Revealing of Socio-Economic Sustainable Livelihood importance of Rudrasagar lake of Tripura, India

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Research Article

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Abstract

Rudrasagar is a natural waterlogged wetland, also this wetland known as the Ramsar site since 2005. This wetland site is historically as well as ecologically important for the nearby inhabitants. There is an agency namely, Rudrasagar Udvastu Fisherman Samabai Samity Ltd. (RUFSS) manages this wetland activity who are directly dependent and sustains themselves. Pisciculture and agriculture are the main occupations in the local community. This is an integral part of inhabitants; it is not only important economically but socially as well as ecologically. Rudrasagar Lake has 240 hectors according to the Melaghar revenue office. The Rudrasagar lake depth is less in the dry season as well as high in the rainy season. Therefore, the inhabitants are mostly dependent on this lake for their sustainable livelihood. Because of these activities, there are presumption about the degrading of the lake's ecological quality. For the purpose of this study six villages namely, Chandanmura, Rajendranagar, Latamura, Kemtali, Baidermura, and Rangamur took as a sample. With the notion in mind of sustainable livelihood, this research will find the socio-economic importance of the Rudrasagar lake and its legal safeguards.

1. Introduction

Efforts to conserve and create wetland ecosystems depend on the recognition of their environment as well as economic values. From an ecological point of view, wetlands are valuable because they are among the most productive ecosystems in the world and host a large amount of biodiversity. Uncounted species of birds, mammals, reptiles, amphibians, fish, and exotic species depend on water and wetland plants for their survival [1]. On the other hand, an anthropological analysis is needed to determine the value of wetlands from an economic point of view. Environmental resources are valued by the opportunities of production and service that it provides to the people, i.e. by its impact on human welfare [2].

Wetlands provide many essential services to human society, but at the same time, there are environmentally sensitive systems. This explains why, in recent years, more attention has been paid to the creation and management of sustainable management strategies for wetlands [3]. It is clear that wetlands have significant economic value, and they are under massive pressure worldwide.Immediate causes of wetland damage and degradation include overuse, land conversion and erosion, pollution, climate change, and the role of species.Wetlands are essential from the point of view of conservation and sustainable management due to the rich diversity of ecological flora and fauna.The products of clear and indomitable diverse resources and wetland functions such as fodder, fish, firewood, non-timber forest products, ecotourism and flood control historically provide the source of human livelihood. The cost per hectare of wetland ecosystem services ranks first among all ecosystems, and the total value of wetland ecosystem services contributes 47% to the global ecosystem [4]. Therefore, it is one of the most important and productive ecosystems [5] & [6].

The role of wetland resources is particularly vital in the livelihoods of the poor in developing countries. For example, wetland activities in Uganda Pace Wetland> provide 50% of the monthly income of

dependent people [7]. About 90% of the East Godavari Delta population of Andhra Pradesh is dependent on mangrove wetland products for their livelihood [8]. Since most of the services provided by the wetland ecosystem have not been traded in the economic market, the value of the wetland ecosystem continues to be neglected or devalued by stakeholders, the government and the public [9].Thus, wetland policy has begun to change from encouraging development towards protection and rational use [10].

The goal of the Ramsar Convention is to protect wetland ecosystem functions and maintain wetland culture, and to realize sustainable socio-economic development through local, regional and national initiatives and international cooperation [11]. Promoted by the Ramsar Convention, countries around the world have participated in research on wetland protection and intelligent use. Inland Importance (Ramsar Sites) has 239 reservoirs covering an area of 299 million ha, which is about 19% of the world's wetlands (recorded as 1210 million ha) [12].

Wetlands go through natural changes due to dynamic arrangements, continuous depletion, drought, sea-level rise, or infiltration by sediments or organic matter.Thus, many wetlands are only temporary features of the landscape and will be expected to change and eventually disappear, where new wetlands will be created elsewhere.The study was made an attempted show ecosystem services such as socio-economic importance of pisciculture and agriculture as well as local people depending on other sources. More on dependency of their livelihood on this wetland needs protective safeguards.

