining intergenerational well-being remains insufficiently theorized. This study aims to reconceptualize women's water stewardship as a form of social reproduction and develop the Water-Women-Children Cycle Model to explain how women's everyday practices contribute to ecological and social sustainability across generations. Employing a Conceptual Literature Review, the study examines 15 purposively selected scholarly articles through thematic and theoretical synthesis, integrating Environmental Sociology, Structuration Theory, Ecofeminism, and Islamic environmental ethics. The findings reveal that women's water stewardship transforms water resources into improved health, sanitation, family well-being, and ecological awareness among children. Islamic values, particularly *khalifah, amanah, mīzān*, and *maṣlaḥah*, function as social mechanisms shaping environmental responsibilities and gender relations, potentially strengthening women's agency while also reproducing inequalities in the division of labor. The implication of this study is a broader sociological understanding of environmental governance that recognizes everyday practices, social reproduction, gender relations, and religious values as interconnected mechanisms of intergenerational sustainability, while providing a conceptual foundation for more inclusive and gender-responsive water governance policies.
Keywords: Water Stewardship; Social Reproduction; Women's Agency; Islamic Environmental Ethics; Intergenerational Sustainability

Perubahan iklim telah memperburuk krisis sumber daya air yang mengancam keberlanjutan lingkungan, kesejahteraan masyarakat, dan kehidupan generasi mendatang. Penelitian terdahulu cenderung menempatkan perempuan sebagai kelompok rentan, pengelola kebutuhan domestik, atau peserta tata kelola air, sementara peran praktik keseharian dan nilai-nilai keagamaan dalam mereproduksi keberlanjutan antargenerasi belum banyak dijelaskan secara konseptual. Penelitian ini bertujuan merekonseptualisasi pengelolaan air oleh perempuan sebagai bentuk reproduksi sosial dan mengembangkan Water-Women-Children Cycle Model untuk menjelaskan kontribusi praktik keseharian perempuan terhadap keberlanjutan ekologis dan sosial antargenerasi. Penelitian menggunakan metode Conceptual Literature Review terhadap 15 artikel ilmiah yang dipilih secara purposif, dengan analisis sintesis tematik dan teoretis yang mengintegrasikan Sosiologi Lingkungan, Teori Strukturasi, Ekofeminisme, dan etika lingkungan Islam. Hasil penelitian menunjukkan bahwa praktik pengelolaan air oleh perempuan mengubah sumber daya air menjadi kesehatan, sanitasi, kesejahteraan keluarga, dan kesadaran ekologis anak. Nilai-nilai Islam berupa khalifah, amanah, mīzān, dan maṣlaḥah beroperasi sebagai mekanisme sosial yang membentuk tanggung jawab lingkungan dan relasi gender, sekaligus dapat memperkuat agensi perempuan maupun mereproduksi ketimpangan pembagian kerja. Implikasi penelitian ini adalah perluasan perspektif sosiologis tentang tata kelola lingkungan dengan menempatkan praktik keseharian, reproduksi sosial, relasi gender, dan nilai keagamaan sebagai mekanisme keberlanjutan antargenerasi, sekaligus memberikan landasan konseptual bagi kebijakan tata kelola air yang inklusif dan responsif gender.

A. INTRODUCTION

Climate change has intensified the global water crisis, threatening not only ecological sustainability but also the social conditions that sustain communities' livelihoods and well-being. Rising temperatures, shifting rainfall patterns, prolonged droughts, and hydrometeorological disasters have increasingly affected the availability and quality of water resources (Agnesia and Ade Fitri 2025; Rosińska et al. 2024). Access to safe water is essential for public health, food security, sanitation, education, and human development (Bose et al. 2024). Its scarcity, however, disproportionately affects socially vulnerable populations, particularly women and children. Limited access to clean water increases the risks of infectious diseases, malnutrition, stunting, and educational disruption, potentially reproducing social inequalities across generations (Dzawanda, Matsa, and Chireshe 2024; Gyan and Duan 2024; Martey et al. 2025; Nugraheni et al. 2025; Rhue et al. 2023; Rosemiarti, Sunardi, and Putri 2026). These consequences demonstrate that water scarcity is not simply an environmental problem but also a sociological concern involving unequal resource distribution, gendered responsibilities, and the intergenerational reproduction of well-being. From an Islamic perspective, water conservation also reflects the principles of ecological balance (mīzān), the protection of life (ḥifẓ al-nafs), and collective welfare (maṣlaḥah), which emphasize humanity's responsibility to preserve natural resources for present and future generations (Agustina et al. 2025; Derysmono and Kahfi 2025; Hamdi et al. 2025; Mohidem and Hashim 2023; Nurholis 2025).

The central problem, therefore, concerns how water resources are transformed into social well-being through everyday practices and how these practices contribute to sustainability across generations. Water availability alone does not guarantee improvements in health, sanitation, education, or ecological awareness; these outcomes depend on the social practices through which resources are managed, distributed, and utilized.

Women play a particularly important role in these processes because their everyday responsibilities often include providing drinking water, preparing food, maintaining sanitation, protecting family health, and caring for children (Brewis et al. 2024; Dickin and Caretta 2022). Although these activities are commonly understood as domestic responsibilities, they also constitute forms of social reproduction through which families and communities sustain their lives and transmit knowledge, norms, and environmental values across generations (Dadman, Aminzai, and Moradi 2025). Nevertheless, women's involvement in water management is shaped by unequal gender relations, meaning that these responsibilities may simultaneously create opportunities for agency and reinforce existing burdens. This raises a broader sociological question about how women's everyday water practices reproduce ecological and social sustainability while operating within gendered structures and religiously informed moral expectations. Islamic principles such as *khalifah, amanah, mīzān*, and *maṣlaḥah* are particularly relevant because they provide ethical understandings of environmental responsibility, although their sociological significance depends on how these values are interpreted and practiced within family and community relations (Syauqi, Askar, and Ghofur 2025; Zulkifli, Nuryaman, and Hafidhoh 2023).

