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Women, Water Resource Management, and Sustainable Development: The Turkey-North Cyprus Water Pipeline Project

Emine Eminel Sülün

Department of International Relations, Near East University 1, 99138 Nicosia/TRNC, Mersin 10, Turkey; emine.sulun@neu.edu.tr; Tel.: +90-542-850-1936

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Abstract: Women's role in water resource management is recognized, yet the implementation of methods and strategies to get beyond gender-based obstacles to women's equal participation in water resource management related projects remain vague. Mainstream considerations on the gender aspects of development and environment focus on women as having an intrinsic relationship with the environment. Women are perceived as a natural reflection of their responsibilities for the household and the comfort and security of future generations. Contrary to mainstream environmental and political ecology research, this paper sees gender as relevant within policy and practice across multiple levels, and within institutions related to natural resource governance. Based on this, the paper looks at the sustainable development and water governance issues with the help of a specific case: the Turkey-North Cyprus Water Pipeline Project. Through broad reviews of project documentation, interviews with people who were directly involved with the project and with women's organizations the paper draws insights on the gender aspect of the decision-making mechanisms related to water governance. The results indicate that participation by women in resource management is marginal in North Cyprus. The paper discusses that this is a reflection of a broader problem, which is gender inequality. In conclusion, one can argue that future water projects need to realize more sustainable outcomes and greater effects on gender equality in North Cyprus.

Keywords: North Cyprus; natural resource management; gender inequality; water governance and participatory development; women's empowerment

1. Introduction

There are various factors which are influential in determining patterns of natural resource use and governance and all are having multifaceted effects on our lives. These factors range from the choice of neo-liberal programs over a social welfare agenda, policies made as responses to climate change, responses in the face of population growth, increased geographical mobility, and urbanization, among others [1]. Gender engages with all these fields as an important analytical tool, which helps us to understand and follow policies and changes in natural resource governance. It is on those lines that the link between gender, environment, and natural resource management can be best understood, through careful analysis of theory, policy, and practice in these distinct fields of research. Gender can be seen as "a political, negotiated and contested element of social relationships" [1]. Gender, from that perspective, provides essential insights for understanding the social dynamics of environment and natural resource management in the sense that it is a critical analytical concept for exploring the social and political aspects of natural resource management and governance across various empirical settings. At this point, it is essential to state that sustainable natural resource management entails the involvement of numerous social actors and stakeholders. Among others, active and meaningful participation

of women in decision-making processes regarding the use and management of natural resources is important [2]. Natural resource governance as a process involves the production, employment, and struggle of gender subjectivities, ideologies and identities. Not many may notice such practices but exclusions and possibilities are shaped by gender discourses within the environment and development processes [1]. Based on these points mentioned above, it is noteworthy to point out that developing gender sensitive environmental policies is quite difficult for policy-makers in relevant fields. Perhaps more important than that would be to question the degree to which such policies will reduce the production and struggle of gender subjectivities, ideologies, and identities in a particular society. It is possible to say that focusing on women out of context of their wider social relationships is unproductive. The main assumption is that women are disadvantaged and subordinated in their relations with men and these relations shape access to resources, participation in decision-making, and the exercise of power within communities [3]. A gender perspective views relations between men and women as socially constructed differences in roles and expectations. From that perspective, gender approaches to water resource management underpin the notion that more equitable division of labor and of power between men and women is possible with a meaningful intervention, which may facilitate changes in gender relations within communities. More specifically, for more equitable relations among women and men, a gender approach to water resource management suggests a more balanced division of labor between men and women, especially in the areas of: "access to information; physical work; contributions in time and cash; decision-making; and access to and control of resources and benefits" [3]. A gender perspective, in that respect, aims to reveal differences between men's and women's interests and how these interests overlap, conflict, and are negotiated. The approach questions the underlying dynamics of the subordination of women in each and every unit of social life, and therefore is concerned with norms, values and hierarchies that determine these conditions at large. Such an approach also attempts to reveal gender differences based on various demographic characteristics such as wealth, age, and ethnicity, etc. It traces the ways in which social and economic trends influence gender roles and relations within society [3]. In this regard, it is seen that, the approach at hand provides possible venues for the embracement of a gender equality perspective to water resource management. In this paper, in more specific terms, it is argued that a gender approach is necessary as women are central to the water governance and it is possible to see that gendered hierarchies exist within that structure in North Cyprus, as it is at other countries.

