

**EMPLOYMENT DIVERSIFICATION IN ECOLOGICALLY  
FRAGILE REGIONS:  
THE CASE OF SUNDARBANS IN WEST BENGAL**

**EMPLOYMENT DIVERSIFICATION IN ECOLOGICALLY**

**FRAGILE REGIONS:**

**THE CASE OF SUNDARBANS IN WEST BENGAL**

*Dissertation submitted in partial fulfillment of the requirements for the  
degree of Master of Philosophy in Applied Economics of the Jawaharlal  
Nehru University, New Delhi*

**Jyotirmoy Sircar**

**M. Phil Programme in Applied Economics**

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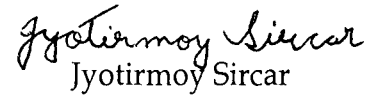
Centre for Development Studies

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June, 2011

I hereby affirm that the work for the dissertation "*Employment Diversification In Ecologically Fragile Regions: The Case Of Sundarbans In West Bengal*" being submitted as a part of the requirements of the M. Phil Programme in Applied Economics of the Jawaharlal Nehru University was carried out entirely by myself. I also affirm that it was not part of any other programme of study and has not been submitted to any other university for the award of any degree.

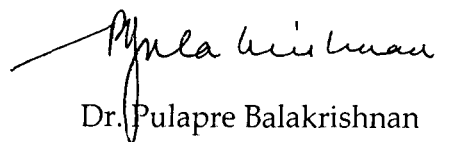
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*Certified that this study is the bona fide work of JyotirmoySircar, carried out under our supervision at the Centre for Development Studies.*

  
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## CONTENTS

	Title	Page No.
	List of Tables	vii
	List of Figures	viii
<b>Chapter 1</b>	<b>Introduction</b>	<b>1-19</b>
	1.1 Motivation	1
	1.2 Review of Literature	2
	1.3 The Research Objective	9
	1.4 The Context of the Problem	10
	1.5 Objectives of the Study:	11
	1.6 The Analytical Framework:	11
	1.7 Methodology	18
	1.8 Structure of the Dissertation	19
<b>Chapter 2</b>	<b>The Ecology and the Socioeconomy of Sundarbans</b>	<b>20-34</b>
	2.1 Introduction	20
	2.2 The Fragile Ecology of Sundarbans	22
	2.3 The Fragile Socio-economy of Sundarbans	27
<b>Chapter 3</b>	<b>Land, History and Development</b>	<b>35-63</b>
	3.1 Introduction	35
	3.2 The Period of Constrained Revenue Maximization (1770-1828)	36
	3.3 The Period of (relatively) Unconstrained Revenue Maximization I (1828-1878)	38
	3.4 The Period of (relatively) Unconstrained Revenue Maximization II (1878-1915)	40
	3.5 The Socioeconomic Force of Forest Conservation	42
	3.6 Development Paradigms and “Waste”	46
	3.7 The Socioeconomic Hierarchies of Land	51
	3.8 Case Studies	55
	3.9 Land and its Hysteresis	60
<b>Chapter 4</b>	<b>Employment Diversification in Three Villages of Sundarbans</b>	<b>64-107</b>
	4.1 Introduction	64
	4.2 Rural Livelihood Diversification	64
	4.3 Employment Diversification	66
	4.4 Block Level Information	68
	4.5 Survey Methodology	73
	4.6 Village Level Analysis	75
	4.7 Inter Village Analysis	75
	4.8 Employment Diversification and the Hysteresis of Land	107
<b>Chapter 5</b>	<b>Conclusion</b>	<b>108-114</b>
	5.1 Abstracting the Research Findings	110
	5.2 Making a Case for Ecological Economics	111
	5.3 Making a Case for Localized Research	112
	5.4 The Way Forward	113
	<b>Bibliography</b>	<b>108-115</b>
<i>Appendix I</i>	Socioeconomic Impact of Cyclone Aila	<b>116</b>
<i>Appendix II</i>	Education Status of Labor Force in the three Villages of Sundarbans	<b>117-118</b>
<i>Appendix III</i>	Field Survey Questionnaire	<b>119 -126</b>

