Does Tourism Contribute to Local Livelihoods? A Case Study of Tourism, Poverty and Conservation in the Indian Sundarbans

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Abstract

This study examines the contribution of tourism towards improving the livelihoods of local people in a remote island village of the Indian Sundarbans. The Sundarban Tiger Reserve is a major tourism destination and a small number of local people participate in the tourism sector as vendors, boatmen and guides. No village household subsists entirely on tourism-based income since such jobs are seasonal. A majority of the local service providers operate with very little or no capital investment. Yet households participating in tourism-related activity are better off than those who do not. Tourism participants spend 19% more on food and 38% more on non-food items relative to other villagers. Earnings from tourism appear to at least partially finance year-long consumption. Tourism may also have a conservation effect in that the proportion of forest-dependent households is significantly lower among tourism dependent households. There is, however, little evidence of any percolation of tourism-related income to non-participating households through intra-village transactions. The study proposes a carefully crafted policy for promoting nature-based tourism with more room for local participation.

Key Words: per-capita expenditure, livelihood opportunities, local stakeholders, pro-poor tourism, Sundarbans

Does Tourism Contribute to Local Livelihoods ? A Case Study of Tourism, Poverty and Conservation in the Indian Sundarbans

Indrila Guha and Santadas Ghosh

1. Introduction

In many parts of the world, tourism has contributed to the dual goal of poverty eradication and conservation. Wildlife areas and National Parks constitute a significant market for tourism based on natural resources and local culture. These areas are also home to remote villages that sustain themselves on subsistence agriculture and forest resources. The co-existence of nature with impoverished communities offers an opportunity for pro-poor tourism. Tourism can support livelihood diversification, which is particularly important in remote areas. It is also labour-intensive, can grow with unspecialized labour and has low entry barriers (Holland *et al.*, 2003; Elliott 2001) – all advantages in locations that have few assets other than nature.

There is clearly a market for 'responsible' tourism that shows concern for the poor (www.propoortourism.org.uk). However, simply bringing tourists to remote areas is not enough. Tourism needs to be organized in ways that enable local people to have better access to tourists so that they can augment their livelihood through employment and small enterprise development (Goodwin 2002; Ashley 2002). Market-driven private commercial enterprises may not ensure adherence to such principles by themselves. As a result, the effectiveness of PPT strategies depends enormously on the local conservation authority (Ashley *et al.*, 1999). Good policies and careful understanding of tourism-needs and the ability of local communities to fulfill these needs are important for tourism to be pro-poor.

In this paper we examine the impact of tourism in a remote area of eastern India. The Sundarban Tiger Reserve (STR) is part of the largest inter-tidal area in the world that is covered by mangrove forest. It renders important ecological services to a vast region in South Asia. The STR is a pack of forest-islands with no human habitation within it — rivers or water channels separate the STR from all the surrounding island-villages. The forests and water ways provide livelihood opportunities for the local poor and are also home to the endangered Royal Bengal Tiger, whose man-eating propensity is historically high[1]. The STR is now part of a nation-wide conservation programme, named 'Project Tiger' and local people have been restricted from using the reserve over the last few decades. This has resulted in conflicts between government-sponsored conservation efforts and the livelihood opportunities of locals. Organized and regulated tourism in the Indian Sundarbans also started with the inception of 'Project Tiger' in the mid-1980s. A Sundarban tour is essentially a cruise through the water channels within the forest with halts at a handful of watch-towers on riverbanks.

An effective conservation strategy for a forest could turn the local poor from intruders into its keepers by making them stakeholders in the earning opportunities that conservation provides. STR is a great tourist attraction and has seen a surge in the number of visitors in recent years. Tourism could potentially act as a vehicle for conservation by providing new livelihood

[1] MOEF (Govt. of India) http://projecttiger.nic.in/sundarbans.htm; WWF : http://www.wwfindia.org/about_wwf/what_we_do/tiger_wildlife/our_work/tiger_conservation/sunderbans/

opportunities in the Sundarban's remote village economies. Thus, it is useful to examine how local stakeholders are integrated into the tourism sector and what more can be done to improve their lot. This is the main investigation undertaken in this paper. Thus, in the following sections of the paper, we try to: i) empirically measure the extent to which tourism augments local livelihoods; and (ii) find out local villagers' perceptions regarding tourism's possible positive and negative social effects. Based on this, we offer some policy recommendations to strengthen pro-poor opportunities in the Sundarbans.

2. Pro-poor Tourism

The issue of protecting the environment through tourism that augments the livelihood opportunities of the local poor has been examined in several policy-oriented studies (Alpizar 2002; Anderson 2004; Sills 1998). Specific aspects of the tourism-poverty interaction are dealt with more elaborately in the Pro-Poor Tourism (PPT) literature. It identifies several reasons why tourism may be particularly effective in reducing both local poverty and peoples' forest dependence. The following advantages of tourism as a vehicle for poverty eradication and conservation have been identified (Elliott 2001; Ashley *et al.*, 1999, 2002):

- High income-elasticity which therefore offers a relatively rapidly growing market;
- More labour intensive than other sectors providing diverse employment opportunities for people with a wide range of skills, as well as for those unskilled**;**
- Not import-intensive, making it particularly attractive to developing countries/backward areas;
- Higher potential for linkage with local enterprises because customers come to the destination;
- Low entry barriers;
- Tourism products can be built on natural resources and existing cultural resources making them productive assets;
- Better infrastructure (water, health, communication), security (law and order), better information on the outside world for locals;
- Contribution to protection of assets such as wildlife and plant diversity due to a wise tourism policy.

Case studies have found that in spite of the above-mentioned potential, tourism is often characterized by a myopic private sector, limited involvement of local communities and a lack of market access (Spenceley 2001). Also, the impacts of different tourism segments and types of tourism on the local poor are different. It therefore calls for strategies/guidelines for PPT and interventions of the authorities at the local level (Ashley 2002; Ashley *et al.*, 1999, 2002).

The literature also points out that there could be negative social effects of tourism on the local community in remote rural set-ups in terms of cultural shock from outsiders (Spenceley 2001). However, studies also indicate that in general most effects were perceived positively by the local residents. A study in Ecuador finds that the encounter with the tourist is mostly seen as a positive experience of cultural exchange by the local stakeholders (Wunder 1999, 2000). Attitudes to tourism in local communities adjacent to national parks in Indonesia and Zimbabwe have also shown significant optimism in response to similar kinds of questions (Goodwin 2002).

Studies point out that in areas with significant seasonal variation in the number of visitors most people treat tourism-related income as 'additional' revenue on top of subsistence farming (Saville 2001). Tourism can boost the local arts, culture and traditional medicine while these in turn boost tourism. Such tourism may change local people's attitudes towards the preservation and conservation of flora and fauna (Kulkarni *et al.,* 2002).

Different segments and types of the tourism can have differing impacts on income generation for the local residents (Holland *et al.,* 2003). Tourism in the 'all inclusive' packages is of the 'enclave form', where those wishing to sell to tourists are often reduced to hawking at the enclave entry and exit points (Goodwin 2002). A study on the Himalayan trails in Nepal which lack roads and transport facilities shows that backpackers who eat and stay in local hotels generate more money to locals than pre-paid organized treks (Saville 2001). A study in Brazil reveals that low-income tourism in a village can generate a sizeable income to local entrepreneurs (Wunder 2003).

In the Indian context, more than one illuminating study is available for the Keoladeo National Park, which identifies and estimates the impact of tourists on incomes of different service providers (Chopra 2004; Goodwin 2002; Goodwin *et al.,* 1997). In another study on the Pench National Park, a similar identification of local beneficiaries and a quantitative estimation of their annual tourism earnings is made (Kulkarni *et al.,* 2002).

Recent studies have identified the environmental and socio-economic impacts of shrimp farming in the Indian Sundarbans (Chopra 2006), which is perhaps the most important commercial activity in this area. Studies have also been conducted on the valuation of timber and non-timber forest products (Santhakumar *et al.,* 2005). However, the available literature does not offer an empirical study of tourism and/or its impact on the local economy in the Indian Sundarbans.

3. Study Area and Data

The Sundarbans is a continuous mangrove delta region covering both India and Bangladesh. Approximately 1/3rd of its area falls within India. Unfortunately, these forests have been degraded over time and the Bengal tiger is now an endangered species. The economy of the island villages of Sundarbans is characterized by remoteness, by the absence of electricity and power-driven industry, and by the absence of any nearby urban centre to sell local products. Villagers have little occupational choice other than agriculture and fishing.

People who directly exploit the forest are mostly the landless poor who live on the riverbanks across the forest. Members of landless and marginal households in the fringe villages of STR often venture into the forest to catch fish and crab in the creeks and to collect firewood and honey with permits for limited periods. The spatial distribution of the population within the surrounding islands is closely linked with their occupational distribution. Landless and marginal households, who are often directly dependant on the forest and rivers, are concentrated on the river-banks bordering the forest. The landed households are mostly placed in the interiors or towards the mainland.

Regulation of tourism in the Sundarbans meant that tourists needed mandatory priced permits in order to enter the forests. While permits are issued from four different places, there is a single entry point to STR. The village Pakhiralay, overlooking the forest and located at one corner of a larger inhabited island, hosts the Forest Range Office where all permits need to be produced before entering the forest. Consequently, it has become the village receiving visitors to STR. Package tours that originate elsewhere stop at Pakhiralay for permits only. These tourists spend nights on launches (large watercrafts) where food is also cooked and served on board. Such package tours are adopted by approximately 70% of the visitors. There is little scope for local villagers to trade with such visitors. But tourists in smaller groups also come and stay in Pakhiralay and hire a boat locally for a day-long cruise into the forest. With an increase in demand in this segment, a number of tourist lodges have come up in the village in the last few years with its attendant business opportunities. Villagers have spontaneously availed themselves of these opportunities as owners of tourist lodges/boats, boat drivers, forest guides, cooks, drinking water suppliers, and as owners of small shops, telephone booths, etc.

