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Women and Water Watershed Management in Mazandaran Rural Areas

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Abstract

This study focuses on the role of men and women in watershed management. It tried to clarify of the priorities and needs of the rural population as well as how the rural population perceives the problems in development of their village. Five counties in Mazandaran Province were studied. These are located in the Bobol, Talar and Siah Rivers watershed. Six most populated villages were selected for survey, each representing a county. Close to 30% of the total rural population lives in these six villages. Some 100 questionnaires were filled for both male and female respondents in each selected village to yield a total of 600 questionnaires by a survey team who were native students of Mazandaran Province. The study has revealed that, despite being in a fairly developed part of the country, the rural population in the study area has a moderate income and a high rate of illiteracy. In this area, women play a significant role in watershed management. Income generating possibilities in this area are not fully exploited. For example, beekeeping is practiced but is not widespread and forest products are seldom sold. On average most respondents would prefer a loan of less than Rls 5 million. Many respondents preferred monthly installments while others preferred annual or semi-annual installments, probably due to the agrarian economy. As a first priority for receiving financial assistance, most of the respondents mentioned ways to generating more income and creation of employment opportunities. Some 52% of priorities were related to living expenditure, About 31% mentioned expanding existing buildings as a priority. Asked about the problems they perceived to be challenges in development of their village, the villagers demonstrated a remarkable awareness of environmental concerns as well as social problems such as gender inequalities. Certain precautions can be accordingly made for a more effective intervention.

Keywords: watershed management, needs assessment, women's participation

زنان و آب

مدیریت آبخیزداری روستاهای مازندران

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چکیده

این مقاله حاصل مطالعه ای درباره نقش مرد و زن در آبخیزداری، تبیین اولویت ها و نیازهای روستاییان و نظر روستایی درباره مشکلات توسعه در آبادی خویش است. این مطالعه در شش روستا از شهرستان های واقع در حوزه آبریز رودخانه های بابل، تالار و سیاه رود در استان مازندران انجام شده است که نزدیک به ۳۰٪ از کل جمعیت روستایی این حوزه آبریز را در خود جای داده اند. در هر روستا، پرسشگران که از دانشجویان مازندرانی بودند، حدود ۱۰۰ پرسشنامه برای پاسخ گویان مذکر و مؤنث تکمیل کردند تا در کل ۶۰۰ پرسشنامه حاصل شد. در نتیجه این مطالعه روشن شد که به رغم آن که روستاییان محدوده مطالعه در استانی بالنسبه مرفه زندگی می کنند، درآمد آن ها متوسط و بیسودی ایشان بالاست. در این محدوده زنان نقشی به سزا در آبخیزداری ایفا می کنند. اما از زمینه های ایجاد درآمد بهره جویی کامل نشده است. در این محدوده زنبورداری می شود اما رواج ندارد. محصولات جنگلی را نیز کمتر می فروشند. از نظر مالی، اغلب پاسخ گویان وامی به مبلغی کمتر از ۵ میلیون ریال را ترجیح می دهند و نخستین اولویت ایشان برای دریافت تسهیلات ایجاد درآمد و شغل است. در پاسخ به مشکلاتی که فراروی توسعه روستا قرار دارد، روستاییان آگاهی چشمگیری از مسائل زیست محیطی و اجتماعی همچون نابرابری جنسی از خود نشان دادند. بر این اساس توصیه هایی برای مداخله سنجیده و کارآمد در محدوده مطالعه ارائه می شود.

کلیدواژه ها: آبخیزداری، نیاز سنجی، مشارکت زنان.

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Introduction

Several social studies have shown that women's involvement in cultivation is high in most rural areas in Iran. Effective watershed management therefore requires the participation of women in watershed management schemes. However, there is currently little information on how to engage these user groups in the context of water management in Iran. There is a need for a detailed understanding of how to empower women and other user groups that have traditionally been excluded from taking an active part in planning for water management in Iran.

This study focuses on the role of men and women in watershed management in rural areas of Mazandaran Province. It aims at clarification of the priorities and needs of the rural population as well as how the rural population perceives the problems in development of their village. Modes of assistance to the population are further investigated.