Existing scholarship on gender and water governance can be organized into three interconnected strands. The first examines women's vulnerability to water insecurity, emphasizing unequal access to resources, increased domestic workloads, and the gendered consequences of environmental crises. Brewis et al. (2024) and Dickin and Caretta (2022) demonstrate the importance of understanding water insecurity through gender relations rather than treating women as a homogeneous vulnerable population. The second strand focuses on women's participation in water governance, environmental conservation, and climate adaptation. Joshi and Ghimire (2024) and Ojwala et al. (2024) highlight the importance of

women's inclusion in resource management and environmental decision-making, while Cole et al. (2024) and Al Haddid, Ahmad, and Ahmad (2026) extend discussions of gender, knowledge, and water stewardship. The third strand investigates the relationship between water access and human development, particularly children's health, sanitation, nutrition, and educational opportunities (Dzawanda, Matsa, and Chireshe 2024; Nugraheni et al. 2025; Rosemiarti, Sunardi, and Putri 2026). Collectively, these studies establish the significance of gender relations, institutional participation, and human well-being in water governance. Yet their analytical emphases differ: vulnerability studies foreground unequal burdens, participation studies examine women's involvement in governance arrangements, and human development studies emphasize the outcomes of water access. Consequently, the everyday social mechanisms linking women's water management practices **to** the reproduction of ecological knowledge, family well-being, and intergenerational sustainability remain insufficiently integrated into a single conceptual explanation.

Sociological and ethical perspectives offer complementary foundations for addressing these relationships. Environmental Sociology understands water as both an ecological and a social resource whose sustainability depends on interactions among environmental systems, social institutions, and everyday practices (Schulz and Gros 2024). Anthony Giddens' Theory of Structuration further explains how repeated social practices both reproduce and potentially transform the structures within which individuals act (Khairul Anam 2025). Applied to water governance, this perspective allows women's activities in sanitation, household water management, and environmental education to be examined as socially structured practices that sustain and potentially reshape collective life. Ecofeminism similarly challenges biological assumptions about women's relationships with nature by emphasizing

how ecological knowledge emerges through socially organized experiences of care and environmental responsibility (Elias 2015). Meanwhile, Islamic environmental ethics introduces the principles of *khalifah* (stewardship), *amanah* (trusteeship), *mīzān* (balance), and *maṣlaḥah* (collective welfare) as moral foundations for responsible resource management (Hamdi et al. 2025; Mohidem and Hashim 2023). These principles can be understood sociologically by examining how religious values are transmitted, negotiated, and enacted within gender relations, household responsibilities, and community practices. Bringing these perspectives together makes it possible to conceptualize women's water stewardship not merely as domestic labor or institutional participation but as a socially embedded process through which ecological resources, moral responsibilities, and intergenerational well-being become interconnected.

Despite these contributions, existing scholarship has not sufficiently integrated women's everyday water management practices, gendered agency, and Islamic environmental values into a conceptual explanation of how ecological and social sustainability are reproduced across generations. o address this gap, this study aims to reconceptualize women's water stewardship as a form of social reproduction and develop the Water-Women-Children Cycle Model to explain how women's everyday practices contribute to ecological and social sustainability across generations. Academically, this study advances sociological debates on environmental governance and social reproduction by reconceptualizing women's water stewardship, while providing a conceptual framework for understanding how everyday water management practices contribute to children's well-being and intergenerational sustainability. Its sociological implication lies in repositioning women's everyday practices as mechanisms of environmental governance through which gender relations, religious values, ecological knowledge, and social structures

interact to reproduce or potentially transform sustainability across generations.

B. METHODOLOGY

This study employs a qualitative approach using the Conceptual Literature Review (CLR) method to develop a sociological perspective on the relationship between women, water governance, and the sustainability of future generations. This approach was chosen because the research objective is not to test causal relationships or evaluate intervention effectiveness, but to construct a conceptual synthesis that explains how women's water management practices contribute to social reproduction and intergenerational sustainability. Unlike a Systematic Literature Review, which synthesizes empirical evidence to answer specific research questions, a Conceptual Literature Review integrates theory, concepts, and empirical findings to generate new conceptual perspectives (Schreiber and Cramer 2022; Snyder 2024). This approach is appropriate for the research objectives: to develop the concept of "Women as Water Stewards for Future Generations" and to establish the "Water-Women-Children Cycle Model" as an analytical framework within Environmental Sociology.

The choice of a Conceptual Literature Review rather than a Systematic Literature Review follows from three features of the research problem. First, the problem is conceptual rather than evidential. The relevant literature on women, water, child well-being, and Islamic ethics is spread across disciplines that use different units of analysis (household practice, community governance, child health outcomes, and theological principle), and no common outcome measure exists against which effects could be pooled, as a systematic review would require. Second, the aim is to build a new explanatory construct (water stewardship as social reproduction) and a model (the Water-Women-Children Cycle Model). This requires putting theories from Environmental Sociology,

structuration, ecofeminism, and Islamic ethics into dialogue with empirical findings, an operation that the aggregation of effect evidence in a systematic review does not perform. Third, a Conceptual Literature Review permits purposive, theory-driven inclusion of literatures, such as Islamic environmental ethics, that are published outside the databases and study designs typical of systematic reviews. The trade-off is that this approach does not claim exhaustive coverage or statistical generalization, so the findings are presented as theoretical propositions and not as pooled empirical effects.

