Household in Sundarban Delta of India: a Participatory Rural Appraisal

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Abstract

The Gangetic delta, known as Sundarban, is one of the few existing mangrove eco-systems, a largest delta and largest mangrove forest area in the world. Comprises of a number of islands the region is spread over India (one-third) and Bangladesh (two-third). Though well known as one of the biodiversity hotspots in the world, Sundarban is les known from rural sociological point of view. Household constitutes an important part of the physical structure of rural society. Therefore, a study of household in terms of its physical resources can prove valuable for planning suitable developmental strategy. Hence, a study was carried out in four purposively selected villages of Sundarban delta in India to have an idea about the characteristic features of the households. Using case study method of PRA (Participatory Rural Appraisal) data were collected from individuals and groups of villagers through listing, topical interview and observation methods. The in-depth study reveals many things hitherto unknown to the outside world which may help in planning a program for socio-economic development of this unique part of the world where rich resources and poverty paradoxically co-exist.

1. Introduction

Famous for the abode of notorious man eating Royal Bengal Tiger, Sundarban is considered a region which has many features unique to it. Sundarban, one of the few existing mangrove eco-systems, is a largest delta and largest mangrove forest belt in the world. Nationally, it has a status of Biosphere Reserve called Sundarban Biosphere Reserve (Ganguly and Mukhopadhayay, 2010). The Sundarban Development Board and Project Tiger under the Government of West Bengal (India) look after the overall development of the region. It comprises of a number of islands crisscrossed by innumerable waterways, creeks, rivers and canals. In this region, people are generally poor who work hard from dawn to dusk to earn a living. Mono-cropping agriculture is the mainstay of living complemented and supplemented with animal husbandry (Das, 2005, 2011; Das and Tripathi, 2011). Owing to typical geographical location, rural settlement in this region is different than any other regions in the world. Within the physical structure of rural society neighborhood and within the neighborhood household is a fundamental unit of analysis. However, there is a dearth of information at household level in the rural society of Sundarban. Therefore, a study of the household with physical arrangement of resources can prove valuable for the outsiders to plan and implement a suitable developmental strategy. As such, a study was conducted in four villages of Sundarban island in India to get an insight into the physical resources and structure of the households.

2. Materials and Methods

Case study method of PRA (Participatory Rural Appraisal) was used. Four case studies were conducted in four selected villages, viz. Samser Nagar, Jemspur, Bagulakhali and Moukhali. Villages were selected purposively based on the location, backwardness and caste. Data were collected from individuals and groups of villagers through listing, topical interview and observation. Data were collected staying in the individual villages in order to gain an insight into the facts and events empathetically.

2.1. Case study method of PRA

Case study is a method of in depth qualitative study of a social unit, i.e. an individual, family, organization/institution, social group or entire community (Young, 2000). It allows to retain the meaningful characteristic of real life events (Yin, 1993). PRA is a group of approaches, methods and behaviors that

enable people to express and analyze the realities of their lives and conditions. It provides an alternative method of data collection and analysis (Mukherjee, 1997) with an emphasis on qualitative than quantitative information (Reddy, 1999). When a case study method is essentially based on a participatory mode along with the principles of PRA it is called the case study method of PRA (Mukherjee, 1993).

2.1.1. Listing

Listing is a PRA method used to facilitate an individual or group to recall and highlight a list of items, criteria, activities, or issues for further discussion (Mukherjee, 2002).

2.1.2. Topical interview

Topical interview is a PRA method used to generate focused information on a particular topic interviewing through some open-ended broad questions and not just answering direct questions (Mukherjee, 2002).

2.1.3. Observation

Observation is a method of social science research used for collecting facts and acquiring knowledge observing phenomena with a purpose (Ghosh, 1992).

2.2. Triangulation

Triangulation is an integral part of PRA based case study for ensuring reliability and validity of data. Triangulation was done by cross-checking the data consulting key-informants (teacher, president of village council, and expert in the concerned subject); approaching individuals and groups other than those who provided information at the first place; and through observation and personal assessment. Apart from this, data collected on a particular aspect was written on day-to-day basis which was shown to the villagers for corrections/modifications, if any.