1.1. Theorizing Gender and Environment

Gender, environment, and natural resource management can be linked via three broad themes. First, one can explore gender and environment within the changing global context by analyzing macroeconomic policies and alterations in governance linked with neo-liberalism. Second, one can attempt to understand the ways in which 'gender' has been incorporated in sustainable developmental goals. Finally, one can examine the gendered agency in environmental actions by addressing the realm of knowledge and authority [1]. The last point may provide a more critical perspective but all are invaluable in terms of providing a versatile gendered approach to natural resource management.

The literature on gender and environment is broadly divided into two main strands: (1) a liberal attempt to incorporate gender aspect into developmental policy and practice, and (2) relational perspectives that lay emphasis on binary power relations between women and men. In both literatures, the main assumption is that men and women experience environment differently from each other because of their materially different daily work activities and responsibilities [1]. Since men and women have different roles, responsibilities, and knowledge with regards to the environment, they have different interests in natural resource management. This notion indicates more the liberal perspective mentioned above, which sees gender as an important variable in determining ecological change and sustainable development. Relational perspectives on gender, on the other hand, argues that it is more valuable to examine power relations and power struggle between women and men over

accessing and controlling natural resources, and their real expressions in conflict, cooperation, and coexistence over the nature [1].

To understand these perspectives better, one may need to look at the scholarship that explores gender in the framework of ecological change, economic circumstances, and a legal normative perspective. Similarly, the topic of gendered property (water and land) rights is extensively researched by [4–8], among others. Women's participation in local development programs and community-led bodies is also an important area of research in the domain of gender and environment [9–11]. Gendered environmental knowledge is another important field of research that can be considered as enlightening in terms of understanding the link between gender and natural resource management [12–15]. Exploring the dynamics of gender in policy discourses also appears to be an important field of study in the same vein. In all these studies, gender dynamics are seen as constituted through norms and institutions and reproduced through individuals [1]. Other works in the areas of feminist and post-colonial theories reconsider 'gender' as a central analytical category. They attempt to constitute gender through other domains of social differentiation and power struggle among different races and classes [16–20].

A Gender Approach to Water Governance

Women and women's role in the analysis of natural resource management in broader terms is reviewed above. This section aims to explore the more specific link between gender, water governance, and sustainable development as important themes of this research. It is possible to argue that, because of their gendered socioeconomic roles, in other words their disadvantaged political and economic position in a society; women are more vulnerable to ecological and water-related problems [21]. Underrepresentation is one of the main problems, where women in many cases are excluded from environmental decision-making processes. Despite this fact, it is rare to find mentioning of water issues in the world of gender policies. In the world of water policies, on the other hand, gendered approaches are available but their depth and breadth can be questioned [22]. One of the contexts in which gender and water are linked is the domain of household (domestic) water use and irrigation. Identifying and addressing gender concerns in these fields require an in-depth understanding of both contexts. Household (domestic) water usage related issues are contextualized in the framework of social rights and welfare, as well as health and hygiene [22]. Irrigation, on the other hand, is a matter of economic efficiency and production. Adaptation of the "basic needs/social welfare" approach in the domain of domestic water acknowledges women's needs for water, but does not specifically address women having a greater saying in water management. Still, in this approach, drinking water and sanitation policies agendas are linked to women. In irrigation policy, women are almost non-existent because this topic is considered to be a part of a manly world of production. Farming and irrigation are considered to be more male dominated jobs, thus making women's opinions seen as irrelevant in these topics [22]. Lynch cited in [22] also argues that women's roles are more recognized and valued in the domestic water sector.