Aims and Objectives

The main purpose of this study is to examine ways in which the poor, women and other small groups such as sharecroppers and tenants that do not have traditionally strong representation in the decision making process for the water and other natural resources management can be empowered to participate actively and meaningfully in water resource management in Iran.

The study therefore tries to:

- (i) Assess existing gender relations among poor communities in the Alborz Basin, within the project area, paying particular attention to traditional social and cultural uses of water.
- (ii) Identify areas where the role of women and poor communities could be enhanced; and
- (iii) Propose mechanisms that can provide viable opportunities for women and the poor across water-related sectors and ensure mainstreaming their active participation in natural resources management.

Key Questions

To this end, this study has to find answers for the following questions in Alborz Basin:

- (i) What are the respective roles of men and women in everyday rural activities? Who does most of those activities affecting pasture management?
- (ii) What does rural population consider as their priorities and needs? Are they aware of the aspects of gender imbalance in their village and do they consider this to be a problem?
- (iii) What problems does the rural population consider to be important in the development of their village? What are their priorities for a possible financial assistance?
- (iv) If rural households were to receive a financial assistance, how would they like to receive it? How much? How would they be willing to pay it back?

Previous studies

Several studies have emphasized the role of women in watershed management, both inside and outside Iran. In northern Iran, Shaditalab (2000) found that women play a significant role in natural resources management in Gilan and Mazandaran Provinces. Her survey reveals that women do more than 50% of farming and livestock-raising. In Khuzestan Province, in the southwest of Iran, the role of women in agriculture and animal husbandry was surveyed (Behnia, 2005). Although Khuzestan Province is home to several different ethnic groups who speak different languages, practice different cultural traditions, and demonstrate different settlement patterns, the distribution of work between men and women is relatively similar. In all cases, the utilization of natural resources is undertaken by women. Women, he concludes, are the most effectual actors in watershed and environmental conservation.

A similar survey was undertaken in northeastern Iran, in Atrak watershed area, Quchan, Khorassan Province (Nasiri, 2005). There is significant ethnic diversity in this area as the population includes Fars, Turk, Kurd, Baluch, and Turkmen tribes who live in a

nomadic or semi-nomadic condition. The survey revealed that despite the traditional differences in work divisions among different tribes, the role of women in pasture utilization is significant. For example, women undertake for more than 80% of medicinal herb collection in all tribal groups.

Women are not only traditionally influential in watershed management, but also are more motivated to undertake conservation work as demonstrated by Mafi (2005a) in her review of the work of 33 women who have done outstanding work in watershed management in different provinces of Iran. More recently, Papoli Yazdi (2006) reviewed several studies about the role of women in watershed management conducted in different parts of Iran. Based on this survey, he concludes that to be successful, any water resource planning exercise has to include a broad public participation. This inevitably entails the inclusion and empowerment of women; as in almost every case, women are traditionally responsible for those activities affecting watershed management.

Outside Iran, Tahir (2005) studies the role of girls and women in watershed conservation and environmental protection in Pakistan. According to him 52% of total labor force in Pakistan is employed in agriculture. Women comprise 73% of this significant employment share mostly as farm laborers. In another experience, Salas (2005) describes a decade long experience in which the women played a significant initiator role in preservation of the Maasin Watershed, Panay Island, Philippines. In Kyrgyzstan, Orolbaeva (2005) explains the Interest women show and the effective role they play in challenging environmental degradation in this country. There are some 70 women NGOs in this country who have ecological activities in their programs.

Recognizing the role of women in watershed management, the Ministry of Jihad Agriculture (MJAo) has taken measures to empower and train women in watershed management. Although there is no legal limit on female participation in cooperatives, in Iran women's participation in rural cooperatives was as low as 9% in

1993. MJAo thus prepared a draft for the Statute of Women Cooperatives. Issued in 1994, the Statute had provisions for local women elected as executive directors of the cooperative. Thanks to the Statute, in the period between 1994 and 2004, the number of Women Cooperatives increased to 120 cooperatives with 30,000 members (Tawhid, 2005).