Tourist arrivals in the Sundarbans occur almost entirely during the winter months as the absence of electricity, adverse climatic conditions and choppy rivers retard tourist arrivals during other parts of the year. During this peak tourist season, local villagers participate in various activities as service providers as already mentioned. Extreme seasonal variation in tourist arrival means there is little opportunity for a village household to depend entirely on tourism as a year-long occupation. All tourist lodges and related business establishments in Pakhiralay, some purely seasonally operated, are concentrated along a 500-meter stretch of road on the riverfront.

Tourism-participants almost invariably belong to the riverside population. Interestingly, this population also includes the direct forest dependents. Taking into consideration this fact, the focus of our study is the livelihoods of riverside households in the village of Pakhiralay. In order to filter out the direct and indirect effects of tourism on livelihood, we also examine the livelihoods of a similar set of households in a nearby control village with comparable geographical and socio-economic characteristics. In this study, the 'study village' (Pakhiralay) and the 'control village' (Dulki) are parts of the same bigger island. Both are placed across the forest and on the bank of the same river, with very similar soil conditions and other socio-economic features. Both are located in the eastern fringe (forest side) of the island while the nearest wholesale market (Gosaba) is on its western tip. Some of these details are clearly identified in Figure 1.

Together, the market and the two villages form a triangle by their geographical location. One important feature is that while each of these villages is linked with Gosaba by village roads, there is no proper road link between them. As a result, there is little economic interaction between the study village and the control village. This renders percolation of tourism money from the study village to the control village practically impossible.

In order to estimate the contribution of tourism-income to the livelihood of local households, we undertook a detailed consumption expenditure survey of households in the study and control villages. The sample households were selected by stratified random sampling from the study and control villages. The stratification was according to the household's landholding status. We generated lists of households located within 500 meters from the riverfront for both the villages along with their latest landholding status. The sampling frame consisted of 273 households in the study village and 193 households in the control village. These riverside households are mostly

'landless' or 'marginal'[2]. No 'medium' or 'large' landholding is found in the selected area. Figure 2 shows the landholding distribution among the survey population which is heavily skewed towards landless and marginal farmers.

From each of the four landholding strata, approximately 18% of the households were selected through equal probability sampling. It resulted in a data size of 87 households (48 in the study village and 39 in the control village)[3]. Each of the sample households was visited once during the off season for tourism (August-September, 2005) and again once during the peak season (February-March, 2006). The expenditure data were collected in the two rounds, while other variables were supposed to be time invariant within a span of less than six months and was recorded in the first round alone. The household survey questionnaire was appended with a module with queries relating to the respondents' perceptions of the possible social and cultural effects of tourism in the village. This appended module was intended only for the respondent households in the study village in the second round (peak season).

4. Methodology

In general, the livelihood opportunities for any household depend on (i) the physical capital in its possession, (ii) the quality of natural capital it has access to, (iii) the public capital (infrastructure), and (iv) human capital. In the Indian Sundarbans, apart from private capital (mostly cultivable land), the natural capital is the forest and river. Direct conservation efforts are gradually lowering locals' access to this capital. Also, unsustainable fishing and forest exploitation is affecting its quality. The geographical isolation of the region and poor accessibility has resulted in insufficient infrastructure (public capital). Local private physical capital formation is also crippled by a lack of local surplus.

Tourism can potentially open up new vistas when it comes to livelihood opportunities for a community. A portion of additional income from tourism may also be used to finance children's education. This enhances the human capital of village households and can create opportunities for new occupations within the region or for migration outside. It may also provide the basis of informed decision-making vis-à-vis conservation and sustainable use of natural resources. This exemplifies the complex character of social changes activated by the cash inflow from tourism (Wunder 1999, 2000) and calls for a deeper analysis of expenditure patterns of participating vis-à-vis non-participating households. In general, there is the potential for tourism to add value to local social and natural capital, making them marketable and productive. The social culture and the existence value of the forest can turn into marketable productive assets. In this study, we examine whether this kind of transition is at least beginning to happen.

The first objective of this study is to empirically measure the livelihood-augmenting impact of tourism. Tourism can have a 'direct' and 'indirect' effect on local households. The direct effect comes from increases in income as a result of wage or self-employment in the tourism sector. We measure this direct effect by examining the differences in household welfare indicators between participant and non-participant households in the study village (Pakhiralay).

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[2] Marginal (0-1 ha); Small (1-2 ha); Semi-medium (2-5 ha); Medium (5-10 ha); Large (> 10ha). (Ministry of Agriculture, Government of India).

[3] The number of sample HHs from the control village is marginally more than 18%, for rounding off numbers in each stratum.

As already stated, the sample households come from a population which is mostly landless or marginal. Focus group discussion suggests that these households save very little on an annual basis. In this set up, the livelihood status of a household is reflected by its monthly per-capita 'expenditure' in money terms. Thus, our main indicator of household welfare is per-capita consumption expenditure. We asked detailed questions about expenditure in the household survey and we obtain an aggregate 'expenditure' figure by taking into account consumption of purchased and self-produced commodities valued at prevailing market prices. For a deeper insight into the expenditure pattern of different households, we further classify expenditures as 'food expenses', 'non-food expenses' and 'expenses on education of children'. While the first two may be regarded as household consumption, the third may be considered as its investment for developing human capital. Thus, in total we have four indicators of household welfare and we check to see if these indicators are systematically affected by participation in the tourism sector.

The total impact of tourism on local households' livelihood is likely to be larger than the direct effect as some of the additional expenditure made by participating households can find its way to non-participating households through intra-village transactions. These secondary local benefits crucially depend upon the extent to which villagers spend their additional income on products produced within the village. Many studies have found significant 'leakages' in tourism money which escapes from the local communities. Estimates show that 50% to 90% of tourist spending usually leaks out of communities closest to the nature attractions (Buchsbaum 2004; Goodwin 2002; Holland *et al.*, 2003). Estimating such leakages is difficult, but it seems that a large part of tourism money received by the villagers is spent on consumer durables like radios, solar energy cells, bicycles, etc., which are imported from outside the village. In this study, we also study household data from a non-touristed control village to examine the presence of any significant 'indirect' or 'trickle-down' effect of tourism. If there is a significant difference in welfare indicators, i.e. the four consumption-expenditure variables, between non-participating households in the touristed village and households in the control village, then we attribute this difference to the trickle down from tourism.

We undertake two tasks to examine the direct and indirect effects of tourism in the two study villages. First we examine mean differences in the four household welfare indicators. However, mean differences do not necessarily tell us whether the welfare difference is because of tourism or because of some other attributes of the households. Thus, in a second step, we isolate the effect of tourism on household welfare by accounting for other factors that might affect household consumption/welfare. This is done through regression analyses. Per capita consumption expenditure is regressed on household level variables including landholding as well as dummy variables for tourism-participation, season, and village. Additionally, expenditures on 'food', on 'non-food items' and 'per-child monthly monetary expenditure on education' are also regressed on relevant household level variables. In recognition of the possible contemporaneous correlation in error terms of the three components of expenditure, we estimate these equations as a system of Seemingly Unrelated Regression Equations (SURE). To check the robustness of the estimates, regressions are run for the pooled data on the two villages as well as on the data from the study village alone.

Human intrusion into the forest takes place primarily in two forms. Firstly, the honey and wood collectors and the fish and crab catchers intrude into the forest's interiors regularly. Secondly, villagers venture into prawn-fry collection in the rivers in a very crude fashion causing much

damage to the delicate ecosystem in the process. Both of these operations are perceived to involve real danger due to tigers and crocodiles[4]. These poor households on the riverside directly depend on the forest as a last resort for their livelihood. To bring out the implications of tourism for conservation, we compare households that are engaged in forest exploitation with those engaged tourism. The study compares the socio-economic indicators of households classified as 'tourism-participants', 'forest-dependants' and 'engaged in other economic activities'. If the 'tourism participants' are very similar to 'forest dependents', we can conclude that tourism is an alternative livelihood option for forest dependent households.

We also check out whether the seasonal tourism-income is being used by the participating households to finance their year-long expenditures. If all the additional tourism income is spent instantly, poor participating households may fall back on forest in the off-season for livelihood. We visited each sample households twice during a year – coinciding with off and peak seasons of tourism. We check to see if household consumption expenditure is significantly higher during the peak tourist season. If it isn't, we conclude that households are spending their tourism income throughout the year.

The second objective of this study was to find out the local villagers' perceptions regarding tourism's possible positive and negative social impacts. For this purpose, we elicited responses on qualitative aspects of tourism on village life through 'yes', 'no' and 'indifferent' choices. It was done in the study village in the peak tourist season (winter) as villagers' perceptions are expected to be more focused at this time. Since the sample households were selected randomly with landholding-based stratification, the aggregate analysis of these responses is expected to represent the village psyche on tourism. Aggregative descriptive statistics are used in this part of the study.

5. Empirical Results

5.1. Profile of Survey Households

The survey data shows that the riverside population in the study area (local households) is indeed worse off compared to their rural counterparts in the State (West Bengal). Distribution of households across monthly per-capita expenditure (MPCE) class shows the median value to be Rs 500 for rural West Bengal in 2004-2005[5] while that for the sample households is found to be Rs. 433 in 2005-2006 (see Table 1).

Being mostly landless or marginal, few households depend on agriculture alone. Often different working members of one household are engaged in different occupations. The occupational distribution, hence, is analyzed at the individual level rather than at the household level. Figure 3 gives an idea of the distribution of working adults across occupations in the study village[6]. It shows that agriculture is the occupation employing the maximum number of the working population in the study area. 'Other occupation' represents a composite of many occupations at the village

[4] Man-animal conflict in Sundarbans: <http://projecttiger.nic.in/sundarbans.htm>

[5] Level and Pattern of Consumer Expenditure, 2004-05; NSS 61st Round: NSSO; Ministry of Statistics and Programme Implementation, GoI.<http://mospi.nic.in/mospi_nsso_rept_pubn.htm >(Table 1R).

