

# Environmental Effects of Socio-economic Activities on Songor Ramsar Site in Ada, Ghana

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## ABSTRACT

*Overexploitation due to developmental activities and overdependence on their values for livelihood are threatening the existence of wetlands. The objective of this study is to find out the main socio-economic activities at the Songor Ramsar Site at Ada, and tax the environmental consequences of these activities on the wetland, and make recommendations to address the cause of its destruction. The research made used of primary data on household livelihood activities, and their effect on the wetland. Data on land use were collected using structured questionnaire, focus group discussions, and participatory observations. Among other findings of this study, 92% of the respondents depended solely on the wetland for their livelihood. This overdependence has led to a reduction of the resources as confirmed by 84% of the respondents. The study therefore recommends among others that public awareness be created concerning the values of the wetland among the communities that depend on the resource.*

**Keywords:** *Wetlands, Songor Ramsar Site, Sustainable Management, Environmental Impact Assessment, Disaster.*

## INTRODUCTION

Increasing human populations and the quest for better life have led to human overexploitation of biodiversity especially in the developing world. Globally, biodiversity is being exploited at much faster rates than ever before with negative implications for sustainable human livelihood (Turner and Taylor, 1990, William, 1993). According to Wilson (1998), biodiversity is being threatened while many others are at the verge of extinction due to human activities. Though wetlands are long regarded as wastelands, yet they are now recognized as important features in the landscape that provide numerous beneficial services for people, for fish and for

wildlife (United States Environmental Protection Agency (U.S. EPA, 2002). Some of these services or functions include protecting and improving water quality, providing fish and wildlife habitats, storing floodwaters and maintaining surface water flow during dry periods (Ramsar Handbook 7, 2007). Despite the benefits most countries derive from wetlands, and the effort to establish a sustainable management of wetlands for their biodiversity, they continue to face destruction throughout the world. Existing literature on wetland studies in Ghana reveals that urbanization, high population growth, fuel wood gathering, salt and sand winning are among the major factors threatening wetland ecosystems (Anku, 2006). Unfortunately, the century long perception of wetlands as filthy, useless places that had to be drained and converted into something more useful still lingers on (Amankwah, 2008). Everyday more wetland areas and their resources are being degraded by way of pollution, reclamation and resource over-exploitation in Ghana (Amankwah, 2008).

Current evidence indicates that degradation of wetlands could be largely attributable to neglect and unsustainable human activities e.g. bush burning, hunting, farming, fuel wood harvesting and estate development over the years (Ntiamo-Baidu, 1991). The current situation, if allowed to continue, is likely to result in biodiversity loss from the wetland. The main object of this study is to investigate the effects of socio-economic activities on wetland ecosystems. This is because wetlands form an ecologically valuable resource. In Ghana, they provide feed, roost and nest sites for thousands of migratory and resident birds. They also act as feeding sites and natural habitat for marine turtles and many species of fish; and plant genetic materials for research. They also provide major source of income from agricultural, salt mining and other economic as well as construction activities especially for poor communities. As tourist sites, wetlands also generate direct revenue to the government but their existence are being threatened by the activities of man.

## **MATERIAL AND METHOD**

The Songor Ramsar site is one of the five constituted coastal Ramsar sites in Ghana. It is in the Dangme East District of the Greater Accra Region. The 51.33 hectares wetland includes the west bank of the lower Volta River estuary and the Songor wetlands. In the south of the wetland is the Gulf of Guinea. The landscape is generally flat with the creeks supplying blackish water from the Volta River to the lagoon during high water tides. There are huge expanses of reeds and sesuvium. These habitats and resources serve the socio-economic needs of the inhabitants and also provide nesting, feeding and resting areas for wildlife species. Over 23 inhabited and uninhabited islands are associated with the Volta River within the Songor wetlands. Ramsar site is managed by Wildlife Division of the Forestry Commission, and its activities are regulated without adversely affecting the core areas. A field study was conducted in six communities, which were purposively selected, to examine the socio-economic activities being undertaken in the Songor Lagoon. In

all, 250 respondents were interviewed using structured questionnaires. Semi-structured interview guides were also administered to key informants from the office of the Forestry Commission- the Wildlife Division, and the Environmental Officer from Ada East District Assembly. Other key informants included Assemblymen, chiefs, and opinion leaders from all the six communities. Finally, separate focus group discussions were held with ten members each from the various groups within the communities exploiting resources from the Lagoon. A mixed approach, quantitative and qualitative, was used to analyze the data. The Predictive Analytic Software (PASW) version 18 was used to process the information from the 250 respondents, while the information from the key informants and focus group discussions was processed manually.