MJAo has further supported several projects with women empowerment as one of their key objectives. Sahriati (2005) reports the results of a scheme of subsidies in rural areas in 7 provinces to encourage women to invest in aquaculture between 2001 and 2002. His findings indicate that, once given equal opportunities and empowered by training, women will show a keen interest in starting a business independent of men. For example, only in Gilan Province, northern Iran, 49% of the main investors in rice or fish farms were women. In central Iran, another project was implemented between 1999 and 2004 in Hableh Rud Water Basin, Tehran and Semnan Provinces Iran. This project included training in income generating activities such as beekeeping and collecting medicinal herbs. The training was undertaken in eight villages with 20% women's participation. Different training methods were employed, but the most successful training was found to be field visits. When trainees visited the work of another beekeeper, for example, they were most motivated to start the same business (Mafi, 2005 b).

Further south, Ansari, (2005) describes a series of projects for the mobilization and empowerment of women in sustainable development and watershed preservation. Implemented between 1996 and 2002, these projects established multipurpose rural cooperatives in Navayegan, Darab; Parzeitooon and Abgel, Firoozabad as well as Lapooee, Zarghan, all in Fars Province. All the projects demonstrated the increased empowerment of women as shown by a gradual increase in the number of women members in established cooperatives. For example, in Navayegan the percentage of women members increased from 10% to 31% in only one year. Realizing a need for

empowering women, a society of women cooperative members was subsequently formed in Parzeitooon and Abgel cooperatives to focus on problems specific to women. This had a significant positive impact as after a period of operation, three women were elected as board members of the cooperative.

In a later project, in Lapooee, a cooperative for sustainable development was established with 400 members, in which women comprised 38% of the membership. This cooperative already included a Committee on Women's Empowerment focusing on issues related to women. Nevertheless, the success of these cooperatives was adversely affected by the following factors: lack of facilitator experience; lack of proper needs assessment; insufficient empowerment of women; extreme household poverty; inefficient

marketing; price fluctuations; and lack of coordination between the actors.

Outside Iran, Sarkar and Sharma (2005) describe a series of 'success stories of women's participation in India'. Their cases include a Self Employed Women's Association. Launched in 1995 in nine districts of Patan, Gujarat; the Associations worked successfully on soil conservation and salinity reduction. They also mention that in Himachal Pradesh at least 50% of the members of Water User Associations are women. Nevertheless they observe that despite women's central role in management of natural resources, excessive emphasis on land development in watershed development projects has marginalized women.

Table 1 below highlights findings on women's role in watershed management in Iran and elsewhere.

Table 1- Summary of previous studies and experiences of women's role in watershed management.

Date	Location	Brief Description	Source
1996	Navayegan Darab Fars Province	Multipurpose cooperatives were established in villages in different parts of Fars Province. The percentage of women members drastically increased in one year.	Ansari, 2005
1997	Parzeitooon & Abgel Firoozababd Fars Province	A society of women cooperative members was formed to focus on women problems, thus women were elected as board members after a period of operation. The need to focus on the following:	
1998	Dezhkord Eqlid Fars Province	<ul style="list-style-type: none"> ■ facilitators experience; ■ proper needs assessment; ■ adequate empowerment; ■ extreme household poverty; ■ marketing and predicting price fluctuations; and ■ coordination between actors. 	
2002	Lapooee Fars Province Iran	A cooperative for sustainable development with 400 members with 38% women was formed; its Committee on Women Empowerment focused on issued related to women.	
1990 ~ 2000	Khuzestan Province Iran	A project for sensitizing rural women to save water in irrigation and domestic use	Behnia, 2005
NA	Different provinces of Iran	review of the work of 33 women who have done outstanding work in watershed management in	Mafi, 2005 b
1999 ~ 2004	Hableh rud Tehran & Semnan Provinces Iran	Training in income generating activities such as beekeeping and collecting medicinal herbs was undertaken in 8 villages with 20% women participation. Learning was best when visits to successful projects were arranged.	Mafi, 2005 b
2000	Quchan Khorassan Province Iran	Survey in diverse nomadic and semi-nomadic ethnic groups such as Fars, Turk, Kurd, Baluch, and Turkmen reveals significant role of women in pasture utilization.	Nasiri, 2005
NA	Karimabad Gilgit District Pakistan	Under an Agha Khan program, women collectively cultivated a wasteland for fuel, income and nutrition.	Tahir, 2005
1995 ~ 2005	Maasin Watershed Panay Island Philippines	Women formed some 80 Women of Watershed Associations for watershed management.	Salas, 2005
1994 ~ 2004	Different provinces of Iran	Significant increase in number of Women Cooperatives due to Special statute of Cooperatives issued in 1994 by MJAO.	Tawhid, 2005
1995	Patan Gujarat India	Self Employed Women's Association was launched in 9 districts worked on soil conservation and salinity.	Sarkar & Sharma (2005)
2000	Himachal Pradesh India	In Himachal Water User Associations at least 50% of the members are women, probably due to their social role in economy.	

