The Women’s Role in Agriculture and Irrigation Management: A Case Study at Gia Xuyen Commune, Gia Loc District in Hai Duong Province, Vietnam

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Abstract

In Vietnam women are important labour forces, especially in rural areas. They have been actively involved in agricultural production activities and played an important role in economic development in rural areas. Moreover, the irrigation management for agricultural production at community level has been carried out mostly by women. However, their role hasn’t been recognized officially. Hence, the improvement of women’s role in agricultural water resources management at community level is an essential part of the gender equality agenda.

In this article, the author has used mixed methods study of quantitative and qualitative (Dey, I., 1993), to assess the role of women's participation in the operation of irrigation and agriculture in community level. The evaluation of the role of women is required in order to understand the inadequacies of gender equality in agricultural water management at the community level. The results showed that, the role of women in rural areas remains limited, they have no power and voice in the implementation and decision-making in the management of irrigation and agriculture.

Key words: Women’s role, water management, gender equality
Introduction

The overview of the current status of women’s role in agriculture and irrigation management

Along with the innovation and economic integration policies issued by the Party and Government, the gender equality in Vietnam has received significant attention. However, there are still many problems in the implementation process and challenges in the shifting of economy – management mechanism. Hence, the gender gap still exists, especially in the rural areas.

In Vietnam women are important labour forces. They have been actively involved in the agricultural production activities and played an important role in economic development in the rural area. However, woman also faced subjective difficulties in the production process due to their own limitations (technical qualifications, health, etc.) or objective limitations (accessibility to the capital/loans, employment, social services, etc.)

According to the statistics, the rural female workers accounted for 58.02% of total rural labour force in the fields of agriculture, forestry, and fishery (particularly, the female workers accounted for 56.29% of total labour in agriculture sector) and currently, female workers produce over 60% agricultural products (MARD, 2012). On the other hand, the role of women in water resources protection and utilization hasn’t been paid sufficient attention.

Although the National Strategy on Clean Water Supply and Rural Sanitation affirmed the important role of women in managing and maintaining the water resources, the plan and program formulation and implementation haven’t been integrated fully the women role. The implementing agencies hasn’t put the gender issues into the design and maintenance of water supply system, the development of information system, and the formulation of water use fee, as well as the communication and education. Moreover, the irrigation management for agricultural production at local level, especially at community level has been taken over by the women; however, their role hasn’t been recognized officially. Hence, the improvement of women role in agricultural water resources management is
an essential part of the gender equality agenda. Especially, the role of women should be recognized fully in order to address the gender imbalance in terms of human resources for water resources management and decision making process. As a result, it is important to ensure the gender mainstreaming in all stages from the management to the decision making for agricultural water resources management. This study aims to enhance the role of women in agricultural water management at the community level to promote gender equality in water management. The research results are presented in this report based on research conducted in a communal area of the Red River Delta basin.

Literature Review and Research Method

1. Literature Review

Researches on women’s role in rural development and water resources management in Vietnam

In Vietnam, some researches mentioned and affirmed the important role of rural women in production and housework. Women have undertaken many production activities and significantly contributed to the family income. They not only participated in the production process but also do the housework. For that reason, the double role seems to be the burden for women. A survey conducted in the Mekong Delta showed that, the women do 72% agricultural production work and 82% the housework [MARD, 2012]. However, due to low educational level and not being provided with technical assistance, the income of women from agricultural and non-agricultural work as well as housework is very low.

In the rural areas of Vietnam, women are considered as disadvantaged group as not being involved in the planning and policy-making process at grass root level. The policies and budget allocation tend to ignore women’s needs. On the other hand, rural women are lacked of knowledge on their legal rights as they have low educational level and the gender bias of the traditional society (UNDP, 2000). This resulted in the “forgotten” of women roles in development activities and in the distribution of benefits from the socio-economic changes of the country. This
is seen very clearly in the study by Nguyen Thi Anh Tuyet et al (2016) when the survey of over 700 women from 07 socio-economic areas of the country. The study results also indicate a problem of concern is women's participation in the positive contributions of labor, material and funding for the development of irrigation infrastructure / irrigation in rural areas. However, the role of women in contributing ideas, supervision, and inspection of infrastructure construction activities is low. This weakness needs to be overcome by encouraging the participation of women in the process of developing and implementing water resources legislation that the Government of Vietnam is drafting and will issue in the coming time. (Anh Tuyet N.T, Chien N.V, 2016)

Compared to the average level of the society, rural women have lower educational level. It means half of the workforce is limited in terms of knowledge, skills, and new technology application capacity. For that reason, the productivity and income of the society is reduced respectively. The gender gap in the accessibility of land, capita, science and technology information is mainly due to the shortage of production means of half of workforce in agro-forestry production. This contributes to reduce the rural income in particular and productivity and income of the society in general.