## RESULTS AND DISCUSSION

***Socio-demographic Setting of Communities:*** A total of 250 households, comprising 59.2% males and 40.8% females, were randomly selected from six communities to conduct a baseline socio-economic survey (Table 1). The communities were Otokpe, Totimekope, Ocansekope, Azizanya, Lolonyakope, and Ayigbo. In terms of age group, 72% were within the age bracket 21 to 50 years. A further 20% were aged between 51 and 70 years; the remaining 8% male respondents only, whose ages ranged from 11 to 20 years were captured at Otokpe and Lolonyakope (Table 1). Most of the respondents had education up to elementary level, 21% had no formal education, while the remaining 11% were respondents with secondary and tertiary education. Most respondents were Dangmes, the rest were Ewes and some minor tribes from northern Ghana. Besides, 44.4% were married, while the unmarried ones formed 28%.

***Socio-economic Activities of the Communities:*** The respondents were engaged in seven main socio-economic activities: These were crop production, fishing, recreation, salt production, building and construction, wood harvesting, and waste disposal (Table 2). Most of the respondents (38.8%) were engaged in fishing while, 19.6 percent were into crop production. A further 16.4 percent were engaged in salt production, and 10.4 percent of the respondents were into building and construction, and wood harvesting. Besides, 2.8 percent were into recreation activities, whilst the least of the respondents (1.6%) used the Songor Ramsar site as their waste-dumping site. Fishing was a major activity for the inhabitants of Ayigbo (14.0%); the other activities in the community employed less than 1.0 percent. Fishing (6.0%), crop production (4.4%), and salt production (3.6%) dominated the economic life of the respondents at Lolonyakope. The Azizanya community had most of its residents engaged in fishing (10.4%) and crop production (4.8%); a few of them were also into wood harvesting and salt production. Ocansekope had most (6.8%) of its residents engaged in wood harvesting. A further 3.6 percent each of its members were into fishing and salt production. Totimekope and Otokpe

had 4.0 percent each community members engaged in building and construction. Whilst most of the respondents (6.8%) at Otokpe were salt producers, only 1.2 percent Totimekope residents were into salt production. There were also more crop farmers (6.0%) in Otokpe than in Totimekope (3.2%) and the other communities. Among the four major occupations at Otokpe, fishing employed the least respondents.

***Socio-economic Activities by Gender:*** Seven main socio-economic activities were undertaken by the people at the Songor Ramsar site (Fig. 1). The female respondents dominated in crop production (12.0%), recreation (2.0%) and wood harvesting (5.6%), while fishing (24.4%), salt production (15.6%), building and construction (8.8%), and waste disposal (1.2%) were mainly undertaken by the males.

***Environmental Disaster on Communities:*** The main environmental disasters identified by the members in the communities were flooding and storm attack. As shown in Fig. 3, most of the respondents (88 %), comprising 56 percent males and 32 percent females, perceived flooding as the greater challenge to the communities. Only 12 % of respondents (8.0% males and 4.0% females) claimed that the communities had been experiencing some storm attacks. These natural phenomena have negatively affected the wetlands and the communities as well. Figure 4 presents the five main effects of disaster at the Ramsar site. According to the survey most respondents (40%), consisting of 32.0 percent males and 8.0 percent females, claimed that flooding in the communities was caused by blockage in water courses. A further 36.0 percent, (20.0% males and 16.0% females), opined that the least rainfall caused flooding because of the low lying land, whilst 12.0 percent (4.0% males and 8.0% females) attributed flooding to land reclaimed from the lagoon for building and construction activities. Another 5.2 percent males and 2.8 percent female respondents pointed out that dumping of waste into the lagoon was one of the major causes. Harvesting of trees at Songor Ramsar site was considered to be the least factor.