## ABSTRACT OF THE DISSERTATION

### EMPLOYMENT DIVERSIFICATION IN ECOLOGICALLY FRAGILE REGIONS: THE CASE OF SUNDARBANS IN WEST BENGAL

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The fragility of the ecology of a region has a direct impact on its economy and vice versa. Many of these regions which have a unique history, nature and landscape are home to a significant population of humans who in turn have deep social, cultural and economic ties with the complex and fragile ecosystems. The Sundarbans which is considered to be a unique mangrove and complex ecosystem due to its specific physiography, hydrology and biodiversity is one such region. However this uniqueness and complexity of this mangrove ecosystem also gives rise to two important aspects: a revenue maximising colonial land reclamation history and immense fragility. This land reclamation history has given rise to a socioeconomic hierarchy of land in terms of its geographical location. The hierarchy had its genesis through the creation of a "hysteresis" of the effects of colonial land tenure and forest conservation policies in the Sundarbans. A comparison of the socioeconomic profile of three villages in Sundarbans reveals that Ramganga which is nearer to the urban and semi urban markets is much better off than the other two villages. Interestingly Ramganga also has the highest proportion of general caste Hindus. On the other hand Herambogopalpur has a significant share of scheduled castes and Muslims whereas Kumirmari is completely dominated by scheduled castes. This spatial organisation of sundarbans society can be attributed to the land reclamation history of the region. The traditional livelihoods like agriculture, fishing and forestry are limited by the fragile ecology of the region. Given the high saline content of the soil and, also the fact that, most of the region is monocropped translates into the people seeking other avenues of income via employment diversification. The lack of any industrial establishment due to abysmal infrastructural facilities and its remoteness from markets has resulted in lack of employment diversification options within Sundarbans. Hence the employment diversification of the three villages occurs chiefly via the avenue of interstate and intrastate migration. However the rates of migration and casualisation of labor vary across the three villages with the locationally best off village (Ramganga) having the lowest rates. Moreover in all the villages those households which have diversified are found to be economically better off than those households which have not.

## LIST OF TABLES

Table No.	Title	Page No.
2.1	Block-wise population of Sundarbans in terms of Social Groups (2001 Census)	28
2.2	Block-wise literacy rate in Sundarbans in (%) (2001 Census)	29
2.3	Blockwise Human Development Indices for Sundarbans (South 24 Parganas)	30
2.4	Blockwise Human Development Indices for Sundarbans (North 24 Parganas)	31
2.5	Blockwise Infrastructural and Banking Facilities in Sundarbans (South 24 Parganas)	33
3.1	Comparison of Colonial Land Reclamation Rules in I phase	39
3.2	Comparison of Colonial Land Reclamation Rules in II phase	41
3.3	District wise Area of Protected Forest	43
3.4	Land Tenure System in Bangladesh Sundarbans	52
4.1	Block-wise percentage of total workers by gender in Sundarbans	69
4.2	Block -wise distribution of total workers by occupation in Sundarbans	70
4.3	Livelihood Patterns of Rural Households at Block Level in Sundarbans	71
4.4	Socioeconomic condition of the three villages (%)	78
4.5	Socioeconomic Parameters (%)	79
4.6	Demographic Profile (%)	79
4.7	Educational Qualification of Economically Active Population (EAP) in %	80
4.8	Social Composition of the Three Villages (%)	82
4.9	Caste at the Disaggregated Level (%)	82
4.10	Age wise LFPR (%)	84
4.11	Age wise WPR and Unemployment Rates (%)	85
4.12	Aggregate LFPR, WPR and Unemployment Rates (%)	86
4.13	Employment by Industry in 2010 (%)	88
4.14	Employment by Occupation in 2010 (%)	89
4.15	No. of Workers Migrating for the First Time Both Within and Outside West Bengal	91
4.16	Annual Growth Rate of Migrant Workers	92
4.17	No of Working days for migrant workers in 2010 (WB)	94
4.18	Migration Location Within West Bengal	95
4.19	No of Working days for migrant workers outside West Bengal in 2010	97
4.20	Migration Location Outside Bengal in 2010	98
4.21	Migration by Industry in 2010	99
4.23	Migration by Occupation in 2010	101
4.24	Percentage of Females in Migrant Work Force	102
4.25	Occupational Distribution of Total Females (%)	103
4.26	Occupation of Subsidiary female labor force	103
4.27	Variations in Average Annual Household (HH) Income in Rupees	105
4.28	Income Slab wise Distribution of Households (%)	106
A1	Impact of Cyclone Aila	116
A2.1	Educational Qualification of Labor Force (UPS)	117
A2.2	Educational Qualification of Labor Force (UPSS)	118