Literature was collected in 2026 from the Scopus, ScienceDirect, SpringerLink, Taylor & Francis Online, and Google Scholar databases and from publications of international organizations such as UN-Water, UNICEF, WHO, UN Women, and the Intergovernmental Panel on Climate Change (IPCC). Searches used the keywords water governance, women and water management, water stewardship, gender and climate change, environmental sociology, social reproduction, children's rights to water, intergenerational sustainability, ecofeminism, and Islamic environmental ethics. The keywords were combined in Boolean searches that paired a gender term with a water term (for example, "*women*" OR "*gender*" with "*water governance*" OR "*water stewardship*" OR "water management") and then added a second concept such as child well-being, social reproduction, or Islamic environmental ethics. The search proceeded in four stages: identification of records; screening of titles and abstracts against the criteria below; assessment of full texts for their relevance to the research objectives; and final selection of the core corpus. Because literature on Islamic environmental ethics and on women's water practices is often published in regional journals, sources in languages other than English were eligible, as stated in the criteria.

The literature was selected through a purposive approach based on its relevance to the research objectives. Inclusion criteria were (1) peer-

reviewed scholarly articles, (2) published between 2015 and 2026 in English, Indonesian, French, or Portuguese, and (3) discussing women's or gendered water practices, knowledge, or governance, or the relationship between water and children's health, education, and well-being, with attention to social dimensions. Popular articles, non-peer-reviewed publications, hydrological engineering studies that do not address social dimensions, and publications without a direct connection to the research focus were excluded. Applying these criteria produced a core corpus of fifteen journal articles, which served as the primary evidence for the thematic synthesis and are listed in Table 2. A second body of literature supported the theory synthesis but was not counted in the core corpus: studies of Islamic environmental ethics and law, selected for their treatment of *khalifah*, *amanah*, *mīzān*, and *maṣlaḥah* in relation to water and the environment; theoretical works on structuration and ecofeminism; foundational works published before 2015 (for example, Ray 2007; Koolwal and van de Walle 2013); and policy documents and reports from international organizations.

Data analysis combined thematic synthesis with theory synthesis in four stages (Table 1). In the first stage, each article in the core corpus was read repeatedly and summarized by context, analytical focus, and main claims about who carries out water-related practices, which outcomes these practices are linked to, and under which norms and institutions they take place. In the second stage, the summaries were coded inductively. The resulting codes (Table 1) cover gendered water tasks, sanitation and hygiene, food preparation, ecological knowledge, participation in decision-making, child health and nutrition, schooling, the transmission of values and habits, and religious or moral norms. In the third stage, the codes were grouped into three themes: (1) women's water stewardship as social reproduction, (2) women's water stewardship and intergenerational sustainability, and (3) the Water–Women–Children Cycle Model as a

conceptual synthesis of the relationship between water resource sustainability, women's practices, and the development of future generations. In the fourth stage, the themes were interpreted through theory synthesis: each theme was read through the theoretical lenses listed in Table 1 to identify relationships among concepts and to construct a sociological explanation of women's water stewardship practices. The Islamic sources were analyzed in parallel and integrated at this stage to show how *khalifah*, *amanah*, *mīzān*, and *maṣlaḥah* can be read as elements of social structure, not only as ethical prescriptions. Table 2 records which articles support which theme, so that each conceptual claim can be traced back to its evidence.

Table 1.

Coding Framework, Themes, and Theoretical Lenses

Code	Operational description	Theme	Theoretical lens
Gendered water tasks and time	Collecting, storing, and allocating water; time and labor burden	T1	Environmental sociology; ecofeminism (care work)
Sanitation and hygiene	Household sanitation, cleaning, and hygiene routines	T1, T2	Social reproduction; structuration (routinized practice)
Food preparation and nutrition	Safe preparation of food and drinking water	T1, T2	Social reproduction
Ecological and water knowledge	Knowledge of water quality, conservation, and adaptation built through care experience	T1	Ecofeminism; structuration (knowledgeability)
Participation and decision-making	Women's roles in household, community, and institutional water decisions	T1, T3	Structuration (agency and structure); water governance
Child health and nutrition	Links between water, illness, nutrition, and growth	T2	Social reproduction; human development
Schooling and learning environment	Attendance, time use, and learning conditions	T2	Social reproduction; human development

Code	Operational description	Theme	Theoretical lens
Transmission of values and habits	Parenting practices that teach conservation, hygiene, and responsibility	T2, T3	Structuration (reproduction of norms); *khalifah*, *amanah*, *mīzān*
Religious and moral norms	Trusteeship, balance, accountability, and public benefit	T1–T3	Islamic environmental ethics read through structuration (signification, legitimation, domination)

Note: T1 = women's water stewardship as social reproduction; T2 = women's water stewardship and intergenerational sustainability; T3 = the Water-Women-Children Cycle Model. Source: Authors' Analysis, 2026

The research analytical framework was constructed by integrating four complementary theoretical perspectives. The Environmental Sociology perspective was used to explain that water resource sustainability is the result of interactions between ecological systems and the social practices of communities. Anthony Giddens' Theory of Structuration was employed to understand water stewardship practices as social actions that repeatedly reproduce social structures while simultaneously sustaining life. The Ecofeminist perspective is used to explain how women's social experiences shape their ecological knowledge and their capacity as agents in safeguarding environmental sustainability. Meanwhile, the Islamic environmental ethics perspective through the concepts of *khalifah, amanah, mīzān,* and *maṣlaḥah* serves as an ethical foundation that complements the sociological interpretation of human responsibility in maintaining environmental balance and bequeathing natural resources to future generations. Integrating of these four perspectives forms the basis for developing the concept "Women as Water

Stewards for Future Generations" formulating the Water–Women–Children Cycle Model as the study's primary conceptual contribution.

Islamic concepts were operationalized sociologically as follows. In Giddens' (1984) structuration theory, social structure consists of rules and resources that actors draw on in practice and that work along three dimensions: signification (interpretive schemes that give practices meaning), legitimation (norms that define what is rightful), and domination (the authority and allocative resources that govern who may do what). In this study, *khalifah* is read mainly as an interpretive scheme, *amanah* as a normative expectation of accountability, *mīzān* as both, and *maṣlaḥah* as a principle used to justify how responsibilities and resources are allocated in the community. This reading allows the analysis to ask not only what Islamic ethics requires but also how these values are mobilized, interpreted, and contested in everyday gendered practices (Table 3).