***Stakeholders Analysis:*** All the stakeholders agreed that the Songor Ramsar site has now become the most suitable area for the socio-economic activities of the surrounding communities. Discussions with the key informants and various groups from Ada East District Assembly and all the communities indicated that livelihood in Ada depended solely on the wetland values. According to the informants, it is their main source of food for the homes, and also of income.

***Methods of Cropping and Fish Harvesting in the wetland:*** Agricultural activities involve intensive cultivation by crop farmers who used various types of chemicals; the most common was NPK 15-15-15. The overuse and misuse of the wetland has led to the decrease of its contents. Most respondents use chemicals because the land is no more fertile. The responses from the respondents showed

that they used a large amount of chemicals for fishing. The use of chemicals in cultivating crops and in fishing affects the function of the wetland ecosystem. Aquatic life and plants are adversely affected; this degrades the wetland because it loses its components and is therefore unable to function properly.

***Building and Waste Disposal in the Wetland:*** The respondents were asked why they preferred building in the wetland. Most of them said they decided to build there so they could have access to the wetland resources. On how they acquired land in the wetland, the response was either through inheritance or leasing. However, some of the respondents from the groups argued that lack of supervision had led to the indiscriminate grabbing of land in the wetland. The respondents remarked that wetland areas were abodes for run-off, therefore when it rained it stored floodwaters. Reclaiming of the wetland to settle on accordingly leaves the run-offs nowhere to flow to. Thus, most of the communities were flooded at high tide and during heavy rains. Few respondents indicated that solid waste dumped into the wetland caused degradation and other associated adverse effects like the loss of aquatic life and blockage in waterway.

***Harvesting of Trees in the Wetland:*** Concerning tree harvesting in the wetland, the responses showed that measures had been introduced to sustain the tree species in the environment. Thus, harvesting of trees in the wetland has been restricted, yet few people always manage to harvest mangrove. Owing to the depression of the wetland, flooding and storm attacks are some of the disasters experienced in the wetland area. Accessibility of the wetland to the public for various livelihood activities has impinged the sustainable management of the resource by the various authorities.

**Table 1:** Respondents' Communities and Age Group

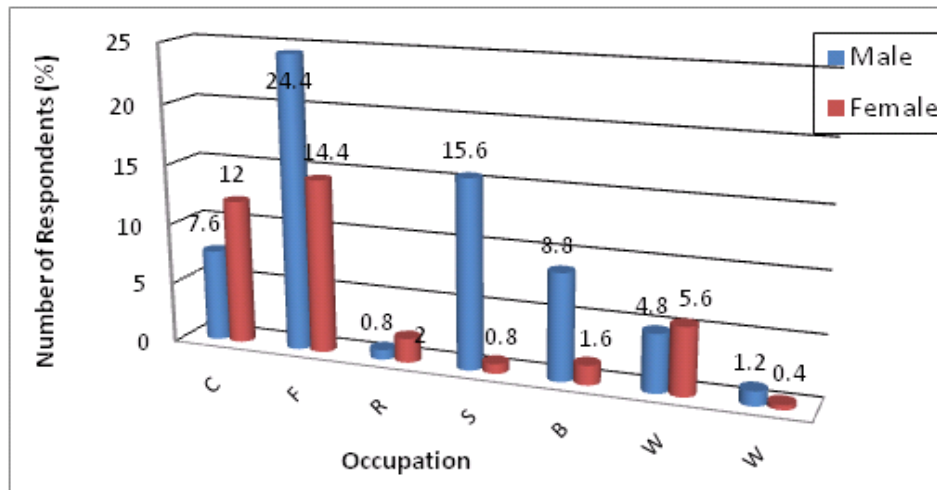
Communities	Age	Female		Male		Total	
		Freq	%	Freq	%	Freq	%
Otrokpe	11-20	0	0.0	10	4.0	10	4.0
	21-30	0	0.0	10	4.0	10	4.0
	31-40	20	8.0	0	0.0	20	8.0
	41-50	0	0.0	10	4.0	10	4.0
Totimekope	21-30	12	4.8	0	0.0	10	4.0
	41-50	0	0.0	18	7.2	20	8.0
Ochansokope	21-30	0	0.0	10	4.0	10	4.0
	41-50	0	0.0	10	4.0	10	4.0
	51-60	0	0.0	10	4.0	10	4.0
	61-70	10	4.0	0	4.0	10	4.0
Azizanaya	21-30	0	0.0	10	4.0	10	4.0
	31-40	10	4.0	10	4.0	20	8.0
	51-60	10	4.0	10	4.0	20	8.0
Lolonyakope	11-20	0	0.0	10	4.0	10	4.0
	31-40	10	4.0	10	4.0	20	8.0
	41-50	10	4.0	0	0.0	10	4.0
Ayigbo	21-30	0	0.0	10	4.0	10	4.0
	31-40	0	0.0	10	4.0	10	4.0
	41-50	10	4.0	0	0.0	10	4.0
	61-70	10	4.0	0	0.0	10	4.0
<b>Total</b>	<b>102</b>	<b>40.8</b>	<b>148</b>	<b>59.2</b>	<b>250</b>	<b>100.0</b>	

