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The Role of Gender in Artisanal Fisheries of the Tono Reservoir

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Abstract

The 1,860 ha Tono reservoir is the largest source of water for irrigation and freshwater fisheries production in the Upper East Region of Ghana. The current status of the fisheries was investigated in this study, with emphasis on the role of gender. The reservoir's fisheries have made a significant contribution to food security and livelihoods. The artisanal fisheries produce an estimated 61.2 metric tons of fish annually and offer employment and income for not less than 480 indigenous households. Participation in the fisheries value chain during the study was gender biased: the ratio of males to females was 104 to 376. The men do the fishing (actual extraction) and mending of the fishing gears, while the women traditionally dominate the downstream post-harvest enterprises. More importantly the women command a considerable influence on the fisheries exploitation as financiers or employers of majority of the fishers.

Keywords: *Reservoir fisheries, gender, post-harvest, fisheries investment, fishing effort*

INTRODUCTION

In general, there is a gender bias in many fisheries and aquaculture operations around the globe. Men usually do the extraction (fishing) and related operations, while women take charge of almost all the downstream processing and commerce, to the point of sale in chop bars and restaurants (Shaleesha and Stanley, 2000; Brown, 2003). In India, however, women's participation extends to mending of fishing nets (Shaleesha and Stanley, 2000), which in many places is usually done by men. In Tanga region of Tanzania, as high as 70-80% of males are involved in fishing (Horrill *et al*, 2001). To ensure a reasonable gender balance and realization of the full potential share of employment and income in fisheries and aquaculture, it is necessary to focus on capacity building support to rural poor women, which would eventually lead to their empowerment to contribute to the national economy. Often illiterate though, rural women are able to learn some sophisticated technologies when transmitted innovatively using appropriate visual aids to adopt them (Shaleesha and Stanley, 2000). Formation of women's cooperatives is usually an advantage in terms of receiving credit facilities and other supports from micro-finance institutions, but often such groups are not common for the lack of mutual trust, in many cases. But where they exist and function successfully, a portion of

the revenue from the fisheries business is usually collected from the members and deposited in the cooperative's common account to meet future needs to ensure economic security for the rural poor women, in lieu of external financial support (Shaleesha and Stanley, 2000).

The Tono irrigation project near Navrongo, the largest in the Upper East Region of Ghana (ICOUR, 1995), has made a significant contribution to agricultural and fisheries production to ensure food security, since its completion in 1985. This study investigated the role of gender in the fisheries component of the irrigation scheme.

MATERIALS AND METHODS

Study location

The Tono irrigation project (Fig. 1) is situated within the Kassena-Nankana Municipality of the Upper East Region of Ghana. The 1,860 ha main reservoir and five minor night storage reservoirs of about 3 ha or more each are the sources of water for irrigation and artisanal fisheries.