2. Materials And Methods

Relevant justification

Every year in this reservoir, at least 9 lakh baby fish are born. Because Rudrasagar is a lowland region with an excellent climate for fish farming. Besides, paddy is grown on the upper part of this lake. The performance here is excellent because of the silt of soil sincewe aimed to assess the economic value of the lake.

Study site

Rudrasagar Lake is located between latitude 23 ° 49 N and longitude 91 ° 31 E (Figure 1). This lake consisted of three permanent sites known as Nayachera, Borduwal Cherra and Durlavnarayan Cherra, which led at that time to significant deposits of silt on the lake of Rudrasagar. Outflow through the regulatory channel was named Kachigang cherra via Gomati River. Lake Rudrasagar was a seasonal lake in oval forms [13]. The Rudrasagar, which occupies 240 hectares, the Dam's total lake water is 344 acres and its agricultural land 1,400 acres (Melaghar Revenue Office).

During the dry season Rudrasagar has a water depth of 6-7 meter, and 11-12 meter in the rainy season. The lake is full of aquatic hydrophytes and herbs, such as plants that emerge and submerge and clay to the bottom. For the survey study, randomly 100 samples from 6 villages were used. Proper sampling is a

non-random process by which the informants are selected on the basis of their experience and information [14]. For 100 people from 6 villages, we carried out the questionnaire. Half-structured interviews with main collaborators have also been conducted. Data from various informants or stakeholders have been obtained. In collecting our details, our local donors were very helpful. They collaborated with various local communities. The respondents received many details on the lake situation that encouraged our research today and in the past. A strong report was drawn up with the community of fishermen to understand the community's past and to interact well during my entire stay. Since August 2019 to February 2020, we are doing this job. Many of our villages have been named such as Chandanmura, Rajendranagar, Latamura, Kemtali, Baidarmura and Rangamura. To study was focus on the ecosystem services such as socio-economic importance of pisciculture and agriculture as well as local people depending on other sources.

3. Result And Discussion

The alternative way of life is grounded in a minimal image of the livelihoods of fisheries and agriculture. Nevertheless, it was noted that, within a multitude of activities that constituted their livelihood strategy, many rural people have fishing and agriculture as an economical feature. The farming practice is increasing because the fishermen society does not control agricultural activity, and the fishermen's society is supervising fishing activities directly. Nonetheless, I think that the fisherman Samabai Samity from Samabai Rudrasagar Udvastu will explore the concept of modern technology and how to grow a better paddy using farmers' training. Besides, the soil is silt in Rudrasagar, with a paddy content of 120-1300 kg per Kani. Fishermen in Rudrasagar are expected to purchase fishery permits. The diet consisted of fish caught in the lake. The system could be used for sustainable agriculture-fishing and paddy cum fish farming. In the wetland, this approach has never been used. The fish will, of course, fly in a paddy plot as the plots are in the water. It is an ecologically sound approach to see if the yields and the productivity of fish vary. Practicing rice and fish farming can benefit from reducing the use of fertilizers and pesticides to preserve the role of ecosystem services. In the wetlands of Rudrasagar, there's an activity that can be carried out indirectly by increasing the Rudrasagar water oxygen level and by earning money from it.

In the rural population of Rudrasagar, fish farming and agriculture are the primary occupations. Agriculture and fish products accounted for 56 per cent of the respondents. At the same time, 24% of local communities continue to fish through rivers, daily wagers, stores, builders, poultry farms and anganwadis, for example. Just 5% of local communities still focused on fishing because of their increased income for other sources. 15% of local authorities in the Rudrasagar area have only been farmers because they believe that farming is the main advantage of fishing and there is an interest that paddy growing will start in the lean season (Figure 2).There is a gradual shift in the occupation from fishing to agriculture. However, the cost of inputs while practising agriculture is higher than fishing.