Thus, the data collection for rural development researched should be disaggregated by gender and the data analysis should be conducted under the gender angles in order to make appropriate and gender oriented decision. The decision shall bring an important implication as it will provide actual data on men and women gap, the advantages and disadvantages of women in development process (UNDP, 2002).

In fact, gender has been mentioned at macro level in Vietnam such as the Gender Strategy for Agriculture and Rural Development in 2010; however at micro level, this issue has not been mentioned in the development policies, especially in the field of water resources management. The involvement of women is only mentioned in the participatory irrigation management projects. Women have been encouraged participating the irrigation management at community level. They has chance to attend workshop, training, and seminar to enhance their capacity on water resources management (Ohira, 2010). The participation and
role of women have just been reflected in the projects financed by international organization. Gender studies on integrated water resources management are still limited. For the Red River basin, the author didn’t see any study on gender equality, especially the women’s role in water resources management at community level. For that reason, this study placed high priority on the role of women in water resources management in agriculture at community level. This aims to encourage the equal participation among male and female as well as promote the role of women in water resources management.

2. Research Method and case study

2.1. Study area

Red River basin is the second largest basin in Vietnam, with a total area of 169,020 km2. Of which, the total basin area in Vietnam is 86,660 km2 (51.35%). Red River basin covers 26 provinces with a population of about 28 million people.

With 86,660 km2 of total natural area and 1874.100ha agricultural area, of which the cultivation area is 1,463,000ha (rice and secondary cropping land is 1,031,000ha, and other crops), the forestry land is 2,570,775ha. The water resources includes: Total annual amount of surface water of Red River is 133.68 billion m3. Red River Delta has advantages in agricultural development. Therefore, the research on enhancement of women role in agricultural management is crucial in developing the agriculture sustainably and increasing the social equality.

The study was conducted in Gia Xuyen Commune locating in the north of Gia Loc district center, 7km from south of Hai Duong city Centre. The commune was passed by the National Road 38. Gia Xuyen Communes has 3 hamlets of Tang Ha, Dong Bao, and Tranh Dau. The commune area is accounted for 4.58% total natural area of Gia Loc district. Its population in 2014 is 8,302 people with 2,709 household. The commune is selected as it contains typical characteristic of the Red River basin in terms of culture, traditional agriculture practices, irrigation management, and canal system.
The soil of Gia Xuyen commune is raised with the deposits of silts from Thai Binh river system. The typical features of Thai Binh river alluvial is alum and nutrient-poor.

Total natural area of the commune is 512.08ha. Of which, the agricultural land is accounted for 57.76%, non-agricultural land is 42.24%, and the cultivation area is 177ha. Presently, the irrigated and drained area of the commune is 282ha.
2.2 Research Method

To seek an in-depth understanding about the governance arrangements related to gender equality on water resources management in Vietnam, qualitative research tools will be utilized, qualitative research is inherently multi-method in focus, and in this research, the following method will be applied

- **Desk study**

An intensive desk review was carried out to get an overview picture of the current status of the irrigation system management in Vietnam. Desk study was conducted prior, during and after the field study to enrich understanding, cross-check and interpret findings.

With the collected data and information, the analysis and assessment will be conducted. The method of secondary data analysis is used as the main tool. As “Secondary data can be a valuable source of information for gaining knowledge and insight into a broad range of issues and phenomena” (McCaston, M.K., 2005).

Research conducted review of documents: the report of the local socio-economic, operational reports of APC, reported by Women's Union, and research papers related.

- **Quantitative methods**

Qualitative data analysis is a process of resolving data into its constituent components, to reveal its characteristic elements and structures (Dey, I., 1993). To used interview techniques by the questionnaire was prepared for women of working age in the locality

The sampling of the research is done based on the size of population are women in the age of social workers are active in the field of agriculture. According to estimates of random sampling is 90. However, in practice, there were 100 women who participated answered questionnaires.