As discussed above, it is possible to say that there is a general problem of a lack of integration of women in environmental decision making processes. At this point, a mentioning of gender and sustainable development can be helpful in addressing that problem in particular. There are several definitions of sustainable development but the most often cited one is the definition proposed by the Brundtland Commission [23–26]. That broad definition highlights the significance of intergenerational equity. The concept of conserving resources for future generations marks the core of sustainable development policy. The long-term stability of the economy and environment can be described as the main objective of this framework. Integrated decision making is thus at the core of sustainable development understanding [25,26]. It is only through the integration of economic, environmental, and social concerns throughout the decision making process that sustainable development can be achieved [27]. The concept of integration differentiates sustainability from other forms of policy. In practice, encountering a comprehensive and highly integrated problem requires the mixing of

economic, environmental, and social objectives across sectors, territories, and generations. Thus, any fragmentation of these objectives can be viewed as a stumbling block in the decision making processes and can hinder development that can be regarded as truly sustainable. Within that perspective, one of the crucial aspects of accelerating sustainable development is to end all forms of discrimination against women [28]. Empowering women by giving them equal rights to economic resources such as water are vital in realizing sustainable development. For that matter, strengthening of policies and legislation for greater gender equality is essential. Nevertheless, notions of gender possibly prompt reactions that this is fundamentally 'women's stuff'. It is noteworthy that gender is not a synonym for women. It, in principle, mirrors the dynamic relationship between male and female. It builds the first political order within a society. That political order affects the ways in which we relate to others, and by what means we govern ourselves. In other words, those struggling for gender equality are not only encouraging for a special interest group that will only have an impact on women [29]. "The male/female relationship is created and sustained by all within the society." [29].

It is possible to find many references made to women's role in improved water governance in particular and to sustainable development in general [30]. For instance, Agenda 2030 [31], connects women's empowerment (SDG 5) and the importance of "water and sanitation" (SDG 6), which provides a guide on interlinks among the two [30]. The UN Water Synthesis Report (UN Water, SDG 6 Synthesis Report) and the UN Women and Global Water Partnership Action Piece [32] each make the connection and they propose venues for action. It is important to highlight that it is not clear whether these reports and action plans are referring to women in their individual/professional capacity or to women organizations. In both roles, women's potential must be given attention. Especially on that matter [33] indicates that involvement of women in water resources development, management, and usage means an involvement of strong social networks that are characterized by norms of trust and reciprocity. This means new solutions to water related problems. In the same place it is argued that projects can be more sustainable and infrastructure development can generate maximum social and economic returns with the involvement of women [33]. This is because women, being trusted in their communities, have the ability of reaching down to different segments of society. They can inform and engage community members and this may result in more locally owned projects and programs. Evidence shows that project effectiveness, efficiency, and sustainability can be enhanced by supporting gender equality and women's empowerment in infrastructure operations [34]. Infrastructure projects can be more gender-responsive by addressing the needs and constraints of women and men. Introducing measures, for example; providing quotas for projects to boost women's opportunities in employment; and enabling and allowing decision making roles for women can be helpful. Stated among them are some interventions to provide enhanced gender-responsive infrastructure projects to maintain women's and men's full access to project benefits. Since this paper is mainly a review of a water infrastructural project, understanding these dynamics discussed above in the context of North Cyprus has the utmost importance for drawing some important conclusions for gender inequality as well. As [21] rightly pointed out, we need to pay attention to "the exclusiveness of role distribution and its implications for resource allocation and the distribution of power," for gender equality in water resource management. This can only be done once it is appreciated that women and men assign different priorities to water and this certainly influences their knowledge bases in terms of water use. This means women and men may have differing ideas regarding project designs. It is important to indicate that policies in water management are drawn largely on men's experiences, needs, and priorities. Therefore, these policies are inadequate in addressing the needs and priorities of the rest of the community. One should recognize that the right to water is an inherent social right for everyone. Easy access to water supplies for all members of a community is one dimension of the matter at hand. Another important point is to have a consistently sufficient supply of water. Without any doubt, the quality of water for health and hygiene is another crucial dimension. In that respect, the following part moves on to review the work, efforts, and skills that women devote to the governance of water as an essential resource of life.