Inhabitant of that locality 30% are exclusively dependent on Rudrasagar Lake alone because they have no choice but to work, work tickets are collected daily from RUFSS Ltd. Just 11 percent of respondents

rely on other sources, including a number of shops, businesses and some employees. They are worked in the private sector, namely as a teacher, police, cop, Clark, etc. Both the lake and other sources are reliant. The diversifications of work made it easier for the local communities to sustain themselves (Fig. 3). As per the survey response 59 per cent of the respondents are dependent on both Rudrasagar Lake and other sources, along with agriculture and fisheries.

The figure indicates that 77% of municipalities in the region have 2.5-15.5 acres of paddy plots (Fig. 4). Just 8 per cent of the families have 15.6-20.5 acres of paddy plots. Others have a tradition to take land on lease or mortgage for cultivation. The other source for livelihood is Rudrasagar lake and 8% of the local population of that area are dependent. The proprietor of paddy plots operates as a labour of 3 per cent. 4% of the people employed on RUFSS in Lake Rudrasagar, and they want to protect the lake. Communities agree that the government can adequately preserve the lake.

According to local populations, the farming of fish is increasingly lucrative for agriculture and paddy cum. Even agriculture is more competitive than fishing for fisheries are 58 per cent of respondents. The fisheries programs have supported just 38 per cent of participants. 4% of the communities in their hometown garden grow plants, some sell local vegetables, some do not use them as a portion of food as shown in Fig. 5.

In this analysis the livelihood of the adjacent inhabitants are more dependent on this wetland. As the water is the source of their earning, it the legal mandate for the state to protect it. As per the Constitutional mandate fundamental rights and directive principle of state policy has its obvious nature for the benefits of the citizens. Art. 21 of the Constitution of India, provides Right to life and personal liberty which is well established by the discussion above. The idea to protect this place in a very stringent way by the legal safeguards is that the community livelihood dependency. Acceptability of the dependency on agriculture, fishing and home gardening is wider in nature.

4. Conclusion

Rudrasagar is an economic zone that annually earns lakhs of rupees. Many people are obtaining their lives. However, there are many casualties, such as misguided businessmen who chase birds and marine animals that are in danger. Silt accumulates, and all kinds of plastic content drop to sea indirectly because there are no plants around the lake, which is very harmful to marine animals. Silt accumulates, and all kinds of plastic content drop to sea indirectly because there are no plants around the lake, which is very harmful to marine animals. So, to save this Rudrasagar, we have to make a perfect plan and regulatory law so that it can be protected. As per the regulatory system of the country, we have laws to deal with this type nature of issues, but its outdated. This system to be updated with the present context and new regulation to protect the wetland as per the biodiversity. Sustainable livelihood of the inhabitant needs to be taken care but not at the cost of losing biodiversity and bioecology.

Declarations

This is to declare that this manuscript is prepared with highhanded research skill.

Funding

Not Applicable

Data Availability Statement

The datasets generated during and/or analysed during the current study are not publicly available due to the reason of privacy but are available from the corresponding author on reasonable request.

Conflicts of Interest

The authors declare no potential conflict of interest exists concerning the research and authorship of this manuscript and all are agreed to submit this manuscript for publication.