C. RESULT AND DISCUSSION

Table 2 presents the fifteen articles in the core corpus, the context and analytical focus of each, and the theme and model component each contributes to. Eleven articles contribute to Theme 1 and six to Theme 2; two of them (Rohendi and Nur 2019; Caruso et al. 2022) contribute to both. The model component column refers to the numbered elements of Figure 1. The corpus includes global reviews and studies from Africa and Asia, and from urban and coastal communities, which supports the claim that the pattern is not confined to a single setting, although the evidence base is small and unevenly distributed across regions.

Table 2.

Core Corpus of Fifteen Articles and Their Contribution to the Themes and the Model

No	Literature (s)	Context	Analytical focus	Theme	Model component
1	Bouman (2017)	Portuguese-language article	Women's role in water governance	T1	Center; 4
2	Shinju and Prasad (2019)	Palakkad, Kerala, India	Women, water, and well-being in a community case study	T1	Center; 1
3	Rohendi and Nur (2019)	Indonesia	Women's role in household water conservation	T1, T2	Center; 3; 4
4	Caruso et al. (2022)	Global (systematic review and qualitative metasynthesis)	Water, sanitation, and women's empowerment	T1, T2	Center; 2
5	Dickin and Caretta (2022)	Global (review)	Water and gender narratives and realities	T1	Center; 1
6	Brewis et al. (2024)	Global (theoretical)	Gender identities, water insecurity, and risk	T1	Center; 1
7	Dzawanda, Matsa, and Chireshe (2024)	Zimbabwe	Children's vulnerability and water scarcity	T2	1; 2
8	Martey et al. (2025)	Ghana	Dry-season community water resources, school attendance, and children's work	T2	2
9	Nugraheni et al. (2025)	Urban Indonesia	Drinking water and urban stunting	T2	2
10	Annisa and Azizah (2025)	Urban coastal communities (Indonesian-language)	Women's agency in water crisis	T1	Center
11	Chowdhury, Choi, and Chowdhury (2025)	Disaster-prone coastal areas	Intersection of water crisis, climate change, and gender	T1	Center; 1
12	Martinez et al. (2025)	Rural Philippines	Women's experiences in gender-inclusive water management	T1	Center; 4

No	Literature (s)	Context	Analytical focus	Theme	Model component
13	Adou, Zogbo, and Kouassi (2026)	Béoumi sub-prefecture, Côte d'Ivoire (French-language)	Household water management and gender equality	T1	Center
14	Al Haddid, Ahmad, and Ahmad (2026)	Jordan	Women's knowledge, attitudes, and practices in gendered *water stewardship*	T1	Center; 4
15	Rosemiarti, Sunardi, and Putri (2026)	Global (systematic review)	Safe drinking water and children's growth and development	T2	2

Note: T1 = women's *water stewardship* as social reproduction; T2 = women's *water stewardship* and intergenerational sustainability. Model components refer to Figure 1: Center = Women as Water Stewards; 1 = Sustainable Water Resources; 2 = Child Well-Being and Development; 3 = Intergenerational Sustainability; 4 = Reproduction of Sustainable Practices. Context and analytical focus are summarized as indicated by each article's title and scope. Source: Authors' analysis, 2026

1. Women's Water Stewardship as Social Reproduction

Climate change and increasing pressure on water resources indicate that water sustainability cannot be understood solely as an ecological issue but also as a social issue related to how communities manage, utilize, and preserve these resources. A synthesis of the fifteen analyzed articles reveals that the success of water governance is determined not only by infrastructure development or formal policies but also by the social practices that unfold in daily life. From an Environmental Sociology perspective, water is a resource that gains meaning through the interaction between people, the environment, and social institutions. Therefore, water sustainability is the result of a social process that is continuously reproduced through the actions of individuals and communities in meeting their daily needs.

A synthesis of the literature indicates that women are the actors who interact most intensively with water in daily life. Various studies explain that women provide clean water, prepare food, manage household sanitation, maintain family health, and child-rearing care for children (Brewis et al. 2024; Dickin and Caretta 2022; Gyan and Duan 2024). This

close involvement often positions women as the group most affect, ed during water crises. However, this synthesis shows that these practices do not merely reflect domestic burdens; they also show how women connect ecological resources to the sustainability of social life (Annisa and Azizah 2025; Chowdhury, Choi, and Chowdhury 2025; Zeyneb Kılıç 2025). Water is not merely a natural resource; rather, it is transformed into health, hygiene, food security, and family well-being through the continuous practices carried out by women.

These findings demonstrate that water management practices are part of the process of social reproduction that is, the mechanisms that enable community life to continue through the fulfillment of basic needs, the maintenance of health, and the intergenerational transfer of values. In this context, women's activities such as providing clean water, maintaining sanitation, preparing food, and caring for family members not only sustain biological life but also create the social conditions that enable families and communities to thrive sustainably. Thus, water management practices serve a broader function than mere domestic activities, as they are integral to the process of social reproduction.

This interpretation aligns with Anthony Giddens' Theory of Structuration, which explains that social structures not only constrain individual actions but are also produced and reproduced through repeatedly performed social practices (Haslett 2013). This synthesis suggests that women's water management practices constitute a form of agency that occurs daily and continuously shapes norms, customs, and values around the use of water resources (Adou, Zogbo, and Kouassi 2026; Bouman 2017; Shinju and Prasad 2019). These practices simultaneously reproduce the social structures that underpin the sustainability of families and communities. This means water-resource sustainability is determined not only by formal regulations but also by the routine actions women take in their daily lives.

This perspective is reinforced by ecofeminism, which views women's relationship with the environment as shaped through social experiences in *care work* (Anjum 2020; Dengler 2023; Shaji 2023). The synthesis findings indicate that women's knowledge regarding water quality, sanitation, conservation, and environmental management develops through daily experiences in meeting the needs of their families and communities (B.R. Leelavathi and Reddy 2024; Martinez et al. 2025; Pai 2016). This knowledge then becomes social capital that enables women to make decisions regarding the efficient use of water, maintain environmental cleanliness, and participate in various water resource conservation efforts. Women's water management practices represent a form of ecological knowledge born from social experience, not merely a biological consequence or a matter of gender nature.