## LIST OF FIGURES

Figure No.	Title	Page No.
2.1	Map of Sunderbans	21
2.2	Geography of Sundarbans	23
3.1	Gross Revenues of Forest Department	44
3.2	Gross Revenues of Forest Department from 1910-11 to 1929-30	45

# Chapter 1

## Introduction

### 1.1 Motivation

The ecology of a region has a direct impact on its economy and vice versa. In case of fragile ecosystems the impacts are more pronounced which more often than not experience a high level of underdevelopment. Many of these regions which have a unique history, nature and landscape are home to a significant population of humans who in turn have deep social, cultural and economic ties with the complex and fragile ecosystems. However standard notions of poverty alleviation and interventionist development policies, often thrust down on these regions, may not bring the desired results due to the geographical and socio-cultural specificities of those regions.

The Sundarbans is remote and largely isolated. Although it is globally renowned as a unique ecosystem it is ironically one of the most backward regions of India. The Sundarbans has a population of nearly four million people of whom 56 percent are landless. Most of the villages still do not have access to electricity or safe drinking water and agricultural productivity is lower than the state average. Inadequate infrastructure, poor communication facilities, lack of access to health and education services and a fragile and limited natural resource base have contributed to a low level of development and high poverty incidence in the region. The productive and absorptive capacity of the agricultural sector is extremely low in the region. Moreover as the majority of the mangrove forests are protected accessing them for forestry and fishing activities is highly regulated and restricted. There is a dearth of employment opportunities in the traditional economic sectors of the region. On the other hand modern services such as tourism and brackish water shrimp farming have been gaining popularity since the late eighties. However the absorptive capacity of these sectors in Sundarbans is quite limited. The standard models of rural development successfully executed elsewhere however have been quite unsuccessful in Sundarbans due to problems specific to this region with special geo-climatic characteristics.

In Sundarbans poverty seems to be highly correlated with lack of employment opportunities and diversification options. Hence the issue of employment diversification in Sundarbans is quite a critical one to look into. An examination of employment diversification requires a nuanced view of the geographic, socioeconomic and historical understanding of the region. Hence the need for this study.

## **1.2 Review of Literature**

This section is divided into four parts: it starts with a brief discussion of livelihoods in mangroves in South Asia and moves to issues in the livelihoods of people living in and around protected forests. This is followed by an examination of land and livelihoods and finally literature available on livelihood issues in Sundarbans is discussed.