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Figures

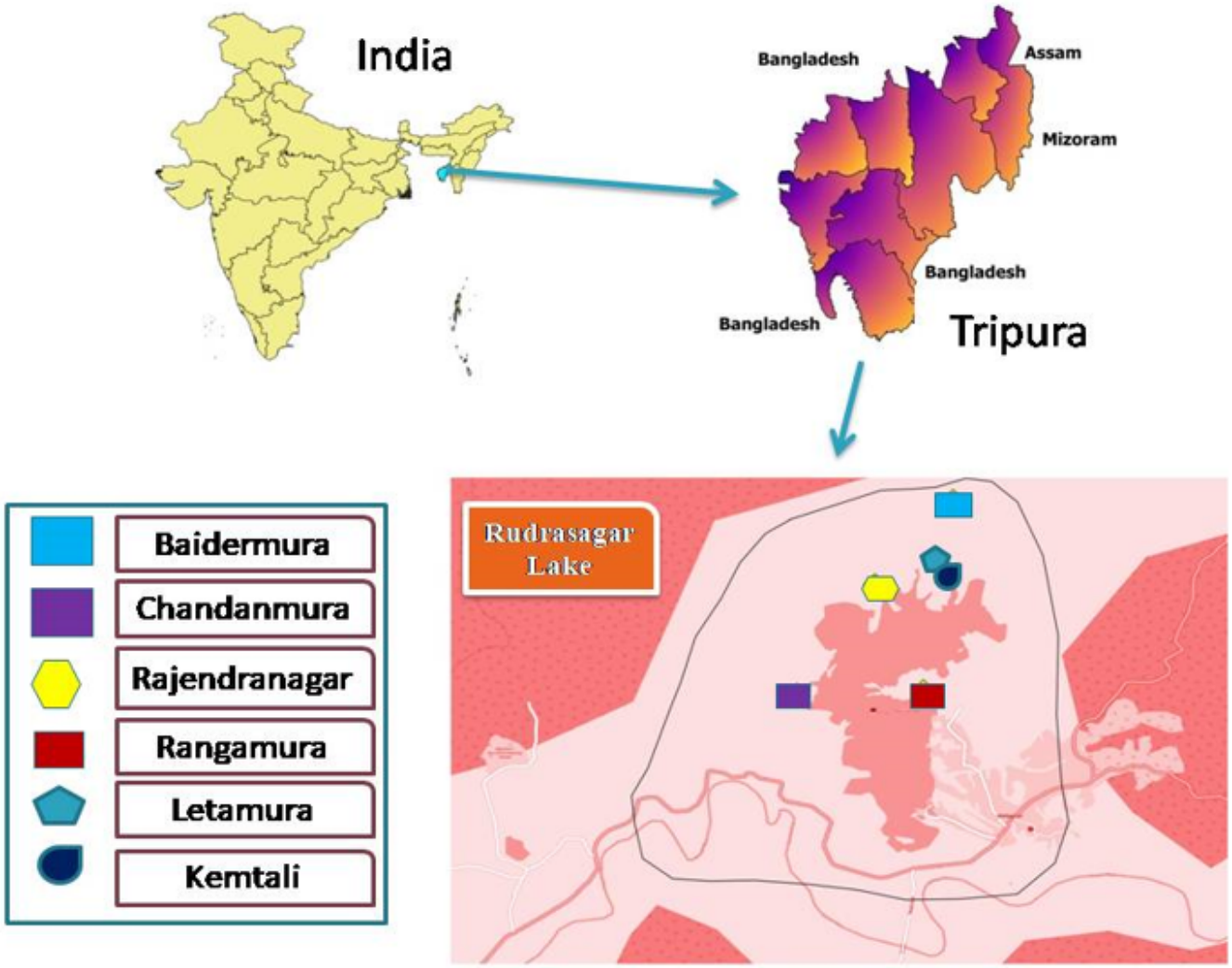

Figure 1

Study map of Rudrasagar lake. Note: The designations employed and the presentation of the material on this map do not imply the expression of any opinion whatsoever on the part of Research Square concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. This map has been provided by the authors.