**Source:** Field survey, 2012

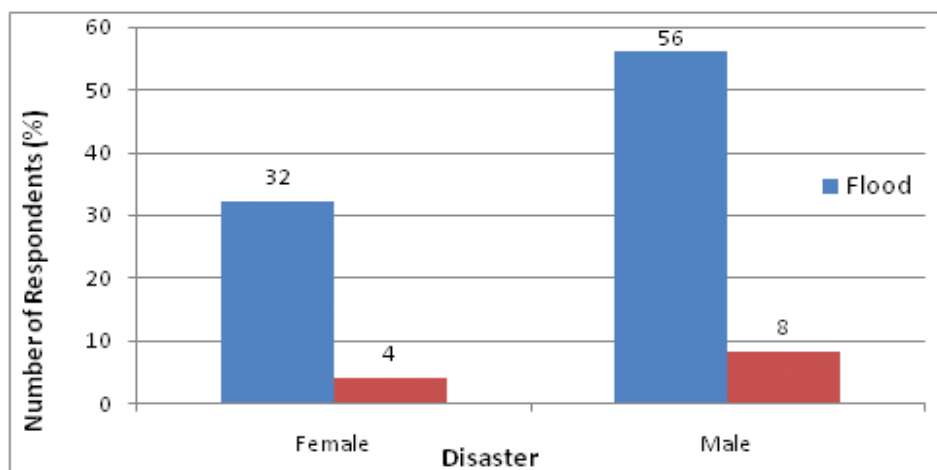
**Table 2: Socio-economic Activities of Communities**

Activities	Otrokpe		Totimekope		Ochansekope		Azizanaya		Lolonyakope		Ayigbo		Total	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Crop Production	15	6.0	8	3.2	2	0.8	12	4.8	11	4.4	1	0.4	49	19.6
Fishing	4	1.6	8	3.2	9	3.6	26	10.4	15	6.0	35	14.0	97	38.8
Recreation	2	0.8	1	0.4	1	0.4	1	0.4	2	0.8	0	0.0	7	2.8
Salt Production	17	6.8	3	1.2	9	3.6	3	1.2	9	3.6	0	0.0	41	16.4
Building and Construction	10	4.0	10	4.0	1	0.4	2	0.8	1	0.4	2	0.8	26	10.4
Wood Harvesting	1	0.4	0	0.0	17	6.8	5	2.0	2	0.8	1	0.4	26	10.4
Waste Disposal	1	0.4	0	0.0	1	0.4	1	0.4	0	0.0	1	0.4	4	1.6
<b>Total</b>	<b>50</b>	<b>20.0</b>	<b>30</b>	<b>12.0</b>	<b>40</b>	<b>16.0</b>	<b>50</b>	<b>20.0</b>	<b>40</b>	<b>16.0</b>	<b>40</b>	<b>16.0</b>	<b>250</b>	<b>100</b>