### **1.2.1 Mangroves in South Asia**

More than 41 percent of the world's mangroves occur in South and Southeast Asia of which Indonesia alone accounts for 23 percent (Rahman, 2007). Although tropical mangroves are the most diverse and dynamic ecosystems (Saenger et al. 1983) and their importance has been emphasised for their unique ecological, economic and protective functions. The Southeast Asian mangroves are the least studied. Southeast Asian coastal areas are highly populated with poor and marginalized people (Iftekhar and Islam 2004). Similarly, Biswas and Choudhury (2009) point out that these coastal people depend heavily on mangroves for their livelihood and this dependency leads people become a major determinant of the state of mangrove forests, often, by suppressing natural processes. Although controversy continues to exist in the debate of whether the mangrove belt can provide total protection, there is no controversy over the significant role of mangroves as a barrier against natural disasters such as tsunamis and tidal surges (Kathiresan and Rajendran 2006). The majority of the poor in these areas depend upon agriculture and harvesting of natural products from forests, and fish and shellfish from accessible waters. (Samarakoon, 2004) points out that overexploitation of shrimp juveniles and brood shrimp which are in demand for aquaculture is an increasingly serious problem for mangroves

located in South Asia.<sup>1</sup> The absence of 'global markets' in the benefit of mangrove preservation and restoration in developing countries results in these global values not being captured by the host country in general and local users in particular (Bhattacharya et al, 2005). Given such a situation, it is indeed not surprising that most of the mangrove restoration efforts have met with limited success (Aksornkoae 1996; Bacon 1987, 1993; Bandaranayake 1998). The increasing rate of mangrove degradation (Duke et al. 2007) and lack of significant success in the scattered mangrove restoration programmes (Lewis 2000) are exposing tropical coastal communities to increasing vulnerability. The effect of intensive human intervention, poor socio-economic conditions and little knowledge on mangrove ecology pose enormous challenges for mangrove restoration in Southeast Asia. Biswas et al (2009) are of the opinion that unwanted human disturbance can be minimized by encouraging community participation. This can be ensured and sustained by facilitating the livelihood of the coastal community.

### **1.2.2 Protected Forests and Livelihoods**

The establishment of protected forest areas can place restrictions on the use of resources within large areas of forest that had been freely available to local and indigenous communities. This can increase poverty and marginalization, resulting in lost livelihoods and dislocation of communities (Pimbert and Pretty, 1995), raising ethical moral, and practical questions regarding protected area management (Kaimowitz, 2003; Salafsky and Wollenberg, 2000). The users of forest products include forest dwellers, nearby farmers, commercial users (including small traders, producers and employees) and the rural poor. Non-timber Forest Produce (NTFPs) and animal protein are all used by the rural poor for subsistence, and also as a source of income and employment (Angelsen and Wunder, 2003). Depending on circumstances, forest products may offer both a 'daily net' and a 'safety net'. The 'daily net' describes everyday use, with products meeting current household needs, offering a reliable source of income to purchase agricultural inputs (Shackleton and Shackleton, 2004), or fodder for

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<sup>1</sup> A strong link appears to exist between the complete loss of mangroves to shrimp farming in the Chakaria Sunderbans in the Cox's Bazaar area of Bangladesh and loss of livelihood from shrimp seed collectors.

livestock herds. A 'safety net' comes into play when other sources of household income (e.g. plantations) fail to meet dietary shortfalls, or whenever a quick cash option is required (McSweeney, 2003).

Non Timber Forest Produce (NTFPs) are often open-access resources which require little processing or the use of low cost (often traditional) techniques. An overview of case studies indicates that forest products contribute between 20percent and 40percent of total household income in forest areas, and that poor households tend to be disproportionately dependent on forest resources (especially fuel wood and fodder) (Vedeld *et al.*, 2007). Although NTFP sales often supplement income, it has been suggested that the same open-access characteristics that make them available to poor households in the first place make them poor candidates for poverty reduction schemes (Arnold & Perez, 2001; Belcher, 2005). Access to restrictions on forest products can often result in an increased dependence on employment or commercial activities such as intensive agriculture, shifting communities towards a dependence on market economies.

In providing a diversified income stream and resource base that can be relied upon in times of stress, forests can contribute to poverty reduction. However, an abundance of natural resources has long been associated with limited economic growth and development, with marginalized communities having little access to markets or other income streams, and often suffering growing restrictions on the use of their natural capital. Whilst the potential for forests to contribute to poverty reduction is often doubted (Angelsen & Wunder, 2003; USAID, 2006), forest resources have traditionally supported the subsistence of indigenous peoples. Forests can also contribute to well-being through ecosystem services such as flood and erosion control. Finally, where there is local control over forests, the option remains to clear them for other uses, such as farmland (Anderson *et al.*, 2006).