At each village (hypertension, Compatriots and Fought) choose about 30-33 people to participate by paying up the list and randomized in gaps
To collect information at the field, a range of qualitative methods is used. It includes the participatory tools such as in-depth interviews and group focus discussions.

**In depth interview:**

Qualitative research require quite extensive in-depth interview. Kahn and Cannel (1958) described interviewing as “a conversation with purpose”. According to Patton (2002), there are three types of interview: the informal – conversational interview, the general interview guide approach, and the standardized – open – ended interview. In this case, the general interview guide approach will be applied with a list of interview questions. The interview questions will be sent to key informants beforehand; interviewees will have the general idea about the content of the interview and prepare necessary information.

**Focus group**

Focus group is a group discussion on a particular topic organizes for research purposes. This discussion is guided, monitored and recorded by a researcher (Gill, P. et al., 2008). Group discussion is used for generating information on collective view. Therefore, this method will be conducted after the in-depth interview in order to find out the solutions to overcome the challenges and solutions for better irrigation system management.

**Results and discussion**

1. **Water resources and irrigation management for agricultural production**

1.1. **Water resources management and irrigation-drainage management**

Gia Xuyen commune belongs to Hai Duong province locating in the north of Gia Loc district center, 7km from south of Hai Duong city Centre. The commune was passed by the National Road 38. Gia Xuyen Communes has 3 hamlets of Tang Ha, Dong Bao, and Tranh Dau. The commune area is
accounted for 4.58% total natural area of Gia Loc district. Its population in 2014 is 8,302 people with 2,709 household.

Water resources management: Gia Xuyen canal system starts from Thai Binh river system. Both surface and underground water resources of the commune are abundant. The commune takes water from Gia Xuyen River flowing through Doan Thuong, Tay Bac River and Cau Go River passing Do Day.

Water level is from a pumping station of North Hung Hai irrigation system. After pumping water from river to the main canal and allocate to secondary and on-farm canals. The main canal was constructed by bricks. Water has been stored on on-farm canal and farmers using the small electric pump or bucket to irrigate their field. The on-farm canal system of the commune is rather completed and facilitates the irrigation to the field.

Irrigation and drainage management: like other provinces in Red River Delta, irrigation and drainage activities are under the management of Irrigation Management Company/Enterprise, Department of Agriculture and Rural Development, and Agricultural Service Cooperatives (Cooperatives). Main works such as weir, headwork, pump station, main canal, and secondary canal are managed and operated by the Irrigation Management Company/Enterprise. The tertiary canal, small scale pump station, and on-farm works area managed and operated by the Cooperatives.

Currently, Gia Xuyen has one agricultural service cooperative operating at communal wide. The services provided by the cooperative are irrigation and drainage, plant protection, animal health, and technology transfer. The cooperative structure included the irrigation management groups namely 16 people working at 08 production units, 08 machine operators, and 02 repairmen. The operations of irrigation management group is under the regulations of the cooperative, direct management of Head and Deputy head of cooperative, selection and supervision of the community.

The irrigation management group is in charge of getting water, allocating water to the on-farm canal; then, the farmers can proactively drain water to their fields.
Irrigation fee: per perch/one crop. Each household has to pay the fee. This money is used to pay for the irrigation management team for the tasks of getting water/allocation of water to the canal/ditch.

Irrigation practice: Farmers have not applied modern irrigation but the traditional practices. The only difference is water was stored in the on-farm canal and can actively get water to irrigate secondary and terrestrial crops.

In general, the local irrigation-drainage operations are in favorable condition; especially, when the commune was selected as the pilot area for the implementation of JICA CD-PIMS Project.

However, after the discussion with local authority and community representatives, there are still some emerging issues and shortcomings in irrigation and drainage activities:

Firstly, the commune is prone to flood when heavy and long-lasting rain occurs. It is due to the topographical features and improper design of canal system. In addition, the filling of ponds and lakes has reduced the drainage ability of the area.

Secondly, the water shortage still occurred in the high elevation and downstream area. At the upstream, the water is abundant but this area is also at risk of inundation. In order to solve this issue, the local authority has proposed to improve the main canal in order to ensure the appropriate water allocation on the system.