[6] Since tourism is an occupation only in the study village, Figure 3 is obtained for the study village only.

level[7] 'Other occupations' include agricultural labourers, traders, cycle van pullers (the only mode of transport on the island), salaried employees (public and private), and other local skilled workers and professionals (artisans, priests, private tutors, quacks, masons, carpenters, etc.).

including daily labourers who get some seasonal employment in agriculture. Hence, the share of agriculture shown in Figure 3 could be considered an underestimate. It is noteworthy that there is no industrial workforce in the area. This is due to the absence of any power-driven industry.

In a few cases, one household can be identified with a single occupation since all its working members are engaged in that one occupation. Table 2 describes 25 such households out of the total sample of 87. It shows that a relatively greater number of them are sustained by Agriculture only or Other Occupation. Forest-intrusion or Prawn-fry collection sustains a much smaller number of households. Significantly, none of the sample households is sustained only through tourism-related occupations. This is because tourism in the Sundarbans, as of now, is restricted to the winter months only.

5.2 Two Villages: Similarities and Differences

A control village is incorporated into this study to find out differences resulting from the presence and absence of tourism. For a statistically valid inference, the control village needs to be geographically and socio-economically similar to the study village except when it comes to the presence of tourism. The rural island villages of the Sundarbans are most similar to each other in their infrastructure, location vis-à-vis the mainland, and socio-economic characteristics when they are part of the same island. Moreover, prices in local markets within the same island are comparable while they vary across islands due to differential transport-costs. In this research, the study and control villages are both parts of the same island on the bank of the same river. However, it was found that there is a larger concentration of landless and marginal farmers in the study village[8]. Table 3 is based on secondary sources[9] and shows a larger number of households in the study village, but an insignificant difference in the total land area. The difference across the two villages narrows down in the study because we include only a subset of the village population, i.e. riverside residents, in our sampling frame.

We checked whether any crucial household level variables differ across the two villages significantly, before arriving at a statistically valid inference from the regression analysis. Since the sample sizes are not large, and the tourism participation is entirely concentrated in the study village, an aggregative comparison at the village level from the survey data may be misleading. Instead, for village-level comparison, we divided households into three categories: (i) households participating in tourism-related jobs, (ii) households showing direct forest-dependence, and (iii) households that are neither tourism-participants nor direct forest-dependents. We carried out comparisons of (ii) and (iii) across the two villages. The null hypothesis of equality of mean values across the two villages is tested in Table 4, which shows that the characteristics of the riverside households, in terms of family size and endowments, do not significantly vary across the two villages.

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[7] The voter-list (2005) of that part of the village lists 939 adults. No child is engaged in the tourism-related trade.

[8] Mentioned in Section 3: the proportion landless:marginal:small:semi-medium is 70:194:6:3 in study village while it is 25:162:5:1 in the control village.

[9] Source : Directorate of Census Operations, West Bengal (2003).

Table 5 describes the expenditure pattern across the two villages, taking all categories of households together. Mean-values of per-capita monthly consumption expenditure, that on food, non-food items and per-child monthly expenditure on education are marginally higher in the study village, though the differences are not statistically significant. However, the standard deviations are markedly higher in the study village. This greater heterogeneity in the study village calls for a closer examination. It is plausible that the heterogeneity is caused by tourism-participation, which is absent in the control village. We conceive that as tourism participation is not yet widespread in the study village, the weight of participating-households is not large enough to reveal a significant inter-village difference in the mean values. We explore this issue more carefully in the following sections.

5.3 Understanding Tourism-Participants and the Rest: Data from the Study Village

Since tourism-related activities and establishments are concentrated in a small part of the study village and all participants are local residents, we could enumerate all of them according to their mode of participation. The number of persons engaged in services/trades catering exclusively to tourists is found to be 77 in 2005-2006 which is approximately 8.2% of the adult population[10]. In addition, there are trades (grocery shops, telephone booths, local ferry service, etc.) which do not exclusively cater to tourists, but significantly gain by their arrival. Approximately 6.9% of the local adult population is engaged in these trades. However, as the latter set of locals plies their trade throughout the year catering to villagers, this study excludes them in the category of 'direct tourism participants'. Hence, our findings regarding tourism's livelihood contribution is conservative and needs to be treated as an underestimation.

A comparison of endowments and expenditure patterns between 'direct tourism participants' and the 'rest' is undertaken for sample households from the study village in Table 6. The intra-village comparison confirms that households participating in tourism are better off in terms of per-capita expenditure. They consume more than the bare necessities as shown by increased expenditure on non-food items and they show a tendency to educate their children compared to the rest. This is in spite of their larger average family size, lower per-capita landholding, and significantly lower literacy and primary-education completion rates among adults. The average age of the head of the household is significantly lower for tourism-participant households compared to the others. It may indicate that the new earning opportunities thrown up by tourism have been utilized by younger households, perhaps with higher levels of entrepreneurship.

5.4 Effects of Tourism on Household Welfare – Regression Results

Though mean comparisons are helpful to bring out differences in characteristics across social groups, the differential effect of tourism on household welfare, both direct and indirect, can be statistically established through a set of regression analyses. Following the methodology described earlier, we regress per-capita consumption expenditure on a set of household variables. These variables are described in Table 7 and reflect household demographic composition (family size, proportion of adults), physical assets (per-capita landholding, livestock) and human capital (literacy). Two variables, 'family size' and 'per-capita landholding' are included in quadratic

[10] The voter-list (2005) of that part of the village lists 939 adults. No child is engaged in the tourism-related trade.

form. Participation status with respect to tourism and forest-exploitation are represented by two dummy variables. We also have dummy variables for village and season (off and peak for tourism). Participation in agriculture is not separately accommodated as it is reflected by landholding status.

Table 8 shows the results when per-capita monthly monetary expenditure[11] (PCE) and its three components are regressed on the household level variables described earlier. Regression for PCE is carried out by OLS with robust standard errors. The equations for the three components of expenditure are estimated as a system of Seemingly Unrelated Regression (SUR), taking cognizance of possible correlation of error terms across them.

The signs of the significant explanatory variables are in conformity with their economic interpretations. Household size (FSIZE) and its square (FSIZESQR) are significant for all expenditure equations (except expenditure on education), with the former being negative and the latter positive. This is expected as per-capita expenditures tend to decrease for a larger household, but the rate of decrease should slow down with additional increments in household size. Per-capita expenditure is positively related with the proportion of household members above 10 years of age, as they are larger consumers. The regression results confirm this expectation.

Per-capita landholding is significant in quadratic form for the PCE regression and its 'food' component. Households with some viable amount of land (represented by a dummy for households with above 1/15 hectare of land) spend significantly less on per-capita food and non-food items. This is apparently contradictory, but can be explained considering a feature of these villages. The landed households are almost entirely marginal and small. Hence, whenever a household possesses some land, it tends to be tied down with the land even if the returns are very small. In contrast, households that are landless or have negligible landholding are more enterprising in seeking out newer avenues of income and can make themselves better off than their poorly landed counterparts.

The proportion of literate adults in a household shows a significant positive impact on per-capita expenditure on non-food items, but a negative effect on expenditure on education. We conclude that a higher literacy rate appears to tilt household's tastes in favour of non-food items. Moreover, its significant negative impact on per-child expenditure on education may indicate that non-literates are keener to provide education to their children. However, it is more plausible that for households where adults are not literate, expenditure on children tends to be more even at the primary stage because they have to be provided with local private tutors.

The dummy for forest dependents (=1 for households directly depending on forest-exploitation and prawn-fry collection) is not significant for other expenditure equations, but it is found that such households spend significantly less for their children's education.

It is important to note that the dummy for tourism participation (=1 for participant households) is the only explanatory variable which is significant across all four equations and holds a positive sign. We also find that among the three components of expenditure, tourism participation status is most significant in explaining 'non-food' expenditure. As non-food items are mostly 'non-necessities' in a remote village economy, they are expected to be more income-elastic. Thus, the additional tourism-money accruing to the participating households is spent proportionately more

[11] Includes imputed values for self-produced items

on non-food items. Based on the estimated coefficients, we calculate that households participating in tourism spend 19% more on food and 38% more on non-food items. We conclude that tourism significantly augments the livelihood of local participating households.

We find that the dummy indicating 'village' (=1 for study village) is not significant for any of these equations except for expenditure on education. For education, it is only marginally significant (at 10%). This shows that non-participating households (in tourism) across villages have little difference in their expenditure pattern. Thus, the 'indirect' effect of tourism money in the study village, which may have accrued to the non-participating households through intra-village transactions, is not statistically significant.

Dummy for season (=1 for winter) is also insignificant across all the four equations. We conclude that the tourism-money, earned almost entirely in the winter months by participating households, are retained to finance their year-long expenditure and not spent instantly in the winter months alone.

To check the robustness of the regression results, we also estimate the four household equations using data from the study village alone (Table 9, where we drop the dummy indicating village). The main results are un-changed.

We can now summarize the major findings of the regression results regarding the overall impact of tourism in the study village. Households entering into tourism-related occupations have significantly raised their living standard compared to other non-participating households. The participating households distribute the seasonal inflow of tourism money over their year-long expenditures. The additional money tourism provides enables the households to consume over and above the bare necessities as revealed by the fact that they have enhanced their expenditure on non-food items proportionately more than on food items. The trickle-down effect of tourism money to non-participating households by intra-village transactions is statistically insignificant as such households show no significant increase in their expenditures by virtue of their location in the study village.

5.5 Link between Tourism and Conservation: Empirical Evidence

Tourism in the Indian Sundarbans is yet to develop into a large scale round-the-year business opportunity for local villagers. Nonetheless, does it act as a vehicle for conservation? We address this question by comparing 'tourism participation' and 'forest dependence' among the study village households.

Table 6 shows that the percentage of households resorting to agriculture among tourism participants and non-participants is similar. But participating households show a significantly lower direct forest-dependence. It could be that tourism has provided the local 'less-endowed' households with alternative earning opportunities which reduce their forest-dependence. This point becomes more apparent by looking at the types of business opportunities and their financial requirements that tourism has opened up. By a complete enumeration of participants, we find that local people are engaged in a variety of service provision to tourists in a small way. Some 78% are engaged in trades/services with nil or a very little capital investment e.g., cook, drinking water supplier, boatman, etc.. A more detailed listing of these services/trades and the number of local people engaged in them is provided in Appendix A1.