Study area

The study was conducted in five counties of Mazandaran Province which are located in the Bobol, Talar and Siah Rivers watershed. These are: Qa'em Shahr, Babolsar, Babol, Juybar and Savadkuh. The table below summarizes the population distribution of study area.

Table 2- Population distribution the study area.

County	Households	Population
Savadkuh	509	1,647
Babolsar	3,859	14,563
Babol	2,845	10,799
Juybar	2,267	8,662
Qa'emshahr	3,727	14,224
Total	13,207	49,895

Source: Iranian Statistical Center, 2004 Census.

Methodology

Conducting a survey in the study area requires special provisions. Due to significant illiteracy in the villages, there is little hope that a questionnaire will be filled out by the villagers themselves. In addition, the villagers speak a local dialect and have problems communicating in official Persian. It is therefore necessary that the surveyors ask questions in the local dialect and fill the questionnaire themselves. To encourage women respondents, female surveyors are preferred.

To this end, a group of local students were selected. Three of the five surveyors were female. Being native of the Mazandaran Province, all of the surveyors were familiar not only with the local dialect, but also with the region and local traditions. The survey was supervised by a local university lecturer with previous social work experience.

A draft questionnaire was prepared to address the question of this study. The questionnaire was in four parts. To assess the role of men and women in watershed management, the respondents were asked about the respective responsibilities of men, women, boys, girls and hired workers in undertaking daily

chores. To estimate household income and the affordability of financial assistance, the respondents were asked in another about the preferred amount of loan and preferred period for installments. To assess their personal priorities, an open question was asked: "What will you do if you receive a loan?"

Finally, to see how the rural population perceived the obstacles to development in their settlement, another open question was asked: "What problems do you think need to be addressed in your village?" Since the survey team members were natives of Mazandaran Province and had some experience in social work in the area, the draft questionnaire was reviewed and revised in a brainstorming session before the survey. Some 100 questionnaires were filled for both male and female respondents in each selected village to yield a total of 600 questionnaires.

Population Profile

The villages in Qa'em Shahr County have an average population of 1580 people. Average Household size in these villages is 3.8. On average 19% of the rural population in this county is illiterate. In this county, one of the biggest villages was selected for survey. Qarakheil village is in Bala Tajan Rural Zone, Markazi District with a Population of 4,186. The household size is 3.9 in this village, and illiteracy 17.6%.

Babolsar County is close to the sea and enjoys some flat fertile land irrigated by traditional network. The villages in this area are populous with an average population of 1820, and an average household size of 3.9. Illiteracy is high, however as on the average, 20% of the population are illiterate. In this County, the village of Azizak was selected in Bahmanir Rural Zone. The population of this village is 3,860, household size is 3.7 and illiteracy is 22.0%.

Bordering Babol River, Babol County lies further to the south of Babolsar County. It includes big villages in the traditional irrigation area. The average village population in Babol County is 1800 and the household size is size 3.8. Illiteracy is around 19%. In

this County, the village of Payeen Bishehsar is chosen for survey. This village is in the Feyzieh Rural Zone, Markazi District. It is one of the largest villages in the county with a population of 2,849 and household size of 3.9. Illiteracy rate in this village is slightly higher than the County average and is around 22%.