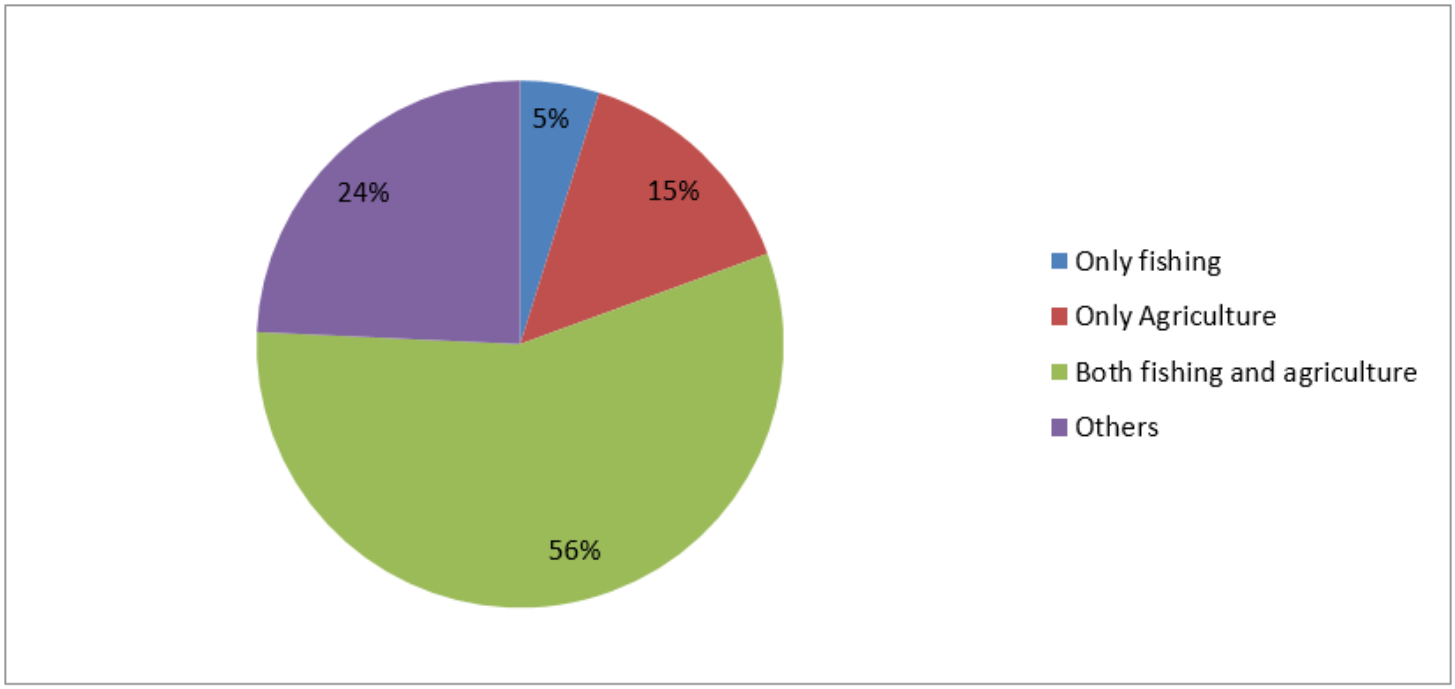

Figure 2

shown local people depending on the lake

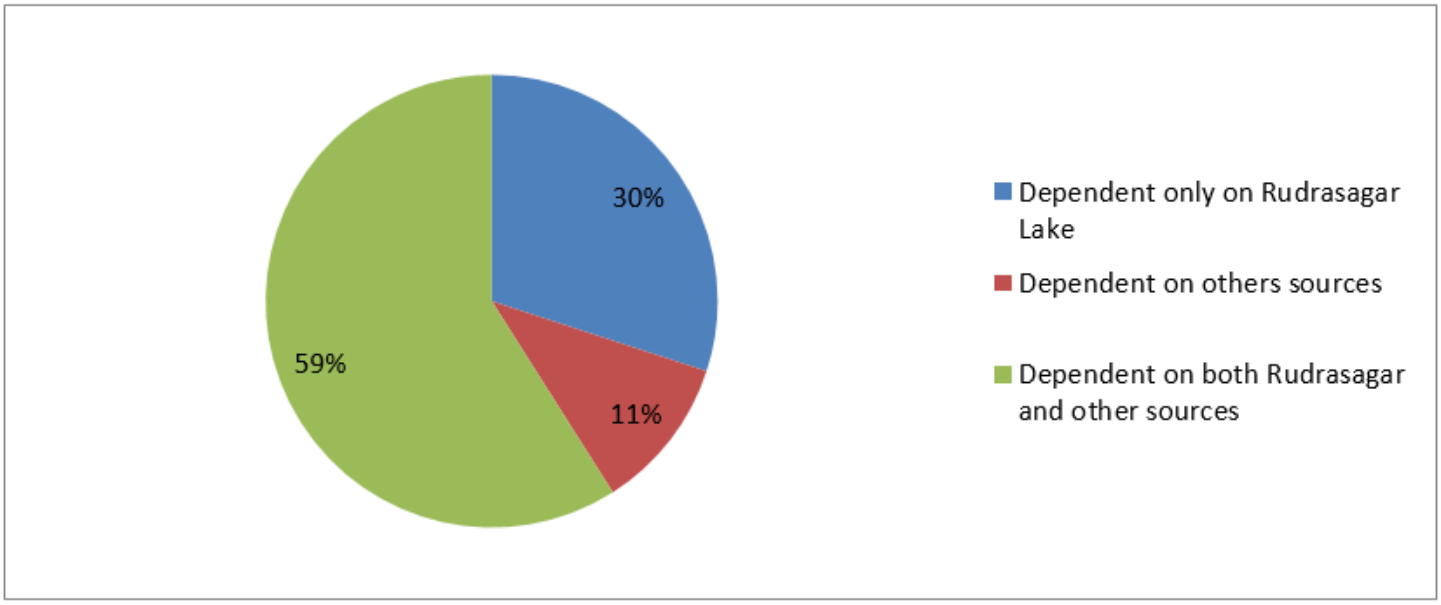

Figure 3

Shown local community is dependent on lake and other sources.