Table 6 looks only at tourism participants versus non-participants. For a deeper insight, Table 10, categorizes the study village households into: (i) solely engaged in fishing and other forest-intrusive activities; (ii) solely engaged in prawn fry collection; (iii) both of these activities; (iv) tourism participants; and (v) others. Table 10 shows that households resorting to both 'forest intrusion and prawn-fry collection' are the poorest, as revealed by their average per-capita monthly expenditures and the fact that they have the smallest per-capita landholding. In contrast, households that participate in 'prawn-fry collection only' have higher landholding and spend as much as non-forest dependents. However, they have a lower family size indicating a lesser number of working hands. Prawn-fry collection is found to be mostly undertaken by the women in the household in the village-side rivers. They possibly cannot move out into other types of income-generating employment for the family.

It appears that the forest intruders compensate for their lesser landholding by forest exploitation. However, both in terms of literacy and completing primary education, they are backward. Additionally, their attitude towards the education of their children is also dissimilar to that of the others as revealed by the lowest per-child expenditure on education among these households. Hence, the overall picture that comes out is indicative of the fact that the forest intruders are landless poor people who are also somewhat divorced form the educated world.

Turning to tourism-participants, the Table shows that they are the largest per-capita spenders on all items. They have the largest average family size, lesser per-capita landholding compared to prawn-fry collectors and other households, the lowest adult literacy except for purely forest-intruders, and the lowest proportion of adults completing primary education. In spite of these lower endowments, they can be seen as the largest spenders, especially for providing education to their children. This constitutes evidence of the fact that mostly landless and marginal households with low human capital (literacy and education) have availed themselves of the new earning opportunities provided by tourism and have demonstrated a significant attitudinal shift in building human capital by educating their children.

We see that tourism-participants and forest-dependents come from the same set of lowly endowed poor households. The mean-comparisons lead us to conclude that tourism-money can lead such households out of their forest-dependence and hence can act as a vehicle for conservation. While we draw this broad conclusion, we clearly cannot establish causality with our limited data.

5.6 Tourism's Social Effect: Local Perceptions and Carrying Capacity

We supplemented the household survey questionnaire by a set of questions for households in the study village. Some possible tourism-related social issues was raised and the respondent's perceptions was elicited with a 'Yes', 'No' or 'Indifferent' options.

The analysis shows that all respondents perceived that the land prices in river-banks (vantage points for setting up a tourist lodge) have increased; however, opinion is divided whether it is good or bad from their personal point of view.

Most of the villagers feel that the spread of tourism has improved transport and telecommunication, road conditions, and ferry services, as well as helped spread the Sundarban's local cultural heritage and folk art into the outside world. However, most of them are also of the opinion that

tourism at its present scale does not significantly reduce the forest dependence of locals. They also feel that it has resulted in increased income inequality in the village.

When it came to tourism's possible adverse effects, something which could be relevant for policy purposes, the majority of the respondents answered positively. According to them, tourism does not contribute to problems such as reduction in drinking water, pollution and congestion or increased crime. The unequal distribution of tourism-revenue in the study village, and the uneven interactions of locals with visiting tourists, is however, an issue. Households were divided in their opinion on a number of issues such as the increase in land and agricultural and other product prices as a result of tourism; the cultural 'shock' effects of tourism and the impact of tourism and income inequalities on their own communitarian lives.

An increase in the number of tourists, without creating additional avenues for locals to participate (and helping them with finance and training) in the trade, may aggravate the existing inequality (economically and perception-wise). This could result in some degree of social tension in the future. Any efforts to increase the number of participants in the tourism sector would therefore be very useful.

It is pertinent to mention in this context that the tourism carrying capacity (TCC) in the Sundarbans is not yet perceived as a constraint by the authorities. This is inferred from the absence of restrictions regarding the issue of permits to tourists.

6. Conclusions and Policy Implications

We draw three main conclusions from our examination of the households in the STR. First, only a small number of households currently participate in tourism. Some 8.2% of villagers in Pakhiralay directly participate in the tourism sector. This suggests that there is ample scope for increasing local participation through tourism.

Households who do participate in the tourism sector have very little in terms of landholding and literacy in comparison to other village households. Furthermore, tourism improves the livelihood status of households who participate in this sector. Participant households spend 19% more on food and 38% more on non-food items per capita relative to similar non-participants. Thus, tourism as a poverty reduction strategy may be particularly useful because it is able to support and improve the lot of households that have the least human and other forms of capital.

Third, there is very little trickle down from tourism to non-participant households. Thus, while the households who work in the sector do gain, the cash they earn does not contribute to an overall growth of the village economy. Thus, the one way forward to really pull people out of poverty is to increase participation in tourism. There simply needs to be more local jobs that are created through this sector if a wide range of villagers are to be affected.

Does tourism contribute to conservation in the Sunderbans? A great deal of the degradation in the Sundarbans is a result of the dependence of locals on these mangrove forests. Tourism may be pulling some households away from this dependence. There is some suggestion in our study that this could be happening but we do not have sufficient data to show that there is a causal relationship between tourism and forest dependence. This will need additional research.

A clear policy recommendation from our study is that the number of local jobs that result from tourism needs to grow. Lack of infrastructural facilities, most notably electricity, results in tourist arrival being restricted to the winter months only. Also, it encourages visitors to take up all-inclusive package-tours originating in far-off places which provide little scope for locals to enter into trade with the visitors. With improvements in infrastructure, visitors can grow in number and the scope for local participation can increase.

A second recommendation is that more publicity and information dissemination is required about the Sundarbans. New vistas should be explored such as nature-based tourism with products like forest-walks, tree-top houses, etc. These products, now absent, could be developed by private entrepreneurs once the authorities come up with a comprehensive tourism development policy. These mechanisms to increase tourism in quantitative terms will need to take into account constraints in the carrying capacity of the forest.

We would like to recognize some data limitations in this study. Tourism-participation may be an endogenous decision on the part of a household, depending on its physical and human capital endowments. Hence, our regression results could be improved by treating 'participation' as an endogenous variable. But we were unable to do this because of the relatively small number of participant households. There is need for more careful research into this and other 'tourism development' aspects of the Sundarbans.

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TABLES

Table 1: Distribution of HHs across MPCE Class (NSS 61st Round v Study Sample)

MPCE Class		Number of HHs (NSS 61st Round)* (2004-2005)	Number of HHs (Study Sample) (2005-2006)
Lower Boundary (Rs.)	Upper Boundary (Rs.)		
0	235	17	7
235	270	26	0
270	320	77	7
320	365	85	10
365	410	104	14
410	455	105	11
455	510	105	11
510	580	125	13
580	690	143	7
690	890	110	3
890	1155	49	3
1155	Above	54	1
	Total	1000	87
	Median** (Rs.)	**500**	**433**

*Source: *Level and Pattern of Consumer Expenditure, 2004-05; NSS 61st Round: NSSO; Ministry of Statistics and Programme Implementation, GoI.< http://mospi.nic.in/mospi_nsso_rept_pubn.htm > (Table 1R)*

** *Median is calculated as the representative value since the distribution is open-ended.*

Table 2: Distribution of Sample HHs with a Single Source of Livelihood*

Occupation	Agriculture	Forest intrusion	Prawn-fry collection	Tourism participation	Other occupations	Total
No. of HHs	7	3	2	0	13	25

** Out of 87 HHs in the sample (both study and control village)*

Table 3: Village Level Information from Secondary Sources*

	Study Village	Control Village
Area (ha)	479.49	419.39
Number of households	772	566
Population	3871	2710
Sex Ratio (M/F)	1.018	1.016

Source: Directorate of Census Operations, West Bengal (2003)*

Table 4: Test for Equality of Mean Values across Villages

[Null hypothesis: mean values are equal across study and control village]

HH Level Variables	Directly forest-dependent HHs (and not tourism-participants)		HHs neither tourism-participants nor forest-dependent	
	Level of Significance		Level of Significance	
	5%	1%	5%	1%
Avg. family size	Accepted		Rejected	Accepted
% of literacy among adults	Rejected	Accepted	Accepted	
% of adults completing primary education	Accepted		Accepted	
Avg. HH landholding (Katha)	Accepted		Accepted	
Avg. per-capita landholding (Katha)	Accepted		Accepted	
Proportion of HHs owning livestock	Rejected	Accepted	Accepted	

** Katha is the smallest local unit of landholding. 1 Hectare = 149 Katha (approximately).*

Table 5: Variation in Average per capita Expenditure across Two Villages

HH Level Per-Capita Expenditures(Item)	Control Village Mean (std. dev.) (Rs.)	Study Village Mean (std. dev.) (Rs.)
Per-capita monthly consumption expenditure (Rs.)	451.31(14.13)	469.55(23.08)
Per-capita monthly expenditure on food (Rs.)	266.69(77.01)	271.22(115.65)
Per-capita monthly expenditure on non- food items (Rs.)	162.86(61.96)	169.14(110.76)
Per-child monthly expenditure on education(Rs.)	40.89(52.39)	62.65(102.80)

Sample Size: *Control Village: 39 HHs, two rounds; Study Village 48 HHs (two rounds)*

Table 6: Household Characteristics across 'Tourism Participants' and 'Others'†

	HHs not directly participating in tourism	HHs directly participating in tourism
No. of HHs	38	10
Average family size	5.3	6.0
Average age of the Head of the HH	47.5	41.7*
Avg. Per-capita landholding (Katha)	7.9	5.9
% of landless or marginal HHs	66%	80%
% of HHs having livestock	89%	90%
% of literacy among adults	79	68*
% of adults completing primary education	56	31***
% of HHs directly exploiting the forest (engaged in fishing and/or prawn-fry collection)	55%	30% *
% of HHs undertaking some agricultural activity	66%	60%
Per-capita monthly consumption expenditure (Rs.)	443	570*
Per-capita monthly expenditure on Food (Rs.)	262	304
Per-capita monthly expenditure on Non-food(Rs.)	158	210
Per-child monthly expenditure on Education†† (Rs.)	58	108