Local livelihoods may be enhanced by diversifying sources of assets, or switching livelihood strategies to a singular but rewarding activity (Twyman, 2001). Diversification entails opening up the correct assembly of opportunities for a specific community (Salafsky & Wollenberg, 2000), which can be challenging to



achieve. However, the direct benefits to local livelihoods depend upon protected area management strategies: the inclusion or exclusion of those local communities and their livelihood activities, or the sharing of protected area benefits with surrounding communities. Coad et al (2008) posit that the extent to which the benefits from protected areas are realised by local communities is greatly influenced by the wider political and economic climate. The provision of these benefits to local communities is again largely dependent upon the mechanisms in place for benefit-sharing through management structures, community involvement in governance or clearly allocated property rights. The costs of protected areas can include: displacement of local communities, changes in traditional land tenure, denied or restricted access to resources, loss of employment, crop damage and livestock predation. Protected area management can provide direct benefits to communities; but can also restrict access to resources, alter local power structures, and change social/traditional values and behaviors.

### **1.2.3 Land and Livelihoods**

Land not only has inherent value, it creates value. Hanstad et al (2004) point out that a plot of land provides a household with physical, financial, and nutritional security, and provides laborers with a source of wages. Land is a basis for identity and status within a family and community. Land can also be the foundation for political power. Within the Sustainable Livelihood Framework land has multiple roles (Chambers and Conway, 1992). Secure access to land can be a livelihoods objective. Land is also a natural asset through which other livelihood objectives, such as gender equality and sustainable use of resources, may be achieved. In addition, land can be a route or opportunity through which a multitude of other assets become accessible. The sustainable livelihoods approach also recognizes that policies, institutions, and processes influence access to and use of assets, which ultimately impacts livelihoods (Carney, 1998). Land laws, policies, and land reform distribution processes may impact whether the family has a plot large enough to maintain a decent income and whether it is able to add to its land holding (Ellickson, 1993). One of the stated objectives of Sustainable Livelihood Framework is to ensure more secure access to, and better

management of, land (DFID, 2005). Land is a natural asset central to rural livelihoods. Land is a natural asset subject to vulnerability factors such as environmental change, political upheavals, and conflict. Hanstad et al (2004) argue that land is natural asset filtered through policies, institutions, and processes (land laws and policies, dispute resolution systems, self-help groups, intra-household relations, credit markets, extension services). Land rights create a basis to access other poverty-alleviating assets/livelihood outcomes in diverse areas such as health, food security, finance, housing etc.

The land use practices and livelihood strategies adopted by poor rural people are influenced by the amount and productive potential of land available, tenure security, customary uses, and access to labour, labour-saving technologies, co-operative social institutions, capital, livestock, knowledge/ skills and markets for inputs and outputs (Andrew et al, 2003). As indicated in Shackleton et al. (2001) the benefits that rural households in existing communal areas derive from crop and livestock production and natural resources are significant, and much greater than previously thought in academic and government circles. Andrew et al (2003) further argue that farming is one of a package of livelihood strategies adopted by poor rural people. Even well off rural households investing in commercial farming still rely on earnings from off-farm sources to supplement household income and generate capital to invest in farming. The increasing reliance on diverse livelihood strategies has been recognised as an essential risk-minimizing strategy by rural households. As depending on farming alone is a very risky business due to the vagaries of the weather and the volatility of agricultural markets.