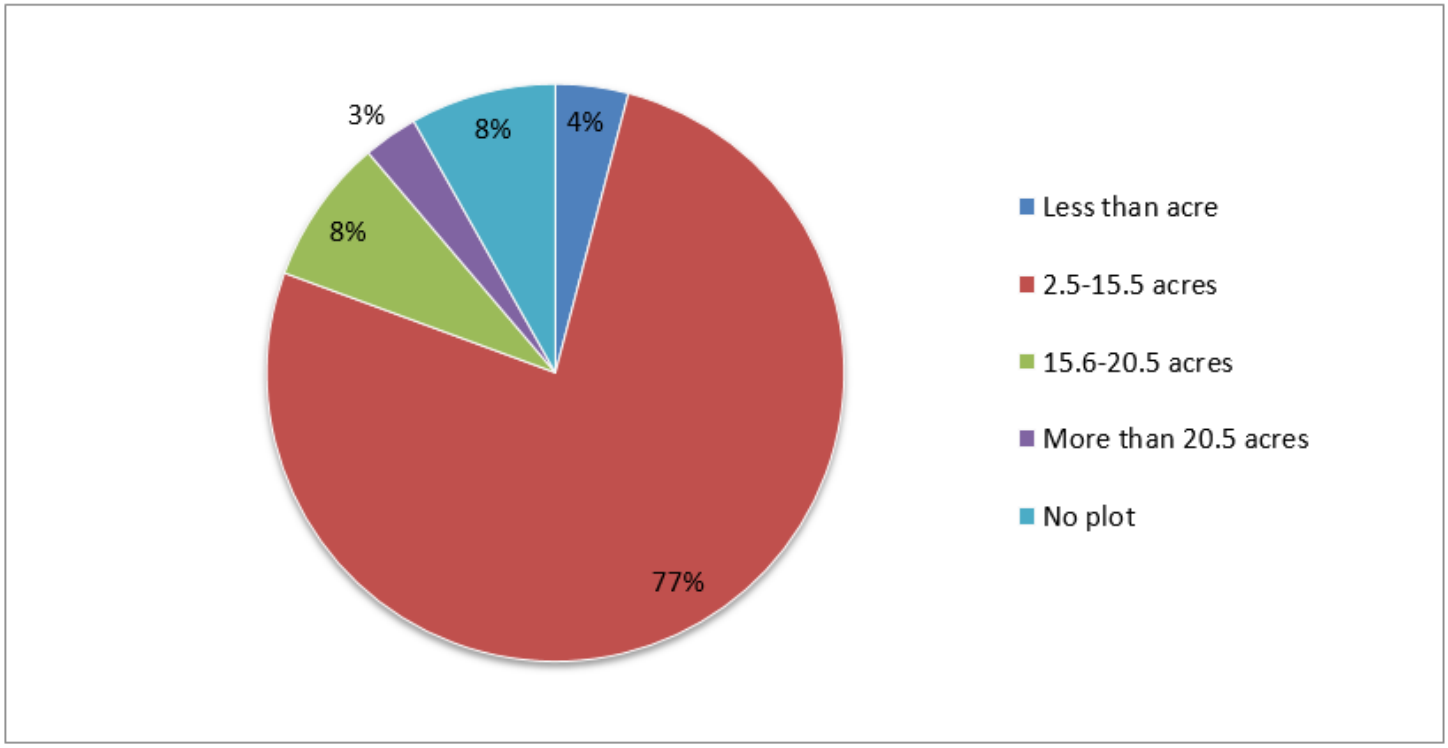

Figure 4

Shown community have their paddy land in Rudrasagar area.