1.2. Policy Entry Points

As mentioned above, water is a basic human need and a social right. Nevertheless, certain limitations arise for women largely in terms of access to water, resource control, participation in decision making structures, and capacity building in that specific field. It is possible to argue that women experience extra burden in times of water scarcity and pollution [35]. Gender equality can be strengthening by managing a more integrated and sustainable access to water and water services. It is seen that more inclusive water policies are developed, which recognizes different needs and demands of women and men [35]. The most critical aspect of these efforts is the acknowledgment that both formal and informal women's networks can play vital roles in water management. This part aims to highlight some of the inclusive water policies recognized by various declarations at different times in various places.

"The International Conference on Water and Environment", Dublin, 1992, admitted the fundamental part that women have in the provision, management, and safeguarding of water (Dublin Principle 3) [35]. In the same conference, positive policies were also suggested, which may address women's specific needs. This conference also highlighted the key is to empower women and to define at what level they may participate in water resource programs. In that vein, this can be considered as one of the policy entry points for women. The Hague Ministerial Declaration issued by the second World Water Forum in 2000 also highlights empowering women through a more participatory process of water management [36]. The 2001 Ministerial Declaration of the Bonn International Conference on Freshwater also emphasizes a participatory approach in water resources management where both men and women should have an equal standing in managing water resources [37]. The Johannesburg Plan of Implementation issued the World Summit on Sustainable Development in 2002 and in that document gender sensitivity is again highlighted this time in the context of the realization of the Millennium Development Goal on safe drinking water and sanitation [38]. In 2003, the third World Water Forum was held in Kyoto, Japan. In the Ministerial Declaration of the forum, the gender aspect is again mentioned in the context of water resource management [35]. These efforts have been important milestones in acknowledging the intrinsic link between gender and water governance. All these declarations, in one way or another, call for tangible results beyond mere talk in the framework of the link between women and water. Within that background, the rest of the paper moves on to explore the dynamics in North Cyprus through careful analysis of the water infrastructural project as well as, the Turkey-North Cyprus Water Pipeline Project.

2. Materials and Methods

This paper entails an in-depth review of the water infrastructure project in North Cyprus and includes an extensive treatment of gender equality concern in respect to this project. It is a qualitative paper based on a single case study. It aims to review in depth the process in which women take part in natural resource management, in particular to water governance through the analysis of a specific water infrastructure project. It is well established that the qualitative case study method in International Relations is helpful in explaining complex phenomena [39]. The role of women in water governance in the context of North Cyprus is a relatively unstructured field of research thus employing a qualitative case study method proving invaluable insights.

With regards to data collection, secondary resources such as textbooks, magazine articles, and commentaries were used and documents were sourced in North Cyprus. Supplementary to these, primary data collection was undertaken. Archive searches, key informant interviews, field observation and informal interviews were used for primary data collection. In-depth and semi-structured interviews were conducted. Interviewee's personal specifications/interpretations of key issues with regard to the water governance in North Cyprus and women in the overall context were elicited with open-ended questions. In terms of the interviewees' selection procedure, a 'purposeful' sampling [40] was employed. Those actors/informants who were considered to be as information rich cases were engaged with until new research themes emerged. Interviews were held both with those who

manage the water infrastructure project in relevant decision-making bodies to understand whether they view women participation as imperative as well as with women's organizations to get their position and understanding of the matter at hand. Interview questions were organized around certain topics (themes). Project coordinators and directors were asked whether they think of any activities to reduce gender inequality for instance rules necessitating women's participation on project committees. Another theme was whether the project took direct measures to empower women mainly by working with or mobilizing local women's organizations. They were also asked whether the different perspectives, needs, and priorities of women and men were identified during the design of the project. All these questions were designed to understand whether women in general inform policy implementation of the water infrastructure project under scrutiny. Interviews with women's organizations were also held. They were asked whether they have any positions in the management and the usage of water resources of the island prior to the project. The questions that were submitted to them followed their understanding of the water management after the implementation of the project. Another theme in these set of questions posed to women's organizations was whether they had any invitations to take part in any of the decision-making bodies related to the project. They were also asked whether their perspective, needs and priorities were asked throughout the design and the implementation of the project. Another question directed to women's organizations was about their interventions in curbing corruption (if they think there was any) in the water project. They were also asked about their interventions in preventing conflicts among different interest groups shaped alongside the institutional arrangements for distribution, maintenance and management of the water brought from Turkey. Their suggestions for increasing resource efficiency in North Cyprus were also asked. A cross-checking of the information provided was possible by talking to officials and relevant people in the field. Field observations of the water project were also undertaken. Interviews were conducted in Nicosia, Cyprus and were recorded and catalogued with the consent of the interviewees.