Thirdly, Dao River is seriously polluted. Recently, the water has abnormal color and odor. The water quality can impact on the soil, crop, and health of people in the commune and the surrounding area. The possible reasons are the uncontrolled waste water from domestic use and jelly processing plants along the river.

In addition, with the policy of restructuring agricultural production, some areas have shifted to aquiculture farming which more or less affected the natural condition of area.
2. Role of women in irrigation activities

As mentioned above, women play an important role in agricultural production, and accounted for the majority of rural labor. Since, women are often assigned to housework, they have less chance to migrate or work in faraway areas while the non-agricultural jobs are suitable to men as they are stronger and have more chance to travel.

According to the survey with 100 women in Gia Xuyen commune, the majority depends on crop production and husbandry (accounted for 96%) and only a few involves in non-agricultural activities such as small trade, service, workers in industrial parks, government officials (4%). 78% income of women is from agricultural production. In the time of finishing harvesting, women can involve in non-agricultural production activities and gain additional income (accounted for 22%).

Role of agricultural production

According to the survey, the decisive role between men and women in agricultural production is not equal. Through group discussion and in-depth interview, at households where men stay at home not going out for non-agricultural activities, men play decisive role. In a contract, where men are regularly absent to do non-agricultural activities, the decision will be made by women.

Table 1: Decisive role in agricultural production (%)

<table>
<thead>
<tr>
<th></th>
<th>Seed</th>
<th>Cultivation technique</th>
<th>Purchase of tools</th>
<th>Purchase of material s</th>
<th>Sow, plantation</th>
<th>Harvest</th>
<th>Selling products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>37,0</td>
<td>48,0</td>
<td>29,0</td>
<td>20,0</td>
<td>24,0</td>
<td>35,0</td>
<td>39,0</td>
</tr>
<tr>
<td>Female</td>
<td>36,0</td>
<td>32,0</td>
<td>5,0</td>
<td>42,0</td>
<td>51,0</td>
<td>23,0</td>
<td>26,0</td>
</tr>
<tr>
<td>Both</td>
<td>27,1</td>
<td>15,0</td>
<td>4,0</td>
<td>14,0</td>
<td>22,0</td>
<td>39,0</td>
<td>34,0</td>
</tr>
</tbody>
</table>
Participation in irrigation and drainage activities for agricultural production

According to the survey, women directly diverted water to the field (accounted for 75%); the figure for man and both men and woman are 9% and 16% respectively.

Figure 2: Man and Women participate on take water form canal to the field (%)

Participation in local agricultural irrigation management

As mentioned in the above section, the members of agricultural service cooperative and irrigation management group are elected by farmers themselves.

From the gender perspective, heads of cooperatives and irrigation management groups are men. Head of the community is also man. Therefore, all the local irrigation management has been managed and operated by men. When asked about why only men undertook these positions, most of female interviewees responded that these jobs required strong health. In order to get water, men have to do at night; in some cases, have to dive into the water to drain. In addition,
men know how to prime the pump and operate the machinery. These above activities are considered inappropriate for women.

Women mainly participated in the cleaning and improvement of canal system. Every year, they will do the weeding once or twice and dredge the canal bed once. These activities also have the involvement of men. Men also participated in the canal improvement activities as they are stronger and have technique.

Figure 3: Man and Women participate on O&M and Facility improvement (%)

(Source: Survey results in 2016 conducted by the author)

Some difficulties and limitation in agricultural irrigation management is low remuneration for members of irrigation management group while the job is occasional (only get water in some time of the year). In fact, the local men are very strong; they often participate in non-agricultural activities such as carpentry, masonry, services at local area or other area. Participate in the irrigation management group is more or less the responsibility to the community; hence, they don’t have motivation or engage on a regular basis.

Besides, there are still conflict between irrigation management group and the community, especially in the case of drought. Since, members of the irrigation management group are farmers, they have chance to pump water to their fields before allocating water to other people field (they less care about the general work but think for themselves). In some case, the conflict may lead to violence.
To solve the shortcomings of irrigation management group, the participation of women is very important as they are more familiar with farming work than men. In addition, women are better at settling conflict than men. This has limited the shortcomings mentioned above, at the same time encouraging and strengthening the participation of women in the management and operation of irrigation and drainage in the locality.