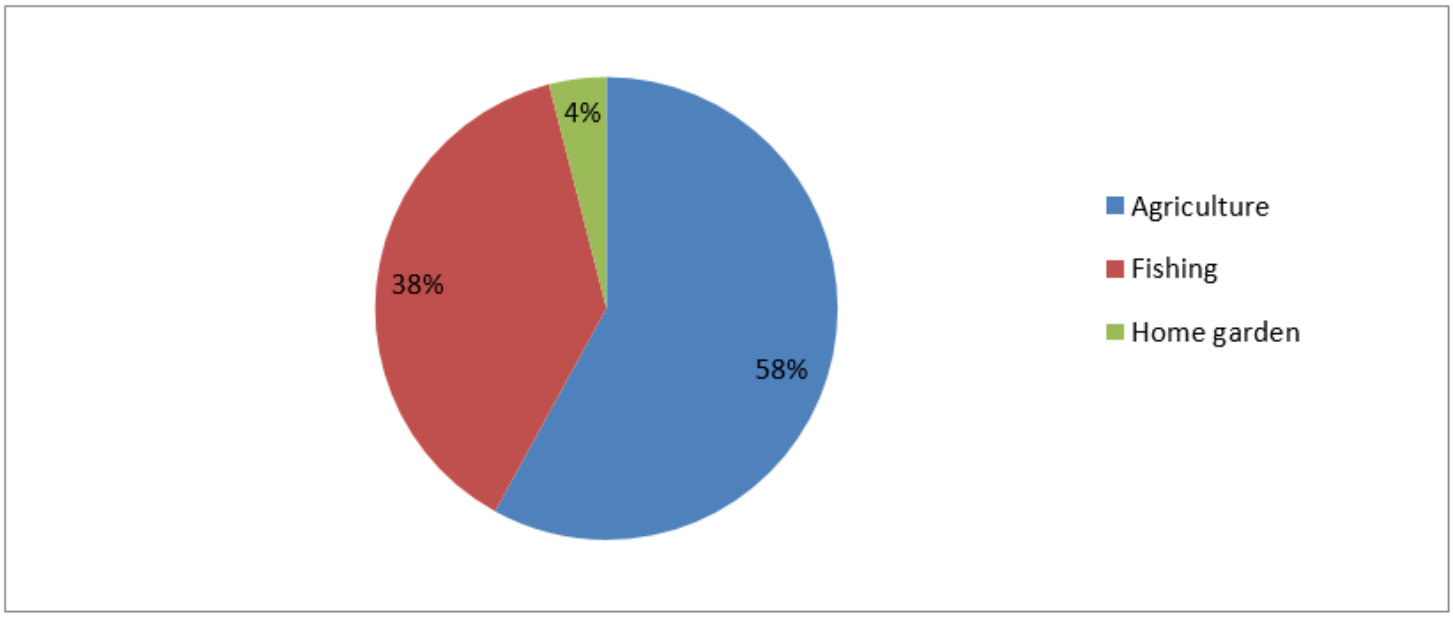

Figure 5

Shown community performances of their livelihood sources.