In terms of data analysis, thematic analysis is employed [41] with the aim of discovering patterns and developing themes in the field. Identifying systematic patterns and interrelationships across themes was important for the research at hand. The research, in that sense, was a process of grouping the data into themes to be able to see the role and the participation of women in a significant policy-making field.

3. Results

3.1. Water Governance in North Cyprus

There are a number of problems related to water governance in North Cyprus. The over-usage of aquifers is one of the main water related problems in that sense (Interviewee 1: Göze in Appendix A). Due to overuse, existing aquifers have become salinized. As underlined by [42], overuse and salinization of coastal aquifers in North Cyprus is mainly the outcome of inefficient water governance. In retrospect, the island was always in need of forestation and improved irrigation. When, in 1878, British colonial officers realized these conditions, they attempted to improve Cyprus's climate by reforestation and improving irrigation [42]. In the 1950's, finding alternative water resources turned out to be a part of their endeavors with regards to water governance of the island. In that respect to this, the British colonial administration initially looked for the possibility of water purification but they eventually decided that this may not be a feasible project [42]. In its place, British administration decided to import water from elsewhere due to these conditions and they considered to import water from Turkey. Since these years were witnessing intercommunal conflict between Greek Cypriots and Turkish Cypriots, Turkey was not considered to be a reliable source for Greek Cypriot experts (Interviewee 1: Göze in Appendix A; [42]). Nonetheless, the politically more positive atmosphere of the 1959 London and Zurich agreements presented new avenues for an underwater pipeline project for bringing water from Turkey. In Nihat Erim's (Erim in Appendix A) memoirs, the idea was to construct a 45-mile underwater pipe with the cost of $10 million, at the 1959 price [42]. With the establishment of

the Republic of Cyprus, in 1960, the interest shifted from Turkey to Syria as a possible source of water. Nevertheless, due to the unsuitable political conditions in Syria, the idea was dropped. Then, the RoC, until the 1963 intercommunal conflict, rather focused on dam construction and water conservation. When the 1974 coup d'etat and following Turkish military operation resulted with the de facto division of the island, two separate and non-cooperative administrations were established. Since then, both administrations have their own separate infrastructure and natural resource management. The RoC, as the internationally accepted sovereign of the island, became an EU member state in 2003 but the acquis communautaire is suspended it in the North of the island until a political settlement. As a result, the island's north is not a part of any international regulatory structures. Mostly due to that reason, most of the time natural resource management in North Cyprus is characterized as disorganized, short-term, and ad hoc. Water management issues nevertheless extend Cyprus's de-facto borders, since there are a number of underground aquifers shared by the two sides. Nonetheless, conflict has been an important part of the inefficient water resource management. A lack of coordinated water infrastructure development after 1974 resulted in grave mismanagement in trans-boundary resources of the island (Interviewee 4: Hüdaoğlu in Appendix A).

In the north of the island, total annual freshwater resources are 90 million cubic meters (mm^3) and over 90% of this is supplied by groundwater resources. The annual demand is 105–110 mm^3 (Interviewee 1: Göze in Appendix A). 60–80% of water is allocated for agricultural use [42]. It is possible to say that there is no water policy regarding a more efficient supply of agricultural water. As mentioned elsewhere, over extraction of groundwater resources has led to the depletion of all aquifers. Salt water intrusion is the main problem of all coastal aquifers in the north. With all these problems, it is clear that North Cyprus is in need of an efficient water governance strategy. Within that framework, it has been always important to find out alternative water resources for North Cyprus. The Turkey-North Cyprus Water Pipeline Project can be seen as part of that endeavor.