The findings of this study also indicate a convergence between sociological perspectives and Islamic values regarding the relationship between humans and the environment. In Islam, humans are positioned as khalifah entrusted with the responsibility to safeguard the earth and all the resources within it. Water is s a gift from Allah that sustains all creatures' lives; therefore, its use must be carried out fairly and responsibly. From this perspective, women's water management practices can be understood as a fulfillment of this trust through actions that ensure the sustainability of water resources, meet family needs, and maintain a balance (*mīzān*) between human interests and environmental conservation. Integrating Islamic and sociological perspectives have that water stewardship practices possess not only ecological and social dimensions but also a moral dimension oriented toward the common good (Ali and Chatti 2023; Djuned 2023; Zulkifli, Nuryaman, and Hafidhoh 2023).

This study argues that women's water management practices constitute a form of "Women's Water Stewardship as Social Reproduction." This concept positions women not merely as water users

or a group affected by environmental crises, but as social actors who transform ecological resources into health, well-being, and the sustainability of life through their daily practices. Water stewardship is understood as a mechanism of social reproduction that links the sustainability of water resources to community survival. This argument forms the foundation for explaining how these practices shape the quality of future generations, which will be discussed in the following section.

The evidence for the first theme is cumulative and does not rest on any single study (Table 2). Work on gender and water insecurity and on water and gender narratives (Brewis et al. 2024; Dickin and Caretta 2022), together with research on disaster-prone coastal communities (Chowdhury, Choi, and Chowdhury 2025), documents that water work is unequally distributed and that women carry much of the risk when water is scarce. Studies of women's agency in urban coastal communities (Annisa and Azizah 2025), of household water management in the sub-prefecture of Béoumi (Adou, Zogbo, and Kouassi 2026), and of women, water, and well-being in Kerala (Shinju and Prasad 2019) allow the same work to be read as continuing practice that links ecological resources to family life, which is the interpretive step on which the concept of social reproduction rests. Studies of women's knowledge, attitudes, and practices in Jordan (Al Haddid, Ahmad, and Ahmad 2026), of women's experiences in gender-inclusive water management in the Philippines (Martinez et al. 2025), of women's empowerment in relation to water and sanitation (Caruso et al. 2022), and of women's role in water governance and household water conservation (Bouman 2017; Rohendi and Nur 2019) connect this practical knowledge to conservation and decision-making. Taken together, these eleven articles support the claim that women's water practices are both a distributional burden and a form of social agency. This study's synthesis focuses on the second aspect without denying the first.

2. Women's Water Stewardship and Intergenerational Sustainability

Women's *water stewardship* practices not only meet their families' current needs but also foster social and ecological sustainability for future generations. Until now, the relationship between water and children has generally been understood through indicators of health, sanitation, or access to clean water. However, this research synthesis shows that these benefits actually mediated by the social practices women use to manage water. In other words, water does not automatically improve children's quality of life; rather, it gains social significance through women's actions that transform this resource into health, education, protection, and family well-being (Caruso et al. 2022; Crider and Ray 2022; Koolwal and van de Walle 2013). These findings indicate that women serve as a bridge between the sustainability of water resources and future-oriented human development.

Women's water management practices yield various benefits that directly influence the quality of children's growth and development. Studies show that safe,sustainable water use supports household sanitation, reduces the risk of environment-related diseases, improves nutritional quality through hygienic food preparation, and creates a healthy environment for children's physical and psychosocial development (Dzawanda et al. 2024; Nugraheni et al. 2025; Rosemiarti et al. 2026). Furthermore, adequate water availability also enhances children's opportunities to pursue education optimally by reducing health-related disruptions and improving learning environments (Gyan and Duan 2024; Martey et al. 2025). Therefore, water managed through water stewardship practices not only meets biological needs but also serves as social capital that supports of human capital development

Women's contributions to future generations extend beyond meeting material needs. Women serve as agents of socialization who transmit values, knowledge, and habits regarding responsible water use to

children through the parenting process (Ray 2007; Rohendi and Nur 2019). Simple activities such as conserving water, maintaining environmental cleanliness, protecting water sources, and fostering clean living habits serve as learning tools that shape ecological awareness from an early age.

These findings demonstrate that the relationship between women, water, and children is intergenerational. Sustainable water resources enable women to practice water stewardship; these practices support children's health and well-being, and children who grow up in a healthy environment with ecological awareness can maintain conservation practices in adulthood. This process demonstrates that ecological sustainability and social sustainability are interdependent and are continuously reproduced through everyday practices. This perspective broadens the understanding of sustainable development—which has traditionally focused more on economic and environmental dimensions by positioning social reproduction as an equally important element.

This study proposes "Women as Water Stewards for Future Generations" as a reconceptualization of water stewardship, which has traditionally been understood primarily as an institutional approach to water resource management. Water stewardship is also a social practice that unfolds in daily life through women's activities in managing water, caring for their families, and transmitting values of sustainability to their children. Thus, women do not merely act as users or managers of water resources, but as agents who simultaneously reproduce both ecological and social sustainability. This perspective expands the field of Environmental Sociology by positioning women as the link between environmental sustainability and intergenerational social sustainability.

This synthesis further serves as the foundation for the development of the Water–Women–Children Cycle Model, which explains the reciprocal relationship between the sustainability of water resources, women's water stewardship practices, the shaping of future generations,

and the reproduction of environmental sustainability. This model not only illustrates the relationships among its components but also explains the social mechanisms that enable sustainability to be continuously reproduced through everyday practices. Before the model is presented, the next section examines how Islamic values operate as social mechanisms within these practices.