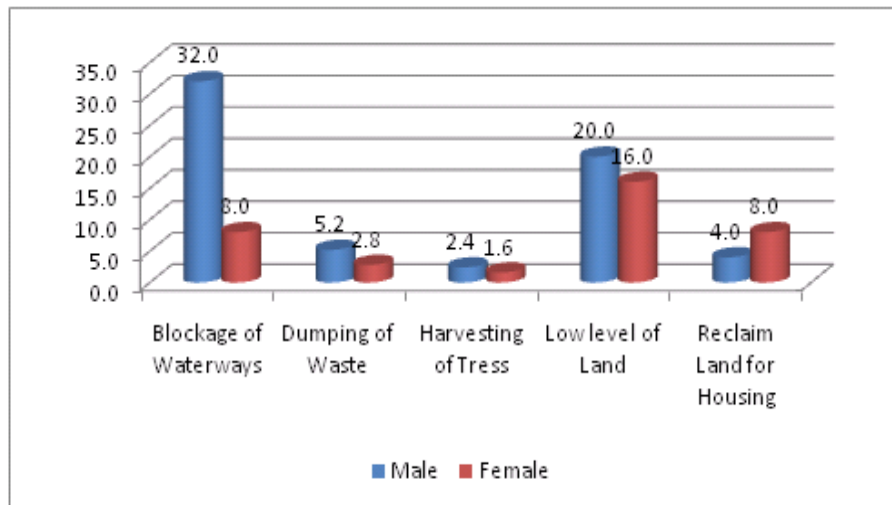
Source: Field survey, 2012



**Figure 1: Socio-economic Activities by Gender**



**Figure 2: Relative Effects of Flood and Storms on Communities**



**Figure 4:** Causes of the Environmental Effects

### CONCLUSION AND RECOMMENDATIONS

The study indicates that the Songor wetland is an unrestricted site, and is not bound by any law to desist people from undertaking activities around the area. Most respondents depend solely on the wetland resources for their livelihood. They also undertake activities such as crop production, fishing, salt production, and housing construction in the wetland. The unrestricted nature of the wetland has made it difficult for the authorities in charge to protect its resources from activities that could cause its degradation.

Researchers like Wuver and Attuquayefio (2006); Agyeman (2008), and Anku (2006) have shown that degradation of wetlands is mainly due to human economic activities. Another ongoing serious activity that contributes to the degradation of the wetland is the disposal of refuse into the wetland by the community inhabitants. It affects the biochemical oxygen demand of the water body (Anku, 2006). The study further shows that the Azizanya community used to be a wetland area, but it was totally reclaimed with red sand (laterite) to settlement. This activity occurs in other communities for expansion of the communities for development. This allows access to wetland resources.

Dugan (1990) explains how such activities adversely affect and destroy the resources, and make the wetland areas extremely difficult to protect. Besides, the study also indicates that some members of the communities use chemicals and fertilizers in economic activities such as crop production and fishing. These chemicals could be drained into the wetland and adversely affect its biological function (Williams, 1993). The ease of acquiring land has led to the abuse and misuse of the site (Agyeman, 2008). Hence, most attributed the cause of the disaster to the blockage in the waterway, while others said it was due to the low-level land. This shows that

the function of the wetland in protecting adjoining communities against flooding and storm attack has not been fulfilled because the site has been degraded by its abuse. Most people in the communities agreed that should they have an alternative source of livelihood then they would leave the wetland resources. The overdependence on the wetland causes its degradation. Thus, an alternative source of livelihood would reduce the overdependence on its resources (Agyemang, 2008). The Songor Ramsar site is a valued wetland which could be very beneficial to the surrounding communities and the government in terms of economic and social values when managed in a sustainable way.

Although the site is ratified as a Ramsar site, and is managed by the Wildlife Division, its mismanagement has allowed the public to have access to it and undertake socio-economic activities in the wetland. This study provides information that will contribute to the debate on how to conserve, protect, and improve wetland areas in Ghana. Appropriate strategies and policies can be formulated to ensure that the full potentialities of wetland areas are realized for the benefit of the country. The following recommendations have accordingly been made:

- i Creating public awareness, among the communities, on the values and the need to conserve the wetland.
- ii Carrying out an Environmental Impact Assessment before undertaking any developmental project.
- iii Formulating a policy to restrict the public from having access to crucial areas in the Ramsar site.
- iv Providing adequate waste management systems in the communities around the wetland to prevent dumping of waste into the wetland indiscriminately.

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