3.2. The Turkey-North Cyprus Water Pipeline Project

With the aim of pumping water from the south Turkish coast to North Cyprus, an undersea water pipeline was constructed and began to operate in 2015. The construction of the pipeline took two years and was managed by the General Directorate of State Hydraulic Works (DSİ) of Turkey. Anamur River is the source of the project and the Alaköprü Dam was built to collect water. The water travels to North Cyprus, a total of 107 km to the Panagra Dam. The pipeline is anticipated to transfer 75 mm^3 of water annually. It is important to note that the project intends to share water equally between domestic use and agricultural use. Beyond these technicalities, the pipeline project was interrupted by discussions over who will manage and control the water flowing from Turkey. This tense atmosphere was the result of a lack of planning on behalf of the Turkish Cypriot authorities. It is apparent that, almost no plans were made with regards to the water management until the time of the inauguration.

In 2010, an agreement was signed between Turkey and the administration in the north for the transfer of the water for 30 years. Renewal for a further five years is also mentioned there. After Turkey finalized the construction of the underwater pipeline and key arteries, a tendering process for internal water distribution and management had begun. From that moment, discussions about the privatization of water governance, the price of the water, and the tendering process for management of the water all turned out to be matters of concern for the Turkish government, the Turkish Aid Commission who financed the construction phase of the pipeline, as well as the administration in the North Cyprus (especially for the Turkish Cypriot public). Therefore, the tendering process had been very tough, mostly due to the fear of Turkish Cypriot municipalities of losing control over water governance. Beyond other alternatives like desalination, it is stated that for many Turkish Cypriot, all the conditions regarding the pipeline project is imposed by Turkey as a way to tie the island more to herself [42]. Among these entire discussions one can see no long-term plan for water management but only a great confusion of whether or not the water will be governed by a private Turkish company with the administration in the north or whether its management will be directly given to the municipalities.

Considering the acknowledged necessity for gender equality on water governance related matters and decision-making processes, the next part expects to find out traces of women involvement in such a critical issue area in case of the water pipeline project. It is seen that this project has many shortcomings throughout the designing and the distribution processes. One way to start a discussion on these would be to examine the aspect of gender equality.

Women's Involvement in the Overall Project

Following the analysis on a broader topic of water governance and in particular to the pipeline project, this part aims to look at women involvement in the overall project. Although water has to be seen as an economic, social, and environmental good of the whole community, it is not possible to talk about a coordinated development of water resources with an all-encompassing community and beneficiaries' participation in the management of water resources in the specific case of the pipeline project. On that point, one of the interviewees (Interviewee 3: Derya in Appendix A) mentioned that it is not only women who have been excluded from the whole project. In practice, none of the civil society organizations were incorporated because the project had adopted a top-down perspective (Interviewee 3: Derya in Appendix A). Beyond this project, water policies are merely focusing on water provision and women are not part of the provision, management and safeguarding of water in any related project, commission or institution in North Cyprus. In this context, when related legislations, policies and programs are considered with regards to the pipeline project, it is seen that they were all drafted and finalized without any participation of women. Interviewee 1 (Göze in Appendix A) stresses that, in an uncoordinated and sectorial approach towards water governance, there is no women involvement in the Water Commission established under the roof of the Union of the Chambers of Cyprus Turkish Engineers and Architects. Though, there are two women engineers in the sub-committee of the same commission. The main reason for that is cited as lack of women expertise on these highly technical matters (Interviewee 1: Göze in Appendix A). Considering that women involvement is not about counting the number of women involved in these processes, one needs to understand whether gender-related perspectives such as women's needs and ideas were incorporated into the project. Both Interviewee 2(Atlı) and 3(Derya) (Appendix A) stress that their ideas as women's organizations were not considered as significant during the planning and the implementation process. It is possible to argue that the project had adopted a top-down perspective without any feedback from the community and especially FEMA (Feminist Atelier) published a number of articles dating back to 2015 (when the construction of the pipeline was finalized and this was followed with a public debate on how water can be distributed) to criticize such a perspective (Interviewee 3: Derya in Appendix A).

On the side of the women's organizations, it is observed that natural resource management, and water in particular, is not one of the most important items on the agendas of women's associations in North Cyprus. Since issues like violence against women, and women's rights seem to have a more direct effect on women, there is more voice against these issues (Interviewee 3: Derya in Appendix A). It is possible to argue that management of water resources has a rather secondary place comparatively. One of the interviewees responded that they leave such issues to environmental organizations (Interviewee 2: Atlı inAppendix A) because they do not have enough capacity and expertise to address such broad range topics and problems. Interviewee 2 (Atlı in Appendix A) also describes the project as the one where a top-down approach was pursued in the design and the implementation process, thus it substantially lacks a transparent framework that would include different segments of the community. It can be argued that the lack of a bottom-up approach in the overall project resulted in the rather marginal involvement of women.

It is seen that above all there is a lack of emphasis on community ownership of the project. In addition to this, the project had no mechanisms for involving women in the design of water initiatives. The project design fell short in including a strategy and action plan stating how women would take part in the design and management of water initiatives linked to the project. This could be done through reserving positions for women on the project committees. The project, in that sense,

lacks a gender-inclusive community planning processes, such as separate women's meetings, gender equality in water committees and project processes, and gender inclusive facilitations. Besides lacking gender inclusive components, there is also no implementation of any policy frameworks and strategic plans to encourage the long term sustainability of the water supply in North Cyprus (Interviewee 1, 2 and 3 in Appendix A).

In the light of these observations, the following part moves on to provide some recommendations on how to increase equal participation of women and men in the decision-making processes on water related matters.

4. Discussion

With gender equality perspective, as mentioned above, the aim is to overcome patterns of inequality between women and men. Nevertheless, attaining greater equality between two genders necessitates changes at various levels of the society. Attitudes and relationships, institutions and legal frameworks, economic institutions, and political decision-making structures all need to change in order to achieve greater gender equality [43]. To commence a dialogue for negotiating shared objectives in sustainable water supply, local women and other non-governmental organizations (NGOs) are valuable partners. Nevertheless, women need institutional strengthening to play a greater role in influencing priorities in infrastructure projects in North Cyprus. This is a problem that deserves further attention also because it is a reflection of a greater problem that is gender inequality. Gender inequality is apparent in all aspects of life, ranging from economic to political domains in North Cyprus. According to [44] the unrecognition and isolation of North Cyprus due to the Cyprus Problem has been a major obstacle in the process of political and economic development and gender equality. Reasons for that are cited as "the earnings differentials, occupational segregation, unequal distribution of unpaid work, attitudes towards working women, and the gender gap and segregation in education" [44]. Nevertheless, the Turkish Cypriot authorities lack policies to prevent discrimination against women. There are no mechanisms to raise awareness of women on the issues of non-discrimination and equality principles (Cyprus Dialogue Forum, Gender Equality). As a result of not being recognized, international treaties and legal frameworks on gender equality are only unilaterally ratified by the parliament in the north of the island, thus they cannot be recognized by the relevant international actors [44]. For example, for the improvement of the legal framework, the Convention on the Elimination of All forms of Discrimination against Women (CEDAW) and the Istanbul Convention are unilaterally ratified by the Turkish Cypriot authorities. Still, the implementation of certain responsibilities under the international and regional instruments is rather slow. Under these conditions, it is civil society stakeholders who can be considered as primary actors for addressing and improving gender equality at the north of the island. They are expected to ensure and monitor the implementation of such frameworks. Although there is such an expectation also in the framework of water resource management and water infrastructural projects, as seen in the Turkey-north Cyprus Water Pipeline Project, in practice women do not have equal access to these projects. Their access is hindered by (a) the lack of adequate policies to represent them in water related initiatives and decision-making bodies (b) by the fact that their own scope of interests is very limited as women's organizations.

Likewise, for North Cyprus, tailoring unique implementation strategies and activity areas in increasing the active participation of women in water management is gravely important. To begin with, women's participation and leadership has to be strengthened. At local levels, activities must be devised that aim to increase women's representation in water related decision-making areas. For example, a gender balance quota can be instituted in key positions such as the boards of the local water management organizations. Nonetheless, this has to go beyond symbolic positions on boards and extra effort has to be made to increase the influence for women on such boards. Linked to that, activities can be organized in helping women to strengthen their leadership skills for an enhanced influence. Leadership training, the strengthening of women's networks and organizations, and capacity-building on rights and gender roles can be listed as some of these activities which can be viewed as helpful [45].

There are studies which show that these activities help to boost women participation for the leadership positions at the local, municipal, and provincial levels [46,47]. Beyond these, policies and plans which can address gender inequality in its various forms are needed for strengthening women's economic empowerment and encouraging women organizations to include water and sanitation issues in their agendas [45]. It can be said that developing strategies to include women in the field of natural resource governance can be seen as a helpful tool in addressing gender inequality in North Cyprus in broader terms as well as contribute to providing a different point of view for the water governance matters.

5. Conclusions

Accessing water and related services are essential for survival. The paper has highlighted the significant role of women in the management and use of this vital resource. Notwithstanding their critical role in that, there are structural stumbling blocks for women in terms of resource control, participation, and capacity in North Cyprus, where in general there's a lack of effective water governance. In that context, the issue of women and water is almost non-existent. North Cyprus urgently needs an integrated and sustainable water resource management with a specific emphasis on gender equity. Experiences around the world have shown that women themselves have to define clearly what their interests and concerns are in the sphere of water governance and have become a part of the water related issues at various levels. It is seen that, in case of North Cyprus both formal and informal women's networks must develop a framework to ensure that their concerns and interests are becoming an indispensable dimension of related programs, projects, policies and legislations. In case of the Turkey-North Cyprus Water pipeline Project, unfortunately women have no role, no capacity, and no say at any stage of the project yet. As women are also major beneficiaries, they need to be effectively represented in water related initiatives and decision-making bodies as well. Related infrastructure projects like the Turkey-North Cyprus Water Pipeline Project must be designed to provide women economic opportunities; to make the proper services to women available; to enthusiastically incorporate and empower women; and to reassure women to engage in decision making and leadership roles in related initiatives and bodies. This research attempted to link together two seemingly distinct fields of research as gender equality and natural resource management within North Cyprus, where as a policy field, even natural resource management is still very immature. It is sure that further studies must be done to detail the stumbling blocks that remain in front of women participation, specifically in the context of North Cyprus.

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Conflicts of Interest: The author declares no conflict of interest.

Appendix

1. A1. Interviewee 1. Göze, B. personal communication, 19 February 2018. Bektaş Göze is the president of the Water Commission formed under the roof of the Union of the Chambers of Cyprus Turkish Engineers and Architects, Nicosia, North Cyprus.
2. A2. Interviewee 2. Atlı, Mine (Personal Communication). 27 July 2018. Nicosia. North Cyprus. She is a lawyer and at the same time a project coordinator of KAYAD (women's organization). Her responses were solely in her own capacity.
3. A3. Interviewee 3. Derya, Doğuş (Personal Communication). 28 July 2018. Nicosia. North Cyprus. Doğuş Derya is a Member of the Parliament and a FEMA (Feminist Atelier) activist.
4. A4. Interviewee 4. Hüdaoğlu, A. personal communication, 18 February 2018. Ahmet Hüdaoğlu, an electrical engineer, is the former president of the Union of the Chambers of Cyprus Turkish Engineers and Architects, Nicosia, North Cyprus. He initiated the formation of the Water Commission under the roof of the Union of the Chambers of Cyprus Turkish Engineers and Architects during his presidency. He also participated at various negotations which took place at different times on Turkey-north Cyprus water pipeline project.

5. Nihat Erim is the 13th Prime Minister of Turkey. He is a renowned Turkish politician who participated at the negotiations on Cyprus in London, England, in 1959.

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