**Participation in irrigation management training**

According to the results from the group discussion and in-depth interview with women in the commune, most of training participants are men. The reason is that all the training and science-technology transfer activities have been conducted by the Farmer Union. Only 8% of women responded that they participated in irrigation management training.

It is worth noting that most members of Farmer Union are men. Although the majority of farmers is women but they often join the Women Union. According to the survey results, only 50% of women responded that they are members of Farmer Union while 90% are members of the Women Union.

Not only in agricultural production activities but also in other sectors, women participated as members or officials. They barely participated as the managers or leaders. According to the survey, no women involved in leadership positions at the Party Committee, local authorities, social-political organizations (excluding Women Union) and cooperatives.

This is the main reason to the limited participation of women in all fields in general and in agriculture and irrigation management in particular. Since not participating in the training, women don’t know about the irrigation technique and how to operate the irrigation system. This will affect the productivity and efficiency of agricultural production as women directly involved in these activities than men. Less participation in training activities will cause the lack of knowledge and skills in operating the irrigation and drainage activities at local level.
Consultation on the irrigation and drainage activities

Only 5% women responded that they have been consulted about the operation and maintenance as well as water allocation plan. It is to understand because 43% said that they didn’t participate in local irrigation management activities. In addition, the irrigation and drainage plan was assigned to the irrigation management group at local people; therefore, most of people just hear about the irrigation plan and schedule.

Discussion

Firstly, rural women depend more on agricultural production, agriculture is the main livelihood. In the sense of restructuring local economic from agricultural production to non-agricultural production, women will be more dependent on agriculture due to health conductions, family responsibility, lack of skills and limited education to change to other career and migration. If the crop structure, cultivation conditions, water resources, farming technique, seed, etc. are not changed in an appropriate way, the income from agricultural production will be reduced, leading to the social status decline of the women. For that reason, in order to improve the status of rural woman, the agricultural production conditions should be strengthened. As a result, women can take lead on the farm, cultivate, trade and increase their income from agricultural production and thereby improve the position in the family and society.

Secondly, increase opportunities for women to participate more in the management and operation of irrigation system. As mentioned earlier, with the existing limitations of local irrigation management group, it is very important to encourage the participation of women in irrigation management group because women are main labor in agricultural production; they also have advantage of resolving disputes and conflicts. In addition, the more involvement in operating and managing the local irrigation system will rise out the voice and status of women in the community; help them to gain initiative in developing the water regulation and allocation plan for agricultural production. With the stronger voice in agricultural activities, women can create prerequisites for promoting their voice in other fields.
Thirdly, enhance knowledge on both agricultural production and irrigation management for women to help them become more involved in agricultural activities, gain more income, and higher the social status. 97% female interviewees responded that they wanted to participate in local meetings on agricultural production, irrigation management, and husbandry. And 56% female interviewees said that they wanted to participate in technical trainings on irrigation and drainage. They understand the importance of knowledge to agricultural production. Recently, the commune applied crop and agriculture restructuring towards using high value crops such as secondary crop, ornamental trees, peach trees, etc. instead of the low yield rice crop. For that reason, the updated knowledge on irrigation and drainage for each crop is very important to ensure the efficiency and productivity.

Fourthly, improve the water resources to ensure the people health and safety of agricultural products. In addition to the encouragement of women in agricultural production and irrigation management, water pollution is an important issue should be solved as it is affecting the women health and safety of agricultural products. Especially, when women are more involved in irrigation management activities: getting water, drain water…which are more exposed to water.

Conclusions and recommendations

From the participation of women in agricultural production and irrigation management at Gia Xuyen commune, the women play an important role in agricultural production and agriculture is the main source of income.

However, the involvement of women in irrigation system operation and management is still limited in cooperatives, irrigation management groups, meetings, trainings, and science and technology transfer. They just engage in activities such as dredging, cleaning, but not the decision making or irrigation – drainage planning.

These shortcomings need to be changed by encouraging the participation of women in irrigation activities. Women are more engaged in agricultural production than men as men tend to seek for non-agricultural job and women will depend more on agriculture. Therefore, in addition to the restructuring of the
local crop restructuring with the knowledge, women should be equipped with the irrigation skills and knowledge to ensure productivity, thereby improving the income and status of women.

Besides, change of thinking and perspective of local people on gender should be taken into consideration. Hence, women can be more engaged in community management and agricultural production.
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