Juybar County borders Siah River on the east of the basin. Most of Juybar is not currently irrigated and is in the development area. The average village population in this County is around 1237 with an average household size of 3.8. On the average, 20% of the rural population is illiterate. Two villages are chosen in this County: Kordkola and Bizaki. The former, Kordkola, is in Gilkhoran Rural Zone, Chapakrud District. This village has a population of 1,631 with a household size of 4.1 and illiteracy rate of 14.3%. The latter, Biaki is in Hassan Reza Rural Zone, Markazi District. The population of Bizaki is 1,589; its household size, 3.8; and illiteracy rate, 20.9%.

The last county is Savadkuh County. The villages in this the mountainous County are small compared to those in the lowland area of the basin on the north, with contrasting differences. The average rural population in this county is as low as 206 and average household size, 3.4. Illiteracy is significantly higher in Savadkuh with an average of 36% illiterate population.

In this county Alamkola Village in Shirgah Rural Zone, Lafur District is chosen for survey. It is one of the biggest rural settlements in this area with a population of 503. Slightly smaller than the county average, the household size in Alamkola is 3.2. Typical of villages in this area, the percentage of illiterate population in this village is as high as 38.6%.

Close to 30% of the total rural population lives in these six villages. Table 3 below shows the demographic data of villages selected for survey.

Findings

In each village selected, 100 questionnaires were filled. The 600 questionnaires were processed to yield information on the following main questions:

- The role of women and men in rural household tasks, especially pasture exploitation and watershed management;
- What the rural population considers as their priorities and needs;
- What is perceived as the most important problems in the rural settlement; and
- What is the preferred condition for receiving financial assistance?

Table 3. Population distribution in selected villages.

County	District	Rural Zone	Village	Households	Population	Household size
Savadkuh	Shirgah	Lafur	Alamkola	155	503	3.2
Babolsar	Bahnamir	Azizak	Azizak	1,040	3,860	3.7
Babol	Markazi	Feyzieh	Payeen Bishehsar	739	2,849	3.9
Juybar	Markazi	Hassanreza	Bizeki	415	1,589	3.8
Juybar	Gilkhoran	Chapakrud	Kordkola	397	1,631	4.1
Qa'emshahr	Markazi	Balatajan	Qara kheil	1,083	4,186	3.9

Source: Iranian Statistical Center, 2004 Census.

Work distribution between men and women

In line with previous studies, this survey revealed an accentuated role of women in all aspects of rural life. Women do most of the work in home making, cattle husbandry, keeping poultry and pasture exploitation. In agriculture, women workers (including girls under 14 years of age) comprise close to 40% of hired labor. The overall percentage of women keeping bees is very low as compared to men, however. The table below summarizes the results of the survey on work distribution between rural men and women.

Also in line with previous studies in the region and other provinces, the results of this survey indicate that

women perform most of the activities affecting pastures. Pasture exploitation activities include: collecting mushrooms, collecting wild plums, collecting medicinal herbs, collecting other forest products, preparing syrup, preparing jam, preparing other products, and selling forest and pasture products. The aggregate percentage of these activities is more than 95% in five out of six villages. In Azizak Village this percentage is around 75% mainly due to the role of men in selling the products. In Azizak and Payeenbishehsar in Babolsar and Babol counties, respectively, there is a trivial contribution made by boys in pasture exploitation.

Table 5- Average percentage of work distribution between men and women in the study area.

	Household				Workers			
	Male	Female	Girls	Boys	Male	Female	Girls	Boys
Home making	10.1%	84.0%	4.2%	0.5%	1.0%	0.1%	0.0%	0.0%
Cattle & Poultry	32.5%	59.2%	2.4%	2.4%	3.0%	0.5%	0.0%	0.0%
Agriculture	28.1%	6.8%	0.3%	1.5%	38.2%	24.9%	0.2%	0.0%
Handicrafts	47.3%	52.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Bee keeping	26.5%	4.3%	0.0%	0.0%	2.5%	0.0%	0.0%	0.0%
Pasture exploitation	5.5%	93.1%	0.7%	0.5%	0.0%	0.2%	0.0%	0.0%
Misc.	75.3%	24.1%	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%

Table 5- Role of men and women in pasture exploitation in selected villages.