The evolving literature on land use change details how and why humans have altered their environments while livelihood studies tend to focus on the material ways in which people produce and reproduce their household economies. Both types of inquiry seek to understand the relationship between nature and society through divergent means, and divergent sets of data. The livelihoods literature recognizes the impact of livelihoods choices on land use outcomes, and the constraints of existing land uses on such decisions (Low, 1989; Carney, 1998; Orr and Mwale, 2001). Generally speaking, as livelihoods diversify

the reliance on natural resources shifts and becomes decreasingly reliant on solely agricultural activities (Bryceson, 1997), which alters land use. Cusker and Carr (2005) posit that livelihoods are not only the circulation of various resources, commonly labeled as forms of “capital”, but also the means by which social roles are constituted and power circulated. Land use is reflective of a power-laden ordering of the world, where the appropriate crops, labor, land area and intensity for a given context are not only agricultural/biophysical facts, but important forms of knowledge that rest upon and produce relations of power in local contexts. In a nutshell livelihoods and land use are divergent manifestations of various social processes through which people negotiate the challenges facing their everyday lives. A better explanation of the social processes at the center of the relationship between land use and livelihoods has to be interpreted in the context that livelihood and land use changes are “co-produced”, where shifts in one are reflexive of shifts in the other (Cusker and Carr, 2005).

#### **1.2.4 Livelihoods in Sundarbans**

Vulnerabilities in the livelihoods of rural communities in the Bangladesh Sundarbans are increasing due to decline in agricultural production, income and natural sources of food (Swapan, 2006). This has led to employment diversification to the shrimp cultivation but ironically the net economic benefits from shrimp farming was even less and was actually contributing to augmentation of poverty. Kabir and Hussain (2007) argue that the Bangladesh Sundarbans suffers from the chronic problem of overexploitation of natural resources which in turn can be attributed as fallout of weak governance. They point out that more than half of the resource users are landless who suffer from off season vulnerability. Moreover the resource users came under the attack of wild animals for which the victim or victim’s families do not get any compensation. The authors also focus on shrimp farming and shrimp fry collection which they point out is a serious threat to the mangrove and livelihood of the people. Chowdhury (2010) describes an example from Sonakhali in Sundarbans, Bangladesh, of a community in living in a balance with a surrounding mangrove forest, upon which it depends for subsistence and livelihoods. Their typical occupations are fisheries, farming, labour, trade and

services, with half of the households depending mainly on the mangrove resources for their livelihoods, and the remaining ones to some extent. Rahman (2007) points out the need for several development initiatives in pursuit of sustainable resource utilization and an overruling need of poverty alleviation in order to assure a win-win situation rather than a development where both the mangrove forest and its communities stand to lose.

Since 1947 the Sundarban mangroves are divided between India and Bangladesh as Sundarban in Bangladesh and as Sundarban National Park in India, and the two parts differ considerably in the nature and extent of investigations, conservation and management (Rahman, 2007). Hence studying the Sundarbans as a whole is extremely difficult. Singh et al (2010) are of the opinion that although the ecological significance of Sundarbans is a well-established fact, the economic significance and the dependency of this economic significance on the ecology of Sundarbans are less addressed due to which the mangroves are facing greater threats. The degradation of mangrove forests and encroachments in Sundarbans are shrinking the resources on which the local populaces are so heavily dependent. Bhattacharya et al (2005) found that people dependent on forests resources and non-forest resources switch to farming or agricultural activities during the off-season which shows that unless farming becomes more rewarding, it would be difficult to reduce pressure on forest and non-forest resources of Sundarbans. The results of their primary survey based study indicated that in areas with dense forests twenty three to fifty per cent people remain involved in jobs related to timbers from 9 to 12 months, the rest switching to other professions.