The evidence for the second theme has a different structure (Table 2). Studies of children's vulnerability to water scarcity in Zimbabwe (Dzawanda, Matsa, and Chireshe 2024), of drinking water and urban stunting in Indonesia (Nugraheni et al. 2025), and of safe drinking water and children's growth and development (Rosemiarti, Sunardi, and Putri 2026) link water to child health and nutrition, while the study of dry-season community water resources and school attendance in Ghana (Martey et al. 2025) links water to education and children's time use. Caruso et al. (2022) and Rohendi and Nur (2019) add women's practices io this picture by addressing women's empowerment and household water conservation. An important qualification follows. Most of the child-outcome studies estimate the relationship between water access and children's outcomes and do not themselves test women's practices as the mediating mechanism. The mediating role proposed here is therefore an interpretive result of the synthesis, drawing on the two studies that connect women and household practice and on the structuration and social reproduction lenses, and it should be treated as a proposition for empirical testing and not as an established effect.

3. Islamic Values as Social Mechanisms in Women's Water Stewardship

The preceding sections treat women's *water stewardship* as social reproduction. This section asks how Islamic values enter that process. The argument is that *khalifah*, *amanah*, *mīzān*, and *maṣlaḥah* do not only state what believers ought to do. They also operate as elements of social

structure that give water practices meaning, define rightful conduct, and shape how responsibility and resources are distributed. Read through structuration theory (Giddens 1984), they work through three channels at once: signification, legitimation, and domination. Table 3 summarizes how each concept works in these channels, what it does to gendered everyday practice, and where it enters the Water–Women–Children Cycle Model.

In the channel of signification, the concepts of *khalifah* and *mīzān* supply interpretive schemes through which water is understood as a trust and a gift to be used in balance, and not as a free commodity (Q.S. Al-Baqarah: 30; Q.S. Ar-Rahman: 7–9; Mohidem and Hashim 2023; Djuned 2023). When household water work is interpreted through these schemes, routine activities such as storing water, cooking, cleaning, and washing acquire moral meaning as acts of stewardship. This reinterpretation matters sociologically because it changes how the work is recognized by family and community: what might otherwise be classified as unpaid domestic labor can be seen as a contribution to the common good.

In the channel of legitimation, *amanah* and *mīzān* generate normative expectations. The Qur'anic prohibition of extravagance (Q.S. Al-A'raf: 31), commonly invoked in Islamic discussions of resource use, and the idea of accountability for what has been entrusted (Q.S. Al-Ahzab: 72) make moderation in water use and care for water quality religious obligations, backed by informal social approval and by individual conscience. Daily religious routines reinforce these expectations. Ritual purity and ablution before prayer make water use a recurrent, visible, and teachable religious practice within the household, so that children can observe and learn how much water is used, how it is used, and why moderation matters. In Giddens' terms, these routines are one of the ways way norms are reproduced through practice, linking the second and fourth components of the model.

In the channel of domination, *maṣlaḥah* and the principle of shared accountability shape how responsibilities and resources are allocated. The prophetic saying that every person is a shepherd who is responsible for those in their care, and that this applies to the man in his family and to the woman in her household (reported in Sahih al-Bukhari and Sahih Muslim), places women explicitly among those accountable for the household, including its water and hygiene. This accountability can be read in two ways, and the sociological analysis must keep both in view. It can enhance women's recognition, authority, and claim to resources, and it can support their participation in community decisions that affect the common good (*maṣlaḥah*). It can also be interpreted to assign water-related care exclusively to women, which would naturalize an unequal division of labor, increase women's time burden when water is scarce, and exclude them from decisions made in mosques, village councils, or water committees. Which outcome prevails depends on local interpretation, infrastructure availability , and the extent to which men and institutions are also held accountable as *khalifah*. This is why the model treats Islamic values as a mechanism that can strengthen or weaken the cycle, and not as a guarantee of sustainability.

Islamic values also operate across generations. Through parenting, women transmit not only hygiene and conservation habits but also the interpretive schemes and norms described above, so that children become carriers of the same values and later reproduce them in their own households and communities. This mechanism closes the cycle in Figure 1 between child well-being (component 2), intergenerational sustainability (component 3), and the reproduction of sustainable practices (component 4). The mechanism is not unique to Islam: other religious and cultural traditions also provide schemes of trusteeship and moderation, and comparative research could test whether the cycle operates similarly under different value systems. The Islamic layer is therefore best

understood as a specific and empirically testable case of a more general process in which values are reproduced through everyday gendered practice.

Table 3.

Islamic Concepts as Social Mechanisms in Women's Water Stewardship

Concept	Normative Meaning	Sociological Mechanism	Effect On Gendered Everyday Water Practice	Model Link
Khalifah (stewardship)	Humans are entrusted with caring for the earth and its resources (Q.S. Al-Baqarah:30)	Signification: interpretive scheme	Water work is recognized as stewardship and not only as a domestic chore; conservation becomes a shared duty, which opens claims on men and institutions	Center and 1
Amanah (trust)	Resources are entrusted, and those who use them are accountable (Q.S. Al-Ahzab:72)	Legitimation: norm of accountability	Those who manage household water are held responsible for its quality and use; responsibility may concentrate on women when care roles are gendered	Center and 2
Mīzān (balance)	Creation is balanced, and the balance must not be disturbed (Q.S. Ar-Rahman:7–9)	Signification and legitimation: norm of moderation	Moderation, efficiency, and hygiene without waste in cooking, cleaning, and ablution, transmitted to children through routine	1 and 4
Maṣlaḥah (public benefit)	Resource use should serve the common good across generations	Domination: allocation of responsibility and resources	Justifies women's participation in community decisions and equitable access, but can be narrowed if interpreted to confine women to the household	3 and 4

Note: Model link refers to the numbered components of Figure 1. Source: Authors' synthesis of the literature, interpreted through Giddens (1984).