County	Village	Household				Workers			
		Men	Women	Girls	Boys	Men	Women	Girls	Boys
Savadkuh	Alamkola	3%	95%	2%	0%	0%	0%	0%	0%
Babolsar	Azizak	23%	75%	0%	1%	0%	1%	0%	0%
Babol	Payeenbishehsar	0%	98%	0%	2%	0%	0%	0%	0%
Juybar	Bizeki	0%	99%	1%	0%	0%	0%	0%	0%
Juybar	Kordkola	4%	96%	0%	0%	0%	0%	0%	0%
Qa'emshahr	Qarakheil	3%	96%	2%	0%	0%	0%	0%	0%

Except for Azizak, and to a much lesser extent in Alamkola, pasture products are not sold at all. This is demonstrated in the table below. Close to 33.3% of the total population surveyed practices beekeeping. These are mainly in Azizak and Alamkola villages. In Azizak Village, Babolsar, all the beekeeping is by men, while in Alamkola Village, Savadkuh some 26% of the population surveyed were female beekeepers.

Priorities and Needs

To assess the priorities and/or needs of the population they were asked: "What will you do if you receive a loan?" The frequency of responses to this question was then classified. This revealed that some 74% of the respondents were thinking of generating more income and creation of employment opportunities, either for themselves or for their children. To this end, buying property (20%), buying a car (15%), buying equipment for agriculture (11%) and expanding the cattle farm (12%) were most frequently mentioned. Activities such as fishery or keeping bees were mentioned only sporadically.

The second group of priorities was related to living expenditures with more than half of the respondents referring to one aspect or the other. In this group of needs, paying routine living costs (21%), paying debts (16%) and buying a dowry or the costs of child's marriage (12%) were most frequently mentioned.

A third category of needs is that of expanding existing buildings. About 31% of the responses were about this need, mainly building an additional house (20%) or repairing an existing one (8%).

Modes of Assistance

The next question asked concerned the amount of a loan the respondent preferred to receive. On the average most of respondent (84%) preferred an amount of loan less than Rls 5 million (approximately US\$ 500). This amount is very low compared to conventional bank financing in Iran and also indicates mean income in selected areas. The villages where the portion of respondents that opts for a loan more than Rls 5 million is not insignificant and are:

Table 6- Percentage of respondents referring to needs.

What will you do if you receive a loan?	Average
Repairing the house	8%
Building a bath	3%
Building a house	20%
Building a warehouse	0.2%
Building extensions	30.7%
Buying dowry or costs of children marriage	12%
Living costs	21%
Paying debts	16%
Medical care	3%
Travel	1%
Living expenditures	51.7%
Buying a car	15%
Buying equipment for agriculture	11%
Buying property	20%
Expanding the cattle farm	12%
Investment	3%
Employment of children	4%
Employment generation	5%
Expanding business	4%
Paying wages	0.3%
Building a restaurant	0.3%
Fishery	0.2%
Keeping bees	1%
Income generation	74.0%

Bizeki (34%), Qarakhei (20%), Kordkola (18%). Alamkola is the village where the lower loan amounts are most preferred (96%) and, incidentally, where the illiteracy rate is highest. The table below shows more detailed information.

Assuming the conventional assumption for a loan of Rls 5 million (25% annual interest rate, 5 year return period, no grace period) and assuming that the monthly loan installments are around 25% of the monthly income, the mean monthly income of the respondents can be estimated to be around Rls 7.5 million. This is slightly higher than three times the minimum official wage (Rls 2,450 million).

The respondents were also asked about the period they preferred for loan installments. Some 40% of the respondents preferred annual or semiannual installments, probably due to the agrarian economy. Nevertheless, on average 60% of the respondents preferred monthly installments. This is probably due to concern for paying back the loan, as those villages where a lower loan amount was preferred the percentage of those who opt for monthly installments is relatively higher.

Perception of problems

The last question in the survey was an open question

Table 8- Preferred amount of loan in selected villages.

County	Village	> Rls 1 m	Rls 1.1m to 5m	Rls 5.1m to 10m	< Rls 10m
Savadkuh	Alamkola	73%	23%	3%	1%
Babolsar	Azizak	59%	30%	11%	0%
Babol	Payeenbishehsar	74%	18%	8%	0%
Juybar	Bizeki	33%	33%	24%	10%
Juybar	Kordkola	55%	27%	18%	0%
Qa'emshahr	Qarakheil	66%	14%	14%	6%
	Average	60%	24%	13%	3%

Table 8- Preferred periods for installments in selected villages.