Though there are no human settlements within the mangrove forests, communities living in the fringe areas depend on the resources in the mangrove forests for their livelihoods. This livelihood dependence needs to be seen in the context of few livelihood options, poor access to even basic services, lack of opportunity to develop skill sets that could enable them to diversify their livelihoods in any sustainable way (Patel and Rajagopalan, 2009). They further point out that this region is concentrated mainly with backward classes, which accounts for more than 45 percent of the total population as against the state

figure of around 25 percent, who are dependent of various types of forest and non forest based NTIPs for their livelihood. This is mainly due to the aggrieved salinity of the soil, which prevents agricultural crops to grow (Singh et al, 2010). Fishing is a major source of livelihood for communities living in the fringe area of the Reserve Forests and the Sundarban Tiger Reserve (STR). Around 2,069 sq km inside the Reserve Forest are considered ideal for riverine fishing using traditional methods (Nanda, K., in Mukherjee, 2007). Singh et al (2010) specifically propose that alternate livelihood options (both in the fishery and outside it) should be explored, based on proposals from fishing communities in the Sundarbans which would help in developing their skills and also in reducing pressure on natural resources in the longer term. Danda (2007) shows that employment opportunities in the Sundarbans exist primarily in agriculture, aquaculture, fishing and in tourism to a certain extent.

Guha and Ghosh (2007) examined the contribution of tourism towards improving the livelihoods of local people in a remote island village of the Indian Sundarbans. They found that although no village household subsists entirely on tourism-based income since such jobs are seasonal in nature the households participating in tourism-related activity are better off than those who do not. There was, however, little evidence of any percolation of tourism-related income to non-participating households through intra-village transactions. It must be mentioned that the tourism industry thrives only in particular pockets of the Sundarbans which are adjacent to the wildlife sanctuaries.

### **1.3 The Research Objective**

It is interesting to note that while there is a deluge of literature on the ecological aspects of the Sundarbans these studies hardly make any mention of the fact there also exists a substantial human population in the Sundarbans. Barring a few ethnographic studies (Jalais, 2009 & Danda, 2007) and one historical study (Sarkar, 2010) there have been hardly any studies, in the last decade or so, on Sundarbans which focus exclusively on the people living there. A similar trend can also be seen in the preceding decades as well.<sup>2</sup> The reason as

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<sup>2</sup> The reference is being made to the Indian part of the Sundarbans.

to why it is equally important to focus on the human population residing in the Sundarbans for more than 150 years can be simply put as follows: It is a huge mistake to look at the ecosystem dynamics of the Sundarbans without taking into consideration the formidable impact the human society settled in the Sundarbans has on it (and vice versa) if the ultimate aim of all the research is to foster sustainable development. Just as it is wrong to ignore ecosystem dynamics while looking at issues of development it is equally wrong to just focus on the ecosystem dynamics and completely ignore the anthropogenic factors. While there have been a few studies regarding livelihoods of the people in Sundarbans there have been no academic inquiries regarding employment diversification in Sundarbans. If the various aspects of livelihoods of the people of Sundarbans are to be better understood it is imperative that the employment diversification of these people is analysed as well.

#### **1.4 The Context of the Problem**

The Sundarbans in West Bengal is one of the most backward regions in India. Inadequate infrastructure, poor communication facilities, lack of access to clean drinking water, health, education services and a fragile and limited natural resource base have contributed to a low level of development and high poverty incidence in the region.

The traditional livelihoods are limited by the fragile ecology of the regions and they include agriculture, aquaculture, forestry and fishery. On the other hand modern services such as 'tourism' and 'brackish water shrimp farming' have been gaining popularity since the late eighties. The livelihood choices are largely influenced by the ownership of land in the region. Further land being not only an economic asset but also a social asset in such a constricted economic space takes centre stage in livelihood decision making. Although the quantity or quality of land does matter what is of foremost concern is the geographical location of land, as land which is near the mainland areas away from the forest and the rivers is seen to be a mark of social status and upward mobility, as compared to land adjacent to the forests, which is deemed to be socially inferior.

However, with the coming of the ecological, environmental and wildlife conservation perspective some of the traditional as well as modern livelihood opportunities are shrinking. This has affected adversely the employment diversification options of a population which was already constrained by the fragile ecology of the region. In this perspective it would be important to understand the trends and patterns of employment diversification of the people in the Sundarbans which in turn has a strong impact on their livelihoods.