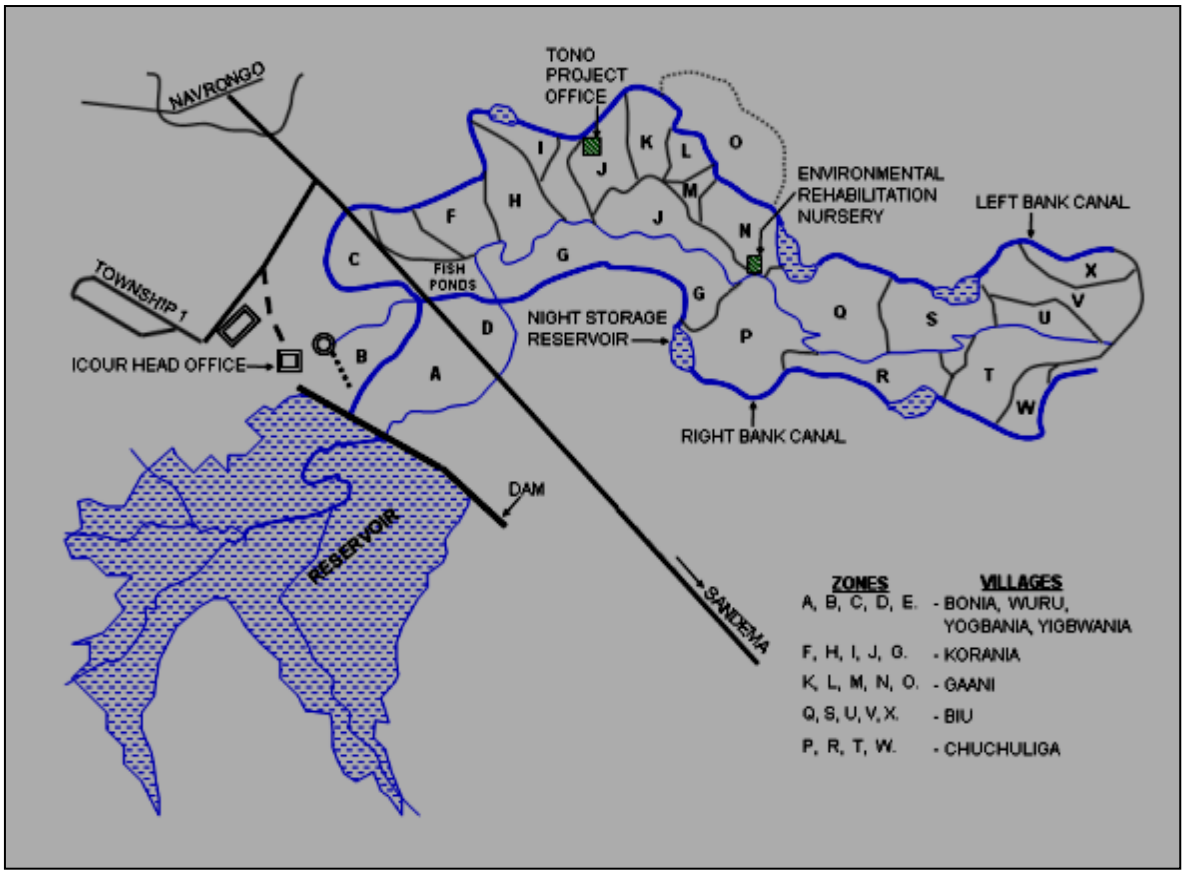

Fig. 1: Map of the Tono Irrigation Project showing the main reservoir (foreground) and the five minor night storage reservoirs and developed irrigable lands (background). **Source: DERF Networks, April 2010**

Sampling, data collection and analysis

Fishers (57) and fishmongers (35) were purposively sampled from five out of the eight beneficiary villages within the irrigation catchment area (Table 1) to voluntarily participate in the study. Both qualitative and quantitative data were collected for analysis, employing a structured questionnaire.

TABLE 1: **Sample populations of fishers and fishmongers from five beneficiary villages within the Tono Irrigation Project site**

Community	Men (Fishers)	Women (Fishmongers)
Gaani	8	4
Biu	35	17
Korania	6	4
Yigbwania	6	6
Yogbania	2	4
Total	57	35

The questionnaire was administered to the participants in the vernacular to collect primary data such as biographical profiles, occupations, educational and marital status, incomes and expenditures and poverty status, while secondary data were retrieved from published articles, and reports. In order to minimize possible errors and ensure reliability and validity of respondents' information, the following measures were taken: i) pilot-testing of the questionnaire in the villages to allow for restructuring of the questions to obtain consistent responses on repeated trials; ii) personal observations to add, verify or refute primary data collected from the respondents; iii) the interviews were not tape recorded to allay respondents' fears that their voices could be used to testify against them someday, especially on issues of tax evasion and fisheries regulation offenses. Analysis of the data were subjected to statistical analysis and presented as means, percentages and graphs.

RESULTS

Anthropogenic statistics

The fishers and fishmongers belonged to three ethnic groups, namely Kassenas, Nankanas and Builsas. Gender ratio was approximately 1:1 for both Kassenas and Nankanas and 2:1 for the Builsas. All the women were fishmongers: no female fisher was encountered, but there were as many as 18 fishers who also performed fishmongering activities.