† *Table accounts for 48 sample households in the study village*
†† *Only HHs with children in the age group 6-18 years are considered*
*, **,*** *indicates differences are significant at 10%, 5% and 1% level respectively*

Table 7: List of Variables Used in Regressions

Variable Type	Symbol Used	Description
Demographic	FSIZE	Family size: number of member in the household.
	NCHLDPROP	Proportion of household members who are not children (below 10 Yrs.).
	LARGEHH	Large HH (Dummy): 1= if household size is greater than 5 (median size).
Physical capital	PCLAND	Per-capita landholding of the household
	SOMELAND	Having some land which is not negligible (Dummy): =1 if the household posses at least 10 Katha (1/15 Hectare)* of agricultural land.
	LVSTOCK	Livestock (Dummy): =1 if the household have livestock.
Human capital	LITPROP	Proportion: of literate adults to total number of adult members in the household
Participation	TRSMDMY	Dummy: 1 = if any of the household members is engaged in tourism related job.
	FRSTDMY	Dummy: 1 = if any of the household members is engaged in direct forest exploitation.
Time and place	SEASON	Dummy: 1 = Winter (peak); 0 = Summer
	VLGDMY	Dummy: 1 = if household belong to the study village; 0 = Control village

** This figure is arrived at by discussions with local households. Landholding below this level doesn't provide any perceptible yield to the household*

Table 8: Regression Results for Expenditure Equations with Data from Two Villages

Regression Method>	OLS (Robust Standard Error)		Seemingly Unrelated Regression (SUR)					
Dependent variable >	Per-capita Monthly Monetary Expenditure (PCE)		Per-capita Expenditure on Food (PFOOD)		Per-capita Expenditure on Non-food Items (PNFOOD)		Per-child Expenditure on Education (PEE)	
Regressor	**Coeff.**	**t-value**	**Coeff.**	**t-value**	**Coeff.**	**t-value**	**Coeff.**	**t-value**
FSIZE	-65.19	-2.87***	-31.87	-2.38**	-35.99	-2.93***	-0.46	-0.04
FSIZESQR	5.02	3.34***	2.33	3.11***	2.86	4.18***	0.01	0.02
NCHLDPROP	219.66	2.47**	105.42	2.23**	120.40	2.78***	0.53	0.01
LARGEHH	-89.85	-2.40**	-34.62	-1.44	-34.18	-1.56	-29.33	-1.32
PCLAND	12.17	2.45**	8.12	3.54***	2.38	1.13	3.04	1.43
PCLANDSQR	-0.19	-2.15**	-0.14	-3.07***	-0.01	-0.24	-0.08	-1.77*
SOMELAND	-97.26	-2.13**	-58.98	-2.76***	-39.01	-2.00**	8.60	0.44
LVSTOCK	-41.79	-0.93	-19.75	-0.70	2.17	0.08	-42.52	-1.62
LITPROP	40.11	0.71	28.42	1.05	50.88	2.06**	-68.17	-2.73***
TRSMDMY	133.39	2.45**	50.48	2.27**	60.54	2.97***	38.00	1.85*
FRSTDMY	-19.69	-0.71	-4.57	-0.30	-2.24	-0.16	-28.07	-2.02**
SEASON	-34.30	-1.43	-19.39	-1.53	-15.78	-1.36	2.55	0.22
VLGDMY	27.03	0.89	14.07	0.94	5.18	0.38	23.73	1.71*
CONSTANT	473.47	3.42***	269.79	3.67***	130.98	1.94*	130.63	1.92*
Total Observations: 174	F(13, 160) =7.71 Prob > F = 0.0000 R-squared = 0.34364		R^2 = 0.296 ÷² = 73.30 Prob > ÷² = 0.0000		R^2 = 0.3032 ÷² = 75.72 Prob > ÷² = 0.0000		R^2 = 0.1568 ÷² = 32.36 Prob > ÷² = 0.0021	

Table 9: Regression Results for Expenditure Equations with Data from Study Village

Regression Method>	OLS (Robust Standard Error)		Seemingly Unrelated Regression (SUR)					
Dependent variable >	Per-capita Monthly Monetary Expenditure (PCE)		Per-capita Expenditure on Food (PFOOD)		Per-capita Expenditure on Non-food Items (PNFOOD)		Per-child Expenditure on Education (PEE)	
Regressor	**Coeff.**	**t-value**	**Coeff.**	**t-value**	**Coeff.**	**t-value**	**Coeff.**	**t-value**
FSIZE	-114.94	-3.01***	-43.90	-2.25**	-61.73	-3.44***	-21.19	-1.09
FSIZESQR	7.77	3.72***	3.09	3.01***	4.21	4.47***	1.18	1.16
NCHLDPROP	490.93	3.32***	220.60	2.90***	236.81	3.38***	104.30	1.38
LARGEHH	-40.22	-0.70	-26.58	-0.77	-2.91	-0.09	-15.24	-0.44
PCLAND	12.17	1.42	8.58	2.55**	2.26	0.73	2.64	0.79
PCLANDSQR	-0.14	-0.94	-0.13	-1.93*	0.02	0.39	-0.07	-1.03
SOMELAND	-131.16	-2.03**	-82.30	-2.83***	-54.69	-2.04**	15.89	0.55
LVSTOCK	2.79	0.05	-1.68	-0.05	28.96	0.88	-34.40	-0.97
LITPROP	127.99	1.38	61.75	1.49	102.82	2.70***	-59.95	-1.46
TRSMDMY	163.13	2.89***	63.42	2.54**	76.33	3.32***	44.02	1.77*
FRSTDMY	-41.27	-0.98	-5.98	-0.27	-17.54	-0.85	-25.02	-1.12
SEASON	-41.40	-1.17	-21.58	-1.18	-17.49	-1.04	-4.19	-0.23
CONSTANT	337.79	1.47	188.70	1.56	63.6682	0.57	114.954	0.96
Total Observations: 96	R-squared = 0.4880 F(12, 83) = 8.02 Prob > F = 0.0000		R^2 = 0.3888 $\div^2$ = 61.08 Prob > $\div^2$ = 0.0000		R^2 = 0.4363 $\div^2$ = 74.30 Prob > $\div^2$ = 0.0000		R^2 = 0.2377 $\div^2$ = 29.94 Prob > $\div^2$ = 0.0029	

Table 10: Household Characteristics across Categories[†]

	Forest Dependent Households			Tourism-participants	Other Households
	Forest intruders	Prawn-fry collectors	Both forest and prawn-fry		
No. of HHs	7	19	4	10	46
Avg. family size	5.7	4	5.25	6	5
% of literacy among adults %	56.2	78.9	81.2	67.7	82
% of adults completing primary education	37.4	51.3	50.0	30.8	66
Avg. per-capita landholding (Katha)	2.8	9.9	0.6	5.9	8.9
% of HHs having livestock	71.4	89.5	100	90	97.8
Per-capita monthly consumption of food (Rs.)	262	281	190	304	266
Per-capita monthly consumption of non-food items (Rs.)	159	177	106	211	160
Per-child monthly expenditure on education* (Rs.)	15	35	53	108	55

† *One of the 87 HHs is found to be an outlier as a forest intruder and dropped in this Table. It has a much bigger landholding than other forest dependents. Such cases are rare, but do occur where an erstwhile forest going HH could procure a large amount of land but didn't yet give up its forest going habit.*