### **1.5 Objectives of the Study:**

The proposed objectives of the study are:

- 1) To examine the process of land reclamation and the subsequent creation of "labor force" and the forest conservation movement in the Sundarbans in the colonial era from a socioeconomic perspective.
- 2) To locate and analyse the peculiar socioeconomic characteristics associated with land in the Sundarbans due to the processes of land reclamation and forest conservation. Further the issue of bypassing of land reforms in Sundarbans is also brought to light via small case studies. This will be used alongwith colonial history to unravel the peculiar socioeconomic characteristics of land there.
- 3) To examine the trends and pattern of employment diversification of the people living in Sundarbans in the context of these peculiar socioeconomic characteristics of land.

### **1.6 The Analytical Framework:**

The triad of ecology, economy and community are inter-related and indispensable aspects of sustainable development. They are the three basic requisites of a relationship which has to be met for attainment of sustainable development. Interestingly both economics and ecology derive from a common etymological root. The former comprises of two roots "okios" and "nomos" which mean "household" and "management" while the later comprises of "okios" and "logos" which mean "home (of species)" and "reason".<sup>3</sup> The World

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<sup>3</sup> See Herring, 1991 and Babson, 2006.

Commission on Environment and Development, 1987 defines sustainable development as development which “meets the needs of the present without compromising the ability of the future generations to meet their own needs”. However even if we leave aside the issue of intergenerational equity and justice it can be clearly seen that ecological concerns all too often conflict with economic interests and community needs such as food, income and waste disposal. Community needs affecting any ecosystem are again of two types namely the needs of the people living near one ecological system (generally a small one and socioeconomically worse off) and the needs of the people who are situated far from it (generally the larger one and socioeconomically better-off). These two types of community needs are rarely harmonious throughout long periods and often become antagonistic at times (Herring, 1991). The former tries to look at the interests of both the ecosystem and the community residing within/beside it whereas the latter focuses exclusively on the ecosystem often to the detriment of the community residing near the ecosystem at large.

An ecological system creates both actual and perceived barriers via social, political, and economic dynamics to sustainable development to which human societies adapt in either planned or unplanned ways, or struggle with. In all cases, the capacities of small communities to conserve their local ecosystems for sustainable development become a bounded function of changes in population level (Jodha, 1985). Unless the ecology can accommodate such population level changes, pressure on local norms of conservation increase gradually. Singh (1976) points out that as we move from conservation of usable resources to preservation of an ecosystem, the boundary conditions become even more stringent and if the ecosystem under consideration is fragile then the stringent boundary conditions can almost choke off any livelihood options deemed sustainable by both local and global authorities.<sup>4</sup> This can lead to adverse socioeconomic and political results if the boundary conditions are not violated but if they are violated, which is indeed the case in most times, then there are adverse effects on the ecosystem

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<sup>4</sup> Preservation of a fragile ecosystem would invariably lead to situation where humans are pitted against nature and can sometimes result in complete loss of livelihoods for those totally dependent on the ecosystem. This happened in the case of Yellow Stone Park in America.



itself.<sup>5</sup> However the story does not end here. If the boundary conditions are respected by both the local and the global community then positive feedback loops are created but whether these positive feedbacks are appropriated by the local or the global community remains eminently debatable (Townsend, 1992). Logically though these positive feedbacks are more beneficial to the global community simply because they don't have to make socioeconomic and sometimes political sacrifices of the same magnitude as that of the local community. On the other hand if the boundary conditions are violated (which used to be the case more often than not until the last two decades or so) adverse ecological effects are generated which in turn create a negative feedback loop which now hits back at the economy itself and ironically affects the socio-politico-economy of the local community at a much greater force<sup>6</sup>. One must add that repercussions are also felt at the global level as well but not of the same magnitude when looked at isolation. Rather in case of the global community, the combined effects of all such "boundary violations" results in a negative feedback loop which in turn