Most (70) of the respondents in this study were in the productive age of 20-50 years and the rest were older. There was no evidence of child labour (persons under 18 years) involved in both occupations. About one half (50.5%) of the fishers and fishmongers were married; the singles (unmarried) were either divorced or widows. The participants in the study represented three major recognized religious faiths in the country, namely; Christianity (65.2%), Islam (30.4%), paganism (3.3%) and the rest (1.1%) claimed to be atheists or animists. Majority (69%) of the respondents especially the women lacked any formal educational attainment and were therefore considered illiterate; the rest had basic education.

Fisheries investment and employment

Three fisheries investment or financing systems were identified in the study, namely; i) the fisher owns the boat and nets (self-employed fishing), ii) the fishmonger owns the boat and nets (full contract fishing) and iii) both the fisher and fishmonger jointly own the enterprise (partial contract or shareholding fishing). In self-employed fishing, the fisher sells his catch to anybody at the prevailing price. On the other hand, contract fishing (full or partial) entitles the woman complete monopoly over the fisher's catch: the fisher sells the fish to her at a negotiated discounted

price, but usually not below half the prevailing price. Thus women command a considerable influence on the exploitation of the reservoir fisheries as employers or financiers.

At the time of the study, a total of 480 registered villagers consisting of 104 fishers (men) and 376 fishmongers (women) were benefiting from the Tono reservoir fisheries. The figure for fishmongers was probably an underestimation because it did not include unregistered women who process fish from the reservoir for sale at chop bars, restaurants and hotels within the municipality and beyond.

Fishing effort

Majority (77) of the fishers and fishmongers work 5-7 days a week as full-time operators, while the rest work 1-4 days a week as part-time or seasonal operators (Table 2). In general, fewer women than men work on Sundays. It was revealed that the women in the predominantly Christian (Catholic) communities are comparatively more religious and attend Sunday church services more regularly than the men. About half of the Christian women however go to the reservoir after church to collect their fish from the fishers. Thus fishing effort is reduced by about one half on Sundays and this has a positive regulatory impact on the fisheries. Also in the cold months of December to early February, fishing effort or frequency is usually reduced by 1-3 days/week depending on the severity of the cold and the disposition of the fishers, because the people are generally wary of cold weather. This behavioral response to the cold season is another way fishing effort is restricted, though the effect seems minimal. However, some of the women financiers compel the contract fishers to fish in the cold and they respond by drinking strong alcoholic beverages to stay warm and active while fishing. Others simply respond by deferring fishing to the late afternoon when the weather becomes relatively warmer. In this manner, the women contribute to the problem of overfishing in the lake for economic reasons.

TABLE 2: **Operational schedules of the fishers and fishmongers**

Gender activity frequency		
Working days in a week	Men (fishers)	Women (fishmongers)
1	1[a]	1[a]
2	2[a]	1[a]
3	2[a]	1[a]
4	2[a]	2[a]
5	8 [b]	3[a]
6	12[b]	19[b]
7	30[b]	8[b]

[a]Part-time or seasonal operators; [b]Full-time operators

Post-harvest management

Post-harvest management involves removing scales, fins, gut and washing the fish with water from the reservoir to minimize spoilage. In general, this is the responsibility of women but certain fishers (men) were seen doing this also. The cleaned fish are not chilled with ice at the landing bays until they arrive at the fish markets. The nearest fresh fish market is at Navrongo, about 16 km away from the reservoir. The cleaned fish are usually packaged in plastic or aluminum carriers covered with insulating jute fabrics and transported on bicycles (the commonest means of transport at the time of the study), motor bikes or on the head by women. Those on motorbikes reach the fish markets faster and their fish are usually in a better quality state.

Refrigeration was not a common fresh fish treatment practice at the time of the study, as only one fishmonger owned a refrigerator to store excess or unsold fish to minimize spoilage. In lieu of refrigeration, many women

engage in wholesaling to avoid fish spoilage, but not without the loss of a substantial profit margin, as retail sale price is relatively higher.

DISCUSSION

Gender statistics available on the Tono reservoir fisheries at the time of this study showed gender bias: the women involved in the entire fisheries value chain were over three and a half times more than the men, reflecting the global situation: men do the fishing (actual extraction) while women dominate the downstream post-harvest enterprises (Shaleesha and Stanley, 2000; Brown, 2003). Strangely however, some fishers (men) in the present study were encountered cleaning their catch by themselves with the same skills as the women. Because of the inherent potential dangers, fish production whether from the wild or aquaculture farms is popularly perceived as an enterprise preserved for men. However, in a recent survey of cage aquaculture in northern Ghana, a slightly more female involvement in the actual production activities has been reported (Ameneku *et al*., 2016). In another survey, female ownership of pond aquaculture farms and involvement in production activities in southern Ghana was rare (Owusu-Frimpong, 1989).

The relationship between active fishers and gear owners for whom they work may influence the fisheries of a water resource (Jul-Larsen and van Zwieten, 2002). The present study and previous ones (Okrah, 2010; Takyi *et al*., 2011; Laar, 2011) have shown that it is a common practice for women (fishmongers) to solely or jointly finance fisheries investments through the provision of fishing gears (boats and nets). The relationships determine who buys the fisher's catch and at what price. Contract fishing (full or partial) of this nature has an inherent disadvantage because the women fix the price of the fish. The result is an apparent lack of trust. The women suspect that the fishers do not bring all the catch of the day to the designated landing bays, while the fishers feel cheated because the contract terms and conditions seem unfavourable to them. Consequently, the women (fishmongers) generally earn more income than the men (fishers), though other factors may account for the disparity. The estimated average incomes in this study were approximately GH¢200.00/week for the women and GH¢150/week for the men.

The Tono reservoir fisheries supply predominantly fresh fish to the markets, but fresh fish trade carries a high risk of fish spoilage that leads to rapid deterioration of the biological quality of the fish and substantial reduction of its economic value, in the absence of proper post-harvest handling and treatment. The underlying reason is that fish is an extremely perishable commodity (Clucas, 1981; Bavinck *et al*., 2005), but refrigeration can minimize fresh fish spoilage. However, at the time of this study, fish refrigeration was not a common practice for the lack of funds to purchase refrigerators. Although some of the women belonged to cooperative associations and could pool resources to jointly own a small cold storage facility, they were reluctant to do so for the lack of mutual trust. Rather the women wanted the Municipal Assembly to provide the cold storage facility and rent it to them as a social responsibility.

The chilling of fish with ice later until arrival at the market place and not at the landing bays, is a bad and risky practice for the following reasons: the popular means of transport (bicycle) is slow and the prevailing high local ambient temperature can exacerbate spoilage, since high temperatures favour activities of intrinsic enzymes and bacteria responsible for fish spoilage. The few women who ride motorbikes reach the fish markets faster to catch the early customers who come there for the best quality fresh fish. Certainly the motorbike owners have a competitive

advantage over those who ride bicycles or walk to the same fish market.

The predominantly gill net fishery was identified as the primary contributor to fish spoilage. Fish caught by this method struggle for long hours and become moribund or die by the time they are harvested from the nets the next morning. Evidently, some of the fish landed during the study were already in various stages of spoilage, and constituted a potential economic loss to the fishers, because the women reject spoiled fish. In fact, the women are guided by a code of ethics to ensure that, as much as possible, only high quality fresh fish are sold to their customers to guarantee consumer confidence and protect their business. The principal diagnostic feature the women usually use to reject fish as spoiled is pale colouration of the gills. The characteristic colour of gills of live or freshly dead fish is blood red. Fish caught using the other gears (cast net, under water trap, and simple hook and line) remain alive or fresh comparatively longer, apparently because of the minimal time of post-capture struggle.

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