4. The Water-Women-Children Cycle Model: A Conceptual Framework for Intergenerational Sustainability

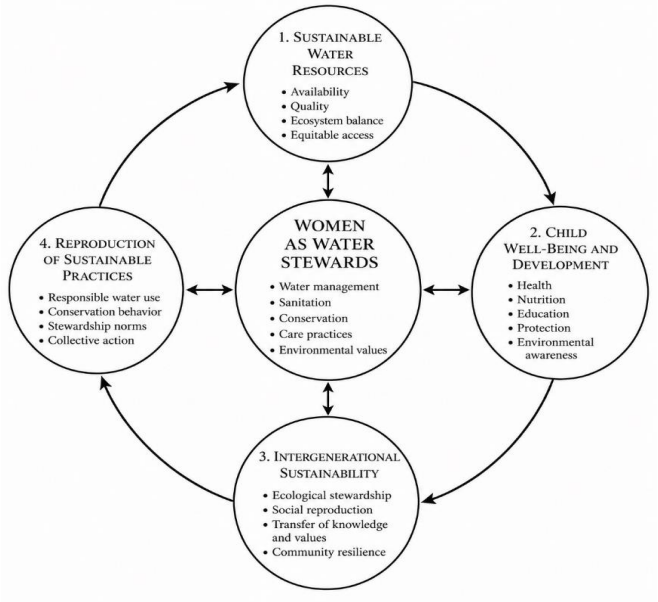
The relationship between women, water governance, and the development of future generations is not linear; it is a social process continuously reproduced through everyday practices. Previous studies have highlighted the linkages between access to water and public health, women's participation in natural resource management, and children's

well-being (Kagurusi et al. 2026; Koolwal and van de Walle 2013; Rohendi and Nur 2019). However, the findings of this research synthesis show that these three elements actually form a mutually constitutive mechanism, in which the sustainability of water resources, women's practices, and the quality of future generations continuously influence one another (Al Haddid, Ahmad, and Ahmad 2026; Haddout et al. 2024; Torregroza-Espinosa et al. 2025). Based on these findings, this study develops the Water–Women–Children Cycle Model as a conceptual framework that explains the mechanisms of social and ecological reproduction in intergenerational sustainability.

The model places women's water stewardship at the heart of sustainability reproduction. Unlike institution-focused governance approaches, it highlights how women's everyday practices transform ecological resources into social well-being and environmental sustainability through a cyclical process in which each component reinforces the others.

Figure 1

Water-Women-Children Cycle Model



Source**:** Author's Analysis, 2026.

As shown in Figure 1, sustainable water resources provide the ecological foundation that sustains community life. However, the synthesis findings indicate that water availability does not automatically lead to social well-being. Water only provides benefits when managed through social practices that ensure its safe, efficient, and sustainable use. In this model, women are central position as water stewards who connect ecological systems with social systems. Women's water management practices,including providing clean water, managing sanitation, processing food, conserving the environment, and raising children,transform the ecological benefits of water into health, food security, and family well-being. Women not only use water as a resource but also establish social norms and practices that support the sustainability of community life.

These water stewardship practices further contribute to the well-being and development of children as the next generation. The findings of this synthesis show that sustainable water management improves children's health, sanitation, nutritional status, and access to better education. However, women's contributions extend beyond meeting physical needs. Through the process of child-rearing, women also pass on knowledge about hygiene, responsible water use, and environmental stewardship to their children. Therefore, children are not only beneficiaries of water stewardship practices but also serve as agents in transmitting ecological values that will shape their behavior in adulthood.

A generation that grows up healthy and environmentally conscious then contributes to intergenerational sustainability by perpetuating environmental conservation practices. At at this stage, the cycle returns to the sustainability of water resources. When the next generation maintains conservation practices, uses water responsibly, and passes these values on to subsequent generations, ecological and social sustainability continue to

be perpetuated. This reciprocal relationship demonstrates that sustainability is not a static condition, but rather a social process that is continuously built through the collective actions of communities across generations.

The model also specifies where Islamic values enter and under what conditions the cycle holds. At the center, *khalifah* and *amanah* give women's stewardship practices their meaning and accountability. Inthe first component, *mīzān* shapes norms of moderate and fair water use. At the second and third components, parenting transmits these norms to children, and at the fourth component, *maṣlaḥah* links household practice to collective action. The cycle is not automatic, however. It weakens when water scarcity or a lack of infrastructure increases women's time burden and reduces the time available for care and participation; when religious or cultural norms are read as assigning water work to women without shared accountability; and when women are excluded from the institutions that govern water. Under these conditions, the same practices that sustain the cycle become a source of inequality, which is why the model should be read as a conditional process and not as a celebration of women's domestic labor.

Based on this overall synthesis, the Water–Women–Children Cycle Model constitutes the primary conceptual contribution of this study. This model demonstrates that the sustainability of water resources, women's water stewardship practices, children's well-being, and intergenerational sustainability form an integrated, mutually reinforcing whole within a cycle of social and ecological reproduction. Unlike water governance models that focus on institutional aspects, the proposed model positions women's daily practices as the primary mechanism linking ecological systems with human development. Therefore, this model offers a new perspective in sociological studies on how environmental sustainability is

constructed through continuous social actions that are passed down from one generation to the next.

5. Sociological Implications and the Distinct Contribution of the Perspective

The Water-Women-Children Cycle Model differs from existing approaches in what it explains and not in the topics it addresses. Table 4 positions it against five strands of literature identified in the synthesis. Vulnerability approaches show that women bear a disproportionate burden when water is scarce (Brewis et al. 2024; Dickin and Caretta 2022), and participation approaches show how women enter water institutions (Haddout et al. 2024; Joshi and Ghimire 2024), but both treat women as affected or as participants. Child-health approaches link water to children's well-being (Dzawanda, Matsa, and Chireshe 2024; Rhue et al. 2023; Rosemiarti, Sunardi, and Putri 2026) but treat women's labor as an input and children as beneficiaries. Ecofeminist and care-work approaches explain where women's ecological knowledge comes from (Dengler 2023; Elias 2015), and Islamic environmental ethics provides principles of trusteeship and balance (Hamdi et al. 2025; Mohidem and Hashim 2023), yet the latter is generally presented as a gender-neutral moral framework.

Table 4.

Positioning of the Perspective Against Existing Strands of Literature

Strand of literature	Typical position of women	What it explains	What it leaves unexplained	How this study differs
Vulnerability and gender-and-water narratives (Brewis et al. 2024; Dickin and Caretta 2022; Chowdhury et al. 2025)	Affected group	Unequal access, burden, and risk	How routine practices reproduce social life and norms	Reads the same practices as stewardship and social reproduction

Strand of literature	Typical position of women	What it explains	What it leaves unexplained	How this study differs
Participation, empowerment, and governance (Bouman 2017; Haddout et al. 2024; Joshi and Ghimire 2024)	Participants and implementers	Entry of women into water institutions	Household and everyday practice; intergenerational effects	Locates stewardship in everyday practice as well as in institutions
Water, sanitation, and child well-being (Dzawanda et al. 2024; Rhue et al. 2023; Rosemiarti et al. 2026)	Input or background labor	Links between water access and child outcomes	The social mechanism that converts water into well-being; children's agency	Positions women as mediators and children as later reproducers of practice
Ecofeminism and care work (Dengler 2023; Elias 2015; Shaji 2023)	Carers with ecological knowledge	Origin of women's ecological knowledge in care experience	Link to governance, intergenerational transfer, and religious values	Specifies the mechanism through structuration and the cycle model
Islamic environmental ethics (Hamdi et al. 2025; Mohidem and Hashim 2023; Zulkifli et al. 2023)	Not addressed (gender-neutral)	Principles of trusteeship, balance, and public benefit	How values operate in family relations and gendered practice	Treats values as structural elements that can enable or constrain women's agency

Source: Authors' synthesis of the literature, 2026

Gendered agency. The perspective locates women's agency in the reproduction of everyday life as well as in formal participation. In the structuration view, actors are knowledgeable and reproduce structure through routine action, so women's water practices are neither simply a response to scarcity nor simply a role imposed by norms. They are the means by which norms and structures are carried forward or altered. This view avoids two errors: treating women only as victims, and romanticizing their burden. Stewardship should not become a moral label that justifies unpaid labor; recognition must be accompanied by shared accountability and by reductions in time poverty.

Everyday practices. Environmental sustainability is treated as an outcome of repeated household and community practices such as water treatment, storage, sanitation, conservation, and the teaching of these

habits, and not only of infrastructure and regulation. These practices are the units at which empirical research on the model should be conducted, for example through household observation, time-use data, and intergenerational interviews.

Environmental governance. The perspective widens the meaning of water governance to include informal, family-based, and value-laden governance that operates alongside formal institutions. Three implications follow. First, women's practical knowledge should be treated as a source of information for water planning and not only as a target of hygiene campaigns. Second, infrastructure and service design should aim to reduce the time women spend on water work, so that stewardship is a choice and not a constraint. Third, where religious institutions and community religious gatherings are important in public life, they can serve as channels for messages that emphasize the shared responsibility of men, women, and institutions as *khalifah*, and they can counter interpretations that confine water work to women.

To make the proposed model empirically testable, four propositions are formulated to guide future research:

> *Proposition 1 (P1).* Where women's water stewardship practices are supported by reliable infrastructure and shared household responsibilities, improvements in water availability will be more strongly associated with children's health and educational outcomes than infrastructure provision alone.
>
> *Proposition 2 (P2).* Households that integrate religious values into everyday conservation and hygiene practices will demonstrate stronger intergenerational transmission of water conservation behaviours.
>
> *Proposition 3 (P3).* Where religious norms assign water-related responsibilities exclusively to women without shared

accountability, the sustainability cycle is likely to weaken due to increased time burdens and reduced participation.

Proposition 4 (P4). Women's participation in community water governance strengthens the relationship between household stewardship practices and collective environmental action.

Together, these propositions provide an empirical foundation for examining the proposed model and its underlying mechanisms. They also offer directions for future research on how gendered agency, religious values, and social reproduction shape intergenerational water sustainability.

D. CONCLUSION

The findings reveal that women's water stewardship extends beyond domestic responsibilities, functioning as a mechanism of social reproduction that connects water sustainability with the well-being of future generations. Through everyday practices, women transform water resources into health, sanitation, family well-being, and children's ecological awareness. Islamic environmental values, particularly *khalifah, amanah, mīzān, and maṣlaḥah*, operate as social mechanisms that shape environmental responsibilities, gendered practices, and intergenerational relations. These values may strengthen women's agency and recognition in water governance but can also reinforce unequal divisions of water-related labor. These relationships are conceptualized through the Water–Women–Children Cycle Model, which illustrates how ecological and social sustainability are reproduced across generations.

These findings reconceptualize water stewardship as a process shaped by everyday social practices rather than institutional governance alone. Women's agency emerges through interactions between gender relations, religious norms, and environmental responsibilities, revealing

how social structures can both enable and constrain their participation. This perspective extends environmental sociology by positioning social reproduction as a central mechanism connecting ecological sustainability, gendered agency, and intergenerational well-being. It also demonstrates that religious values are not merely ethical principles but socially embedded forces that influence how environmental responsibilities are interpreted, distributed, and reproduced.

Theoretically, this study contributes to debates on environmental governance and social reproduction, while practically supporting more inclusive and gender-responsive water policies that recognize women's contributions without reinforcing unequal responsibilities. However, the proposed model remains conceptual and has not been empirically tested across different social, cultural, and religious contexts. Future research should empirically test the four propositions by examining how infrastructure, shared household responsibilities, religious values, and women's participation shape water stewardship and its intergenerational outcomes. Comparative studies across diverse communities could further assess the applicability of the Water-Women-Children Cycle Model and its underlying mechanisms.

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