* *Only HHs with children in the age group 6-18 years are considered*

FIGURES

Figure 1: Distribution of Landholding in the Survey Population in Two Villages

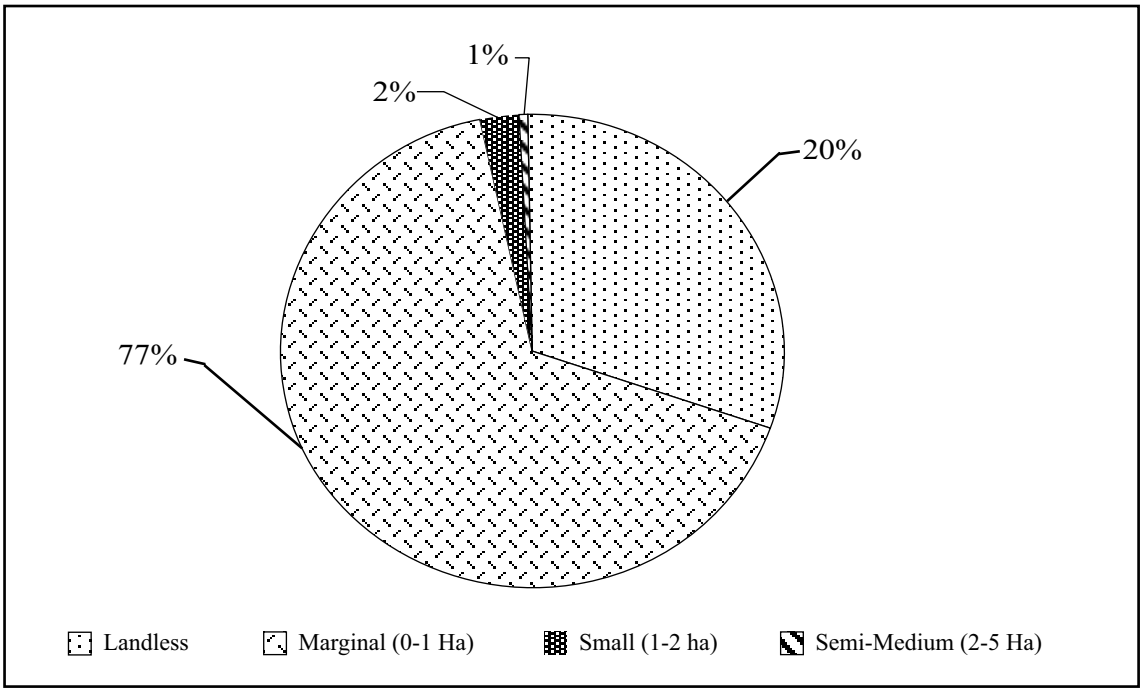
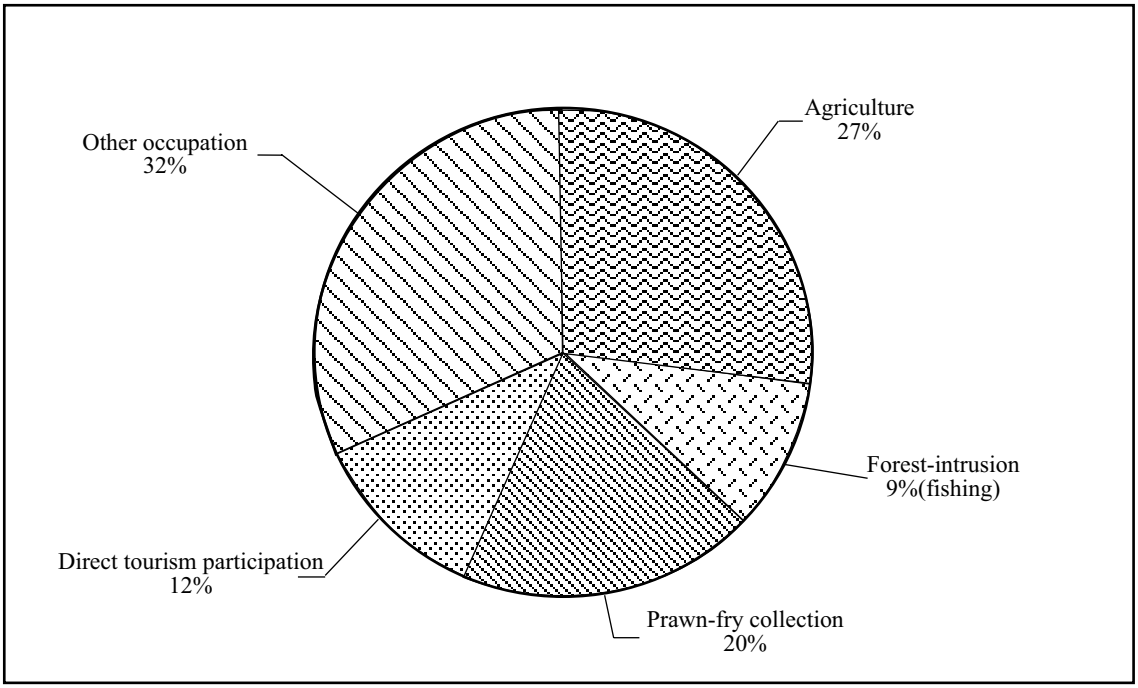


Figure 2: Occupational Distribution of Working Adults according to their Primary Occupation (from Sample HHs in Study Village)



APPENDICES

APPENDIX – A1: Detailed Profile of Tourism Participants

The tourism-related trades/services adopted by local people have been exhaustively listed by this study as follows:

- Supplying drinking water in hotel/tourist lodge/in-transit boats/launches
- Cleaning of hotel rooms/bed sheets/Maintenance/decoration of lodge premises
- Cooks in hotels/lodges and Driver/Helper/Cook in tourist boats
- Paid tourist lodge managers / caretakers
- Owning tourist boats/lodges/huts /renting out own dwelling rooms to tourists
- Forest guide (regular pool and reserved pool)
- Temporary stall owners vending fruits/honey/fish and telephone booth owners
- Owning small/medium variety stores/tea stalls (stocking limited grocery items, snacks)
- Big grocery shops/ Stalls providing tea & breakfast
- Local ferry service/Cycle-van puller
- Arranging food for on-shore tourists on contract.

Tourism being extremely seasonal (only 60 days of significant business), all the workers in the lodges are employed on a daily-wage basis. Some of the above mentioned trades/services are exclusively tourism related and remains operative only in the winter months (peak season). Others cater also to the locals in off-season, but shows significant improvement in their sale/profitability in peak season.

Going by the electoral roll of one poll booth in Pakhiralay in 2006, which entirely covers the target riverside population, and from which the entire local tourism-related service providers come, the number of adults is 944, out of whom an estimated 77 persons (8.2%) were found to be related to trades/services which are exclusively tourism-related. The number of persons engaged in trades not exclusively devoted to tourism, but significantly gaining by it, is estimated to be 65 (6.9%). Also, for 132 such persons, a classification of trades/services according to the financial investment requirements finds that 78% adopted a trade/service where investment requirement is nil or less than Rs 5000 (approx US$ 110). It clearly shows that those who have adopted tourism for augmenting their livelihood are mostly the poorer villagers.

Table Showing Financial Investments for Tourism-related Trades/Services

Required investment (obtained by focus group discussions with traders)	Nature of service/trade	Number of engaged persons listed in study village
Nil	Supplying drinking water, cleaning of lodges, laundry services, cooking food, driving tourist boat, forest guide	52
Less than Rs 5000	Owning small stalls vending fruits/ honey/fish, phone call centres, selling tea/breakfast , cycle-van pulling (on-shore conveyance)	52
Rs 5,000 % Rs 25,000	Owning small variety stores selling grocery/stationary items, snacks	5
Rs 25,000 % Rs 1,00,000	Renting out dwelling rooms to tourists and small unorganized tourist huts, owning medium size shops with grocery/stationary items, owning tourist boats	17
More than Rs 1,00,000	Owning large tourist lodge, big variety stores	6
	TOTAL	132

APPENDIX – A2: Household survey questionnaire

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THE GCP-SANDEE PROJECT·

2005 - 2006

HOUSEHOLD EXPENDITURE SURVEY

FIRST - ROUND

(AUGUST – SEPTEMBER, 2005)

Village .....…… Household No. ……..

·Information collected by this questionnaire will be used exclusively for the GCP-SANDEE project under Jadavpur University during 2005-2006. The confidentiality of the supplied information will be duly maintained

SECTION 0: HOUSE ROSTER

1. ID Code	2. Sex	3. Relationship to head of household	4. Age	5. EducationalAttainment	6. Marital Status	7. Number of months resident inhouse (during past 12 months)
	MALE 1 FEMALE 2	HEAD ..... 1 SPOUSE OF HEAD ..... 2 SON / DAUGHTER ..... 3 SPOUSE OF SON/DAUGHTER ..... 4 GRANDCHILD ..... 5 FATHER /THER ..... 6 BROTHER /SISTER ..... 7 FATHER/MOTHER-IN-LAW ..... 8 BROTHER /SISTER-IN-LAW ..... 9 SERVANT/EMPLOYEE /OTHER 10	[if less than one year, write zero]	ILLITERATE ..... 1 LITERATE WITHOUT FORMAL SCHOOLING ..... 2 LESS THAN PRIMARY ..... 3 PRIMARY ..... 4 MIDDLE ..... 5 MATRICULATE ..... 6 INTERMEDIATE ..... 7 B.A./B.Sc. ..... 8 PROFESSIONAL DEGREE ..... 9 DIPLOMA 10	CURRENTLY MARRIED ..... 1 NEVER MARRIED ..... 2 WIDOWED ..... 3 DIVORCED / SEPARATED 4	Write “12” ifAlways present,or if away forLess than a month
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						

SECTION 1: HOUSEHOLD INFORMATION: SOURCES OF LIVELIHOOD

Which are the sources of livelihood for your household (both in cash and in kind)?

1. CHECK (√) ALL THE RELEVANT BOXES AT LEFT. THEN ASK FOR THE THREE MOST IMPORTANT SOURCES AND WRITE CODES IN BOXES AT RIGHT.

Check Box (√)	Source of Livelihood	Code		
	OWN FARM ACTIVITIES	1	FIRST	
	CASUAL LABOUR(FARM AND NON-FARM)	2		
	LONG TERM AGRI. EMPLOYEE	3		
	SALARIED EMPLOYMENT	4		
	PERSONAL (JAJMANI) SERVICES	5		
	PETTY BUSINESS/TRADE/MANUFACTURING	6	SECOND	
	MAJOR BUSINESS/TRADE/ MANUFACTURING	7		
	COLLECTION/FORAGING	8		
	CHARITY/ALMS	9		
	INTEREST INCOME, PROPERTY,LAND RENTALS, ETC.	10	THIRD	
	PUBLIC TRANSFERS/PENSIONS	11		
	PRIVATE TRANFERS/REMITTANCES	12		
	FISHERY	13		
	PRAWN FRY COLLECTION	14		
	HONEY COLLECTION FROM FOREST	15		
	BOAT MAN [Any sort of boat]	16		
	CYCLE-VAN PULLER	17		
	OTHER	18		

2. DOES THE MOST IMPORTANT LIVELIHOOD SOURCE LISTED ABOVE ACCOUNT FOR MORE THAN 50 PERCENT OF YOUR HOUSEHOLD'S LIVELIHOOD?
[Put 1 for 'YES', 2 for 'NO']

3. WHO IS THE MAIN BREADWINNER IN THE HOUSEHOLD?
[Write ID Code, write 99 if outside household]

SECTION 2: ACTIVITIES OF THE EARNING MEMBERS

1 Name, Id Code and Income sources of family members over the past 12 months, **Activities** **Codes** Own farm activities ..... 1 Casual labour(farm and non-farm) ..... 2 Long term agri. employee ..... 3 Salaried employment ..... 4 Personal (jajmani) services ..... 5 Petty business/trade/manufacturing ..... 6 Major business/trade/ manufacturing ..... 7 Collection/foraging ..... 8 Charity/alms ..... 9 Interest income, property,land rentals, etc .. 10 Public transfers/pensions ..... 11 Private transfers/remittances ..... 12 Fishery ..... 13 Prawn fry collection ..... 14 Honey collection from forest ..... 15 Boat man [any sort of boat] ..... 16 Cycle-van puller ..... 17 Other (please mention) 18	2. During which months of the Year did you do this activity ? (Put √ against the corresponding months)	4. Did you do this work in this village? YES...1 NO…2

Name	Id Code	Activity Code	J	F	M	A	M	J	J	A	S	O	N	D	

SECTION 3: HOUSING

1. Dwelling Unit [1]
[Please put √ on appropriate code]

OWNED	1
RENTED	2
OTHER (please mention)	3
NO DWELLING UNIT	4

2. Do you have secure rights on your homestead land ?
[Please put √ on appropriate code]

YES, OWNED	1
YES, PATTA	1
NO	3

3. Type of structure
[Please put √ on appropriate code]

KATCHA / THATCH	1
KATCHA / TILE	2
SEMI - PUCCA	3
SECTOR HOUSING SCHEMES	4
PUCCA	5

4. Floor type
[Please put √ on appropriate code]

MUD	1
BRICK	2
CEMENT/STONE/TILE	3
OTHER (Please mention)	4

5. Number of separate rooms in the household.

1 DWELLING means the building, or group of buildings, in which the household lives. The dwelling may be a hut, a group of huts, a single house, a group of houses, a villa, an apartment, several one-room apartments in a courtyard, or any other type of residential unit. If the household occupies a portion of a house, refer to that portion when answering the questions.