County	Village	Monthly	Semiannually	Annually
Savadkuh	Alamkola	73%	8%	19%
Babolsar	Azizak	66%	5%	29%
Babol	Payeenbishehsar	79%	4%	17%
Juybar	Bizeki	35%	12%	53%
Juybar	Kordkola	39%	52%	9%
Qa'emshahr	Qarakheil	72%	6%	22%
	Average	60%	15%	25%

regarding how the respondents perceived the development problems of their village. To stimulate and clarify a response, the surveyors gave sample answers based on other research. The respondent's response was then recorded. The high level of awareness of social and environmental issues was remarkable.

Several answers concerned gender inequalities in income, employment opportunities, ownership rights and education. Some respondents also mentioned that women were not taken as seriously as men in public offices. Another set of interrelated social problems not as frequently mentioned were unemployment, juvenile delinquency and addiction. Another frequently mentioned problem was the need for health and medical care in rural areas. The respondents were also aware of environmental issues such as the quality of water and garbage collection.

Conclusions

Despite being in a fairly developed part of the country, the rural population in the study area has only a moderate income and high illiteracy. The survey confirms what other studies have demonstrated, i.e. that in this area, women play a significant role in pasture exploitation and watershed management. As supported by other research, women are not only traditionally influential in watershed management, but also are more motivated to undertake conservation work. This implies that to be successful, any water management initiative should consider women's empowerment in project area.

Other studies have shown that women acquire a higher social status and have a formal representation once they can generate an income. Nevertheless, income generating possibilities in this area are not fully exploited: beekeeping is practiced, for example,

Table 9- Average importance of problems in the village.

What problems do you think need to be addressed in your village?	Average importance
Less jobs for women	71%
Less income for women	69%
Limited health and medical care	64%
Women do not have equal ownership rights	63%
Low potable and agricultural water quality	63%
Women do not participate in village management	58%
Less educational facilities for women	46%
Society does not allow women to work	33%
Society does not allow women to study	28%
Unemployment and migration to cities	27%
Lack of garbage collection	25%

but is not widespread. Forest products are seldom sold and, if sold, only men sell the product. Handicrafts are mainly for domestic use. If women were trained to undertake these activities for income generation they would acquire more confidence and a higher social status to take a more effective part in watershed management.

As again demonstrated by other research, training has most impact if field visits are arranged to projects successfully run by women. This method of training has several advantages. Not only trainees learn the techniques for a certain activity, but they are also encouraged to undertake the activity themselves.

It is essential, however that adequate market studies are conducted before introducing an income-generating activity. Lessons learned in previous projects show several failures, sometimes because the quality or design of products did not meet market tastes. Sometimes the initiative was ruined because of price fluctuations and/or speculations.

Another effective method for fostering women's participation is to establish a special committee for addressing women problems. Establishing these committees proved to be successful in increasing women members in cooperatives established in 2000 in Fars Province. In 1994 when MJAO prepared such a draft, not only women members increased in number, but also cooperatives were formed with full female membership. Mazandaran has the advantage of a high awareness of gender issues as demonstrated in this survey.

The amount of loan preferred by most respondents (Rls5 million or approximately US\$500) is too low to be viable in conventional banking in Iran and requires a micro-credit lending. The micro-lending should provide for annual or semi-annual in addition to monthly installments.

The objective of such financial assistance can be to generate more income and creation of employment opportunities in concordance with the priorities of respondents. Nevertheless, the income generating activities mentioned by the respondents are not exactly

those related to pasture and watershed exploitation. Fishery or keeping bees were rarely mentioned. On the other hand, more than half of the respondents stated their living costs as a priority. Accordingly, this necessitates initial training and adequate guarantees so that the loans are spent for their intended purpose. Another area which could be the objective of lending is construction either for expanding existing buildings or building new ones. Nevertheless, the required lending for this purpose well exceeds a micro-credit scheme.

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