2.3. Locale of the research

Sundarban form the southern part of the Gangetic delta between the Hooghly river in the West in India and the Meghna river in the east in Bangladesh. It is a system of islands formed by deposition of silt and sand where the River Ganga meets the Bay of Bengal. It spreads over an area of 20,400 km^2 of which two-third belongs to Bangladesh, and one-third is under India spreading over North and South 24 Parganas District of West Bengal State. There are 102 islands in Indian part of Sundarban which are crisscrossed with innumerable canals, creeks and tributaries of which 54 islands have human habitation encompassing 19 Development Blocks (13 under South 24 Parganas and 6 under North 24 Parganas District). Sundarban constitutes a special forest eco-system known as mangrove eco-system found at the land-sea interface of the tropical and sub-tropical regions of the world. Extremely poor communication facilities and dependence on water for transportation coupled with poor levee facilities make the region almost inaccessible during the rainy season. Maintenance and strengthening of the embankments are the prime requirements for supporting the lives of this deltaic region in all respect.

Samser Nagar village (Kalitala Gram Panchayat, Hingalganj Block, North 24 Parganas District) is situated at Indo-Bangladesh border beside the Kalindi River on the fringe of Sundarban Reserve Forest. Jemspur (Laheripur Gram Panchayat, Gosaba Block, South 24 Parganas District) too is a forest fringe village. Inhabitants of these two villages depend heavily on forest and river for their livelihood. On the other hand, Bagulakhali (Chunakhali Gram Panchayat, Basanti Block, South 24 Parganas District) and Moukhali (Tambuldaha-1 Gram Panchayat, Canning-2 Block, South 24 Parganas District) are non-forest fringe villages. Hence, no dependence on forest for their livelihoods. Among the study villages Bagulakhali was most well communicated with urban area and Samser Nagar was most interior village with poor conveyance facilities.

3. Results and Discussion

3.1. Household premise

Households in the selected villages were found to be sprawled along the sides of a village path, embankment, canal, etc. A household area varied roughly from one-fourth of a *bigha* to several *bigha* (1 acre=3 *bigha*, 1 ha=7½ *bigha*). It was observed that individual houses in Sundarban delta were mostly made up of mud with thatched roof by paddy straw. However, *golpata* (*Nypa fruiticans*) was used for the purpose in most of the houses of forest-fringe villages. Slope of the thatch was invariably very high to get rid of the heavy rain water coming inside the house. Each household had its own compound situated on a higher ground hipping earth cutting from within the household premise. As a result, a pond was invariably seen in every household. Huts of the individual households were arranged around a central courtyard, sometimes surrounded by a mud wall. Across the study villages, it was observed that there was a main dwelling house compulsorily single-room with a front *varanda* (locally *deila*) in each household. Apart from this, there were kitchen house, temple, paddy stack, paddy granary, earthen oven, coop for sheltering duck and chicken, pond, lavatory generally on the trees and the like, a cattle shed-cum-store house, and different types of trees and plants in the household. Major household trees and plants include neem (*Azadirachta indica*), babla (*Acacia arabica*), subabul (*Leucaena leucocephala*), simul (*Salmalia malabaricum*), *dhundul*, hinge, khadi, gaab, guava, date, palm, coconut, *radhachura* (golden flamboyant), krishnachura (*Delonix regia*), tamarind, flower trees, some useful plants like *nal*, *pati*, etc. grow on the edge of the pond, etc. (Table 1).

Some of the other socio-economic and ecological profiles studied are presented descriptively at length under the fol-

Table 1: Some important home trees/plants and their major use

Shimul/ pakra	Fine cotton obtained from ripe fruit is used to make pillow
Dhundul/ shimul	Cotton obtained from ripe fruit is used to make quilt
Hinge	Yoke of country plow is made best from hinge wood as it varnishes well and it lasts for a long time (20-30 years)
Pati	To make mat of fine quality
Khadi	Kind of a subabul tree, smaller and thinner than it. Leaves are used for feeding goats and sheep.
Nal	To make dol, etc.
Gaab	Gum extracted from fruit is used to dye threads of khabla net to make it strong and long lasting
Babla (Acacia)	Wood is best used for making frames (bankgochcha) of boat

Source: Villagers across the study villages Method: Listing and probing questions Note: Local name of plants/trees are given. There were also other trees valuable and useful to the villagers in one way or the other

lowing sub-heads.

3.2. Household material culture

Table 2 reveals a list of materials, things, tools, or equipments possessed by the households across the study villages along with their descriptions/uses. However, all the materials/things listed in Table did not exist in all the villages. Possession of these household materials by the people made them culturally unique. Material culture also narrates survival strategy, standard of living and overall socio-economic conditions of the people, indirectly. Households of the forest-fringe and river-sided villages (Samser Nagar and Jemspur) had some materials which households of other villages (Bagulakhali and Moukhali) did not possess or vice-versa due to difference in location, livelihood, and caste. Thus, forest-fringe and river-sided villages had a common material culture different than non-forest fringe villages. However, at certain level, all the villages shared a common pattern of culture. Similarities in cultural traits and patterns may be due to similar geographical locations and agro-ecological conditions. Differences could be attributable to caste and occupation/livelihood pattern. In some cases, a similar thing/material was named differently in different villages.

Study revealed that most of the materials possessed by the villagers were evolved and used locally and traditionally, some of which were home-made. A few modern materials were also found like television, solar panel, radio, bi-cycle, motorcycle, plastic chair and bucket, generator, paddy threshing and husking machine, fan, electric bulb, etc. However, these things were possessed exclusively by a few households. On the other hand, some materials and things like *dhenki* (husking pedal), *kharam* (wooden sandal), *rukka*, *chubri*, *hucca*, *hanjari*, *akar*, etc. were rarely found. These were disappeared or were on the verge of disappearance.

3.3. Pond- a household resource base

A pond of one kind or the other was found invariably in every household across the rural society of Sundarban. Most of the households in the study villages were having one main pond and another puddle. Pond was considered as property- an indicator of socio-economic status of the household. To understand its utility, participatory method of micro-analysis of resource base was applied. Micro-analysis revealed that ponds contain water round the year. Almost all the household activities that needed water were being accomplished through pond. Rural people were utilizing their ponds for washing mouth, hands and legs; taking bath; washing cooking utensils and clothes; cooking and drinking (in some cases); irrigating kitchen garden; dipping bamboo, gunny bags of paddy, etc.; cultivating and growing vegetables and fruit trees, etc. on the edge of the pond; using a number of aquatic and non-aquatic greens grow naturally in and around the pond as food; consuming and selling a number of fish, shrimps, crabs, etc. cultivated as well as grow naturally in the pond; and for other domestic activities that needed water. A medium and big size pond was one and more than one bigha, respectively. Generally, domestic ponds were less than one bigha in size. According to the villagers, around ₹ 5,000-7,000 was required for cutting a pond of 45 ft long, 30 ft wide and 8 ft deep.

To catch fish from the pond khabla/jain net, berh net, etc. were needed, besides catching a small amount of fish by fishing hook and other kinds of indigenous fishing devices such as tainwa net, etc. Besides, pond was baled out at an interval of one to four years, mostly during mid-November to mid-February, and caught fish were sold wholesale in the market. Almost every year fish were caught once/twice by net for selling. From a medium-sized pond, villagers could earn around ₹ 8,000 from selling fish. Deducing cost of production around ₹ 2,000, net profit obtained was ₹ 6,000 year^{-1}. According to the villagers, the profit was quite more than that obtained from paddy cultivation. Money obtained from selling fish caught by net or after baling out the pond was being utilized for repayment of debt, purchasing paddy for consumption, besides for meeting various socio-economic needs. Almost every household in rural Sundarban had one/two khabla net at home. It was used for catching fish from time to time round the year for household consumption, hospitality etc.

Table 2: Traditional/home-made materials possessed by the households

Materials	Description/use
Paddy straw cutter	Kind of a large sickle fixed to a piece of wood to press it by foot to keep it in a fixed position while chopping paddy straw.
Akar/ *dharat*/ *chcharat*	A large rectangular structure made up weaving bamboo laths. Used to thresh paddy.
Daa (Iron made cutter)	Kind of a cutter (slightly sickle shaped) used for cutting wood, branches, bamboo, tree, etc.
Shabal	An iron bar, used for digging works, etc.
Paddy granary	Three different types- one made of ruli bamboo laths, another garan sticks and other paddy straw ropes with thatch. Used for paddy storing.
Jhuri (busket)	Kind of a bamboo basket used primarily for gathering and carrying dung, cattle shed waste, etc. Another kind of bamboo basket is used for carrying earth.
Chcheni/ *katari*/*henso*	Kind of a sickle shaped (larger than sickle) iron tool used for cutting date tree for sap collection.
Mugur	Kind of a very light wooden hammer to hit chisel very lightly against the cut surface of date tree.
Batali (chisel)	Used to give a fine 'V' shaped cut on date tree. Through this 'V' cut sap oozes out.
Thick jute rope	Used to hold the person stand secured while cutting date tree or tying and bringing down earthen sap pot.
Raser handi	Small earthen pot used for holding sap.
Chchikka/ *sika*	Made up of jute rope or banana leaves. Used to keep earthen container, bottle, fish, food, honey, ghee, curd and other household items. Kept in hanging condition from roof. Secured and out of reach by children, cat, etc.
Kula	A bamboo flatter. Used to winnow rice, paddy, pulses, puffed rice (muri), fried paddy (khoi), flattened rice (chira), etc.
Dhenki (husking pedal)	Used to husk paddy, grind rice and to make chira.
Tabal/taba	A very large square flat pan with edges around, made up of tin. Used to boil date sap to make treacle. Special earthen oven is required to place the taba for the purpose. It is also used to boil paddy.
Creel	To hold fish, crabs, etc. while catching.
Hanjari	A very large container made up of bamboo laths, etc. Used to soak large quantity of paddy hold in it under pond water before boiling.
Dola	Alike hanjari but smaller than it. Made of bamboo laths. Used to keep rice for household consumption round the year.
Dol	A container made from nal plants or bamboo laths. Used to keep rice and paddy seed and also to soak paddy in water.
Matka/ *meite*	A large earthen container like pitcher with a comparatively very small opening. Used to keep rice for daily consumption and to store drinking water.
Hanji	Kind of a container made up of aluminium or bamboo laths (more in earlier days). Used to wash and rinse rice in water before cooking.
Toly and *lai*	Made by weaving thin bamboo laths closed together. A basket like structure. Used to hold, carry and to transfer paddy and rice from one container to another.
Onra	Kind of basket like container almost like a toly. Made by weaving thin bamboo laths apart to leave the place for water to come out. Used to transfer water soaked paddy from soaking container to boiling container, etc.
Dhama	Kind of a basket made of a rattan weaving together compact. Used to carry paddy, rice, etc.
Khancha/ *topa/jhanka*	Kind of a bamboo cage. Used to protect/ control the movement of chickens and ducks.
Pala	Cone-shaped cage made of bamboo sticks. Used to keep chickens and ducks protected inside it on the ground. Also used to catch fish.
Khoar	Four sticks on four corners surrounded by a net/mosquito net. Used to protect duck inside it on water.
Hanjal/ *malsa*	An earthen pot used to hold fire of paddy husk, rice bran, dung cake, etc. Used by old folk to get heat during winter. Also used to put fire in sailta to light kerosene lamp, hurricane, etc.
Sailta	Jute stick, one end of which is covered with sulphur. Used as match stick. It is home-made. Rarely used at present.
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Chalan/ chaluni	Kind of a flat container made from thin bamboo laths. Chalan is used to separate rice bran from rice. Chaluni is used to remove undesirable things from muri and khoi.
Gunro chalan	Alike chalan with holes larger it. Used to separate broken bits of rice (khud) from rice.
Khuchi	Kind of a small rattan container used to measure the quantity of rice.
Rukka	Kind of a wooden stand for kerosene lamp.
Chchabi/ Jain/ khabla net	Hand-made net used to catch fish, etc. in pond, river, etc.
Kerosene lamp	Made up of brass, tin, aluminium, etc. mainly used in kitchen during dinner and to light hurricane, etc.
Hurricane	Used in day-to-day domestic lighting purposes.
Hucca/ laiche	Tobacco pipe made of hollow coconut shell used for smoking purpose.
Antol-pata/ ghuni	Made of very thin sticks of bamboo. Used to catch fish, placing it in the field at a place through which water passes.
Kachchi and garafi	Kachchi is a thick nylon/jute rope and garafi is wooden used for anchoring a boat.
Fanda, topil, khochchi, takur	Wooden and bamboo tools required for weaving khabla/jain net. Fanda is used to spin threads, topil and khochchi to weave net and takur is used to spin jute fiber into thread/rope.
Benchi/ binti net	Made of 2-3 pieces of nylon nets knitting together. Used to catch prawn seedling on boat.
Tainwa net	A piece of wasted mosquito net, benchi net, etc. arranged in between four sticks, used to catch small fish from pond, canal, etc. to meet domestic need partially.
Tempu net	A piece of wasted mosquito/benchi net arranged with four sticks in triangle/square. The net is dragged along the river sides during ebb and flow tide in waist-deep water to catch prawn seedling and small shrimps in small quantity.
Dhakka net	Kind of a net fastened with long polls of bamboo. It is placed in the middle of a canal at a high place. A bamboo platform with thatch is constructed along with the net to catch fish sheltering therein.
Nouka net	Boat (nouka) net is used to catch prawn seedlings.
Khara, hoopri, chakan	Khara is like a creel but larger in shape and size. Chakan is a bamboo basket with hoopri made up of bamboo, covered over it. Chakan is used to hold fish, crabs, prawn, shrimps, etc. in large quantity for transportation. Khara is used to hold these in small quantity. Another kind of bamboo khara is used to cover the water-immersed end of the plastic pipe in order to filter mud and filth into the pipe while baling out water powered by diesel operated generator.
Jalti, thin nylon rope, and bait	Jalti is a small net arranged in triangle with three sticks and a long stick as handle. Used to catch crab from river. Thin nylon rope is used to drop the bait deep in water and dry kamat fish is used as bait.
Matla/ masla/nada	A large round wide earthen tub. Prawn seedlings are held in matla from benchi net. From matla seedlings are transferred in white dish and from dish to aluminium container sorting out by oyster. Matla is sometimes also used as a manger. Besides, matla is used to boil date sap, soak paddy in water, and to place atop the cone shaped thatch of granary to prevent water coming inside the granary.
Thungi	A bamboo made container used to carry tools required in date tree cutting fastening behind the waist.

Source: Groups of men, women and children across the study villages Method Listing, topical interview and observation
Note: Italicized words indicate local term

Greens and plants grew in and around the pond were utilized for consumption (halaincha saak, susni saak, aadamoni pata, kulekhara, kolmi saak, brahmi saak, kochu and its stem and leaves, thankuni, gandhavagali, kaal megh, etc.), for making mat (pati) of superior quality from pati plant and dol from nal plants. Pati plants were being sold at ₹ 30-40 for 80 plants whereas halaincha, kalmi and brahmi saak were sold in local weekly market at 50 paise to one Indian rupee bunch^{-1}. Many greens, particularly brahmi, halaincha, susni, aadamoni paita, etc. had a great medicinal value as reported by the villagers.

3.4. Domestic energy

The major domestic energy or fuel sources in the study area were dung cake, paddy straw, stubble, paddy husk, fuel wood, leaves, branches, etc. of homestead trees and forest. Most important was dung cake. A significant part of women's energy was being spent in collecting and preparing fuel material particularly during dry months (mid-October to mid-May) for use during rainy season (mid-June to mid-October). Whereas dung stored exclusively during mid-June to mid-October was made into dung cake during mid-October to mid-January. During dry months, household's fuel requirements were met mainly through fuel sources other than dung cake. Forest-fringe villagers had availability and accessibility of forest wood, leaves, etc. particularly the households situated by the river side. Paddy husk was available during mid-December to mid-February after harvesting of paddy which was mainly used as fuel along with stubble to boil paddy during those months. Thus, villagers met their households' requirements of fuel through utilizing a combination of fuel sources as per need and season/months of their availability and accessibility.

4. Conclusion

The in-depth case study of rural households in Sundarban delta of India reveals many things hitherto unknown to the outside world. Thus, findings of the present study may help in designing a program for socio-economic development of this unique part of the world where rich resources, backwardness and poverty paradoxically co-exist.

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