SECTION 4: PROVISIONS / FACILITIES

DRINKING WATER SOURCES	PROVISION OF LATRINE
1. Where does your drinking water generally come from? [Please put √ on appropriate box] Tap 1 Well 2 Tubewell / Handpump 3 Tank/ Pond/Pond reserved for drinking 4 Other (please mention) 5	9. What type of latrine do you use? [Please put √ on appropriate box] No latrine 1 Flush system 2 Septic Tank 3 Service latrine 4 Other 5
2. Do you share this source with other households? YES / NO	10. Do you share this latrine with other households? YES / NO
3. How many households share this source? Number……..…	11. How many households share this latrine? Number……
4. How far is this source from your dwelling? [Please put √ on appropriate box]	**MAIN SOURCE OF LIGHTING**
Within Premises 1 Less than 0.5 K.M. 2 0.5 KM to 1 KM 3 1 KM or more 4	12. What is the main source of lighting for your dwelling? [Please put √ on appropriate box] No lighting 1 Gobar Gas / Oil / Kerosene 2 Other 3
5. Is water from this source ever scarce? YES / NO	**FUEL FOR COOKING**
6. If answer is YES for the previous question,what is the alternative source? [USE CODES from questions 1 and 4.	13. What kind of fuel is most often used by your household for cooking?
i. Code of alternative source ii. Code for distance from dwelling	[Please put √ on appropriate box/ boxes] LPG or piped Gas 1 Locally produced Gas 2 Kerosene 3 Coal 4 Firewood 5 Cow-dung cakes 6 Leaves / Straw / Thatch 7 Other 8
7. How much did you pay as fee for Drinking Water over the last 12 months? Rs…….....	
8. How much did you pay for maintenance/repairs of the Drinking Water Source over the last 12 months? Rs…….....	

14. Name of the facilities and Code Facility Code	i. Is it available in your village? [Use Code] YES..... 1; NO..... 2 DON'T KNOW... 3	ii. How far is the nearest such facility from your house? [Use Code] LESS THAN 0.5 KM.. 1 ; 0.5 TO 3 KM.....2 3 TO10 KM.....3; MORE THAN 10 KM … 4
Primary School 1 Middle School 2 Secondary School 3 Primary Health Centre 4 Private doctor 5 PDS Shop 6		

SECTION 5: LOAN

1. In the past 12 months, did you borrow (cash or in kind) from anyone? YES NO [Please put √ on appropriate box] 2. If 'YES', who did you borrow from? List up to THREE SOURCES in order of importance. [Please put √ on appropriate box]	3. How much in total does your household currently owe to others?(include all types of loans currently outstanding) Rs. _____ [write zero if nothing owed]
Employer / Landlord 1 Trader / Money Lender 2 Relative (kin or in-laws) residing in same village 3 Relative (kin or in-laws) residing outside 4 Credit groups 5 Banks/Institutional sources 6 Other (please mention) 7	4. How much in total is currently owed by others to your household? Rs. _____ [write zero if nothing owed]

SECTION 6: LAND HOLDINGS INCLUDING WATERBODIES

1. Total agricultural land owned: …….Bigha/……..Katha 2. Total agricultural land rented / sharecropped in …….Bigha/……..Katha 3. Total agricultural land mortgaged in …….Bigha/……..Katha 4. Total area owned as pond/waterbody …….Bigha/……..Katha 5. Total pond / waterbody area mortgaged/rented in …….Bigha/……..Katha	6. Total agricultural land rented /sharecropped out …….Bigha/……..Katha 7. Total agricultural land mortgaged out …….Bigha/……..Katha 8. Total pond / waterbody area mortgaged / rented out …….Bigha/……..Katha

SECTION 7: CROP PRODUCTION

1. List of the crops that the household cultivated during the past SIX months [Please use crop code given below[1]] For eache crop, ask Q. 2, 3, 4		2. How much land did you cultivate under this crop?	3. Did you sell any part of the produce? YES..... 1 NO 2	4. Value of sales (Rs.) [If sold]
Name of crop	Code			
		…....Bigha ……...Katha …....Bigha ……...Katha …....Bigha ……...Katha …....Bigha ……...Katha …....Bigha ……...Katha …....Bigha ……...Katha		

1 Crop Codes

Name of crop	Code	Name of crop	Code
Rice	1	Other Vegetables	6
Pulses	2	Prawn	7
Potato	3	All other fishes	8
Tomato	4	Any other (please mention)	9
Chili	5		

SECTION 8 : EXPENDITURE ON NON-DURABLE GOODS
(During last one month)

Name ..... (Code)	No (√)	Yes (√)	Amount (mention Unit)	Price (Rs.)	Expenditure (Rs.)
Rice 1					
Wheat 2					
Other cereals 3					
Pulses 4					
Gram (Chana) 5					
Gur 6					
Sugar 7					
Milk 8					
Milk products 9					
Vanaspati 10					
Other edible oils 11					
Meat and fish 12					
Eggs 13					
Tea leaf, coffee 14					
Salt and spices 15					
Potatoes 16					
Other vegetables 17					
Fruit 18					
Cigarettes / tobacco / pan, etc 19					
Alcohol and other intoxicants 20					
Other foods 21					

SECTION 9: EXPENDITURE ON NON-FOOD ITEMS
Money value of the amount purchased or received in-kind during the last one month

1. Item ..... Code	2. AMOUNT (Rs)
Wood (bundlewood, logwood, sawdust) 1	
Cow dung cakes / Kerosene oil 2	
Coal, charcoal 3	
Cylinder gas 4	
Matches, candles, lighters, lanterns, etc 5	
Toilet soap, toothpaste, shampoo, other personal care items 6	
Newspapers, books 7	
Recreation and entertainment expenditures 8	
Transport 9	
Wages paid to servants, *mali, chowkidar* 10	
Household cleaning articles (soap, bleach, washing powder) 11	
Clothing 12	
Footwear (shoes, slippers, etc.) 13	
Medical consultation fees, medicines and supplies 14	
Remittances sent to other households / individuals 15	
Toys, sports goods, etc. 16	
Litigation 17	
Taxes, other charges 18	
Religious expenses (incense, etc.) 19	
Social expenses (weddings, deaths, rites) 20	
Any other (please mention) 21	

SECTION 10: DURABLE GOODS

1. Does your household own any of the following items? [Please put √ in the appropriate box for all items] If the answer is yes, ask Q. 2.			2. Number of this item owned
Item ..... Code	YES	NO	
Radio / cassette player 1			
Camera/camcorder 2			
Bicycle 3			
Motorcycle / scooter 4			
Pressure lamps / Petromax 5			
Telephone sets 6			
Sewing machine 7			
Pressure cooker 8			
Watches 9			

SECTION 11: LIVESTOCK

1.Does your household own any of the following items? [Please put √ in the appropriate box for all items] If the answer is yes, ask Q. 2.			2. Number of such animal owned
Animal ..... Code	YES	NO	
Cows 1			
Buffaloes 2			
Goats / Sheep 3			
Duck/ Chicken 4			
Other livestock (please mention) 5			

SECTION 12: OWNERSHIP PRODUCTIVE ASSETS

1. Which of the following assets does your household own? [Please put √ in the appropriate box for all such assets] If the answer is yes, ask Q. 2. & 3			2. Number of such assets owned	3. For how much (Rs) could you buy it today?
Asset ..... Code	YES	NO		
Tractor 1				
Pumpset 2				
Cart 3				
Thresher 4				
Fodder cutting machine 5				
Fishing Boat 6				
Fishing net and other gears 7				
Cycle Van 8				
Generator 9				
Any Other (please mention 10				

SECTION 13: REMITTANCES AND TRANSFERS

1. During the past ONE month, have you received / paid anything in kind / money as gifts from/to any person who is not a member of your household? (Please put √)

YES.....1	NO..... 2

1. Transfer Item number	2. Id Code of therecipient/ Donor	3. Whether Received/ Donated [Put code: Received....1 Donated…2]	4. hat is the Donor/ recipient's relationship with head of the household? [Use relationship codes from Sec. 0.3] Mention briefly for code 10	5. ow much in total did you receive from/ donated to? [Rs.] (Use money value, as perceived by recipient/ donor if the transfer is in kind)
01				
02				
03				

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THE GCP-SANDEE PROJECT·
2005 - 2006

HOUSEHOLD EXPENDITURE SURVEY

SECOND - ROUND
(FEBRUARY - MARCH, 2006)

Village .....…… Household No. ……..

·Information collected by this questionnaire will be used exclusively for the GCP-SANDEE project under Jadavpur University during 2005-2006. The confidentiality of the supplied information will be duly maintained

1. Members of the Household:

ID Code	Age [if less than one year, write zero]	Sex MALE 1; FEMALE- 2	Number of months resident in house (during past 12 months)
1			
2.			
3.			
4.			
5.			
6.			
7.			
8.			

2. Household Monthly Expenditure (during last one month):

Item		Quantity (Unit[1])	Price Rs./unit)	Expenditure
Paddy[2]				
Weekly expenses on Grocery (X 4)				
Fuel	Fuelwood			
	Kerosene			
Weekly expenses on Fish/Meat/Vegetables (x 4)				
Monthly expenses on Education				
Monthly expenses on Doctor/Medicine				

1 Please mention unit of measurement, when appropriate.

2 If paddy is obtained from own field, then please mention the current market price of that variety and the amount used for self-consumption during last one month.

3. Activities of the Earning Members over Last 6 Months (Use Code [3])

1Id Code and earning activities of family members over the past 6 months		2. Did you do this work in this village? [YES...1 ; NO…2]
Id Code	Activity Code	

[3]Activities	Codes
Own farm activities	1
Casual labour (farm and non-farm	2
Long term agri. employee	3
Salaried employment	4
Personal (*jajmani*) services	5
Petty business/trade/manufacturing	6
Major business/trade/ manufacturing	7
Collection/foraging	8
Charity/alms	9

Activities	Codes
Interest income, property, land rentals, etc	10
Public transfers/pensions	11
Private transfers/remittances	12
Fishery	13
Prawn fry collection	14
Honey collection from forest	15
Boat man [any sort of boat	16
Cycle-van puller	17
Other (please mention	18

4. During the past ONE month, have you received / paid anything in kind / money as gifts from/to any person who is not a member of your household? (Please put √)

YES.....1	NO..... 2

1. Transfer Item number	2. Id Code of the recipient/ Donor	3. Whether Received/ Donated [Put code: Received....1 Donated…2]	4. what is the Donor/ recipient's relationship with head of the household? [Use relationship codes in the footnote[1]] Mention briefly for code 10	5. how much in total did you receive from/ donated to? [Rs.] (Use money value, as perceived by recipient/ donor if the transfer is in kind)
01				
02				
03				

1 Relationship codes : Relationship to head of household [Codes are in conformity with that of section 0.3 in first round survey. Codes 1 and 2 should not appear]

HEAD 1
SPOUSE OF HEAD 2
SON / DAUGHTER 3
SPOUSE OF SON/DAUGHTER 4
GRANDCHILD 5
FATHER /MOTHER 6
BROTHER /SISTER 7
FATHER/MOTHER-IN-LAW 8
BROTHER /SISTER-IN-LAW 9
CHARITABLE TRUSTS/ NGOs/EMPLOYER /VILLAGE NEIGHBOUR/ OTHER 10

5. During the last six months, have you undertaken cultivation of any crop? (Please put√) If 'YES'

(a) Crop details:

1. List of the crops that the household cultivated during the past SIX months [Please use crop code given below[1]] For each crop, ask Q 2,3,4		2. How much land[2] did you cultivate under this crop?	3. Did you sell any part of the produce?	4. Value of sales (Rs.) [If sold]
Name of crop	Code		YES..... 1 NO 2	
		….....Bigha ……...Katha ….....Bigha ……...Katha ….....Bigha ……...Katha ….....Bigha ……...Katha ….....Bigha ……...Katha ….....Bigha ……...Katha		

5 (b): Cost of Cultivation [for all crops in the last SIX months]:

Total Labour Cost		Rs.
Cost of seeds		Rs.
Cost of pump hiring /irrigation		Rs.
Fertilizers	Urea	Rs.
	Phosphate	Rs.
	Potash	Rs.
	Pesticides	Rs.

[1] Crop Codes

Name of crop	Code	Name of crop	Code
Rice	1	Other Vegetables	6
Pulses	2	Prawn	7
Potato	3	All other fishes	8
Tomato	4	Any other (please mention)	9
Chille	5		

[2] Land cultivated = own land + leased-in land – leased-out land

HH EXPENDITURE SURVEY
Appendix TO 2ND ROUND for village Pakhiralay
(Tourism-related questions)

A1. Do you derive any direct economic benefit from tourists?

YES: 1	NO: 2

A1.1. (If "YES") What type of works do you and/or the members of your family perform as tourist service provider/s? ***[Please fill up the following table]***

Id Code of family member	Service to Tourists (put code[1] codes) [Mention briefly if code=14]	For how many days in a year you provide such services[2]?	Actual income/ profit in last month (January), if any [as perceived by the respondent] (in Rs)

---

* Service *Code*

Service	Code	Service	Code
As owner of a boat carrying tourists	1	As a fish/vegetable/ fruit/honey vendor in Pakhiralay	8
As a boat driver/helper of tourist boats	2	As a owner of a phone booth in Pakhiralay	9
As a tourist lodge owner	3	As one supplying drinking water in tourist boats/launches and hot water to Lodges	10
By renting out own dwelling rooms for tourists (during peak season)	4	As a professional cook during tourist season	11
As a permanent employee of a tourist hotel/lodge (like manager drawing monthly salary)	5	As a Forest guide	12
As a temporary employee of a tourist lodge drawing daily wage (e.g., cooking, cleaning rooms and utensils washing clothes, etc.)	6	As a van-puller	13
Running a tea/food shop in Pakhiralay	7	Any other(please briefly describe)	14

[2] For those (like shop owners) whose services are provided year-round even for the locals, please enter the number of days the respondent considers significantly remunerative from tourism.

[For the rest of the questions, please Put √ in relevant boxes]

A2. Do you think there is scope for developing tourism in Sundarbans?

YES: 1	NO: 2

A2.1: If "Yes", what should be done? (Please put √ for 3 most important requirements)

Develop and improve communication from Kolkata (transport)	
Develop more accommodation facilities (at existing price)	
Develop more low priced accommodation facilities	
Develop marketing (opening more booking offices)	
Provide all time electricity	
Increase number of watch towers in the forest	
Permit tourists to go deep into the forest	
Disseminate more information about the Sundarbans (by Govt)	
Regulate rowdy and noisy tourist groups	

A3: Tourism is responsible for increasing the land prices in Pakhiralay. Do you agree?

1	2	3	4	5
Strong "No"	"No"	Indifferent	"Yes"	Strong "Yes"

A3.1. If agreed, do you think the effect of such increase in land price is good for locals?

1	2	3	4	5
Strong "No"	"No"	Indifferent	"Yes"	Strong "Yes"

A3.2: Do you have plan to sell your land (if any) to outside investors in near future?

YES	NO

A3.3: Do you have plan to venture into tourism-related activity/business in future?

YES	NO

A3.4: If "Yes", why are you not doing it immediately? (please record the comments briefly) ***[like lack of financial assistance, lack of experience, restriction from Govt. Departments, etc.]***

A4: There is improvement in telecommunication facilities due to tourism in Pakhiralay. Do you think you are benefiting from it?

1	2	3	4	5
Strong "No"	"No"	Indifferent	"Yes"	Strong "Yes"

A5: Do you think you have benefited from improvement in road conditions/ferry services due to tourism in Pakhiralay?

1	2	3	4	5
Strong "No"	"No"	Indifferent	"Yes"	Strong "Yes"

A6: Tourists roaming in streets, and boats/launches carrying them, may lead to congestion in the roads/ferry jetty. This may make local commuters' journey uncomfortable. As a local commuter, do you think it is a problem?

1	2	3	4	5
Strong "No"	"No"	Indifferent	"Yes"	Strong "Yes"

A7.1: Tourism may be responsible for increasing commodity prices in Pakhiralay compared to nearby villages. Villagers who sell their products to the tourists benefit from such increase in prices. Do you agree?

1	2	3	4	5
Strong "No"	"No"	Indifferent	"Yes"	Strong "Yes"

A7.2: Due to such increases in prices of local products, the villagers in Pakhiralay have to pay more than others. As a local villager, are you adversely affected?

1	2	3	4	5
Strong "No"	"No"	Indifferent	"Yes"	Strong "Yes"

A8: Do you think tourists' arrival in large numbers aggravate the problem of drinking water scarcity in Pakhiralay in the tourist season?

1	2	3	4	5
Strong "No"	"No"	Indifferent	"Yes"	Strong "Yes"

A9: Do you think arrival of tourists may cause serious pollution problems (land/air/ water/noise) and cause environmental degradation in Pakhiralay ?

1	2	3	4	5
Strong "No"	"No"	Indifferent	"Yes"	Strong "Yes"

A10. Do you think tourists cause disturbance to animals and birds in the Forest?

1	2	3	4	5
Strong "No"	"No"	Indifferent	"Yes"	Strong "Yes"

A11. Do you think that tourism has been able to decrease locals' forest exploitation/ dependence by providing them with alternative earning opportunities?

1	2	3	4	5
Strong "No"	"No"	Indifferent	"Yes"	Strong "Yes"

A12: Do you think that there are increasing incidences of theft, snatching, and petty crime in Pakhiralay village due to increase in tourist arrival? Do you feel more insecure in this context?

1	2	3	4	5
Strong "No"	"No"	Indifferent	"Yes"	Strong "Yes"

A13: Do you think there is improvement in your knowledge about city/outside world and about modern health/medicine facilities due to your interaction with tourists in Pakhiralay?

1	2	3	4	5
Strong “No”	"No”	Indifferent	"Yes”	Strong “Yes”

A14: Tourism may encourage the flourishing of local culture as they patronize local cultural shows. It also helps to disseminate local culture to the outside world. Are you in favour of it?

1	2	3	4	5
Strong “No”	"No”	Indifferent	"Yes”	Strong “Yes”

A15: Tourists’ dress codes, aggressive behaviour and language, different taste and culture may influence the local youth and may also affect the privacy of a village home. Do you experience such adverse impacts in Pakhiralay?

1	2	3	4	5
Strong “No”	"No”	Indifferent	"Yes”	Strong “Yes”

A16: Tourism has provided earning opportunity unequally among the villagers in Pakhiralay. This has increased economic inequality among villagers. Do you agree?

1	2	3	4	5
Strong “No”	"No”	Indifferent	"Yes”	Strong “Yes”

A17: The economic inequality that has possibly resulted from tourism-money has affected the social fraternity and mutual faith/honour among villagers in Pakhiralay. Do you agree?

1	2	3	4	5
Strong “No”	"No”	Indifferent	"Yes”	Strong “Yes”

A18. Any other comment regarding tourism in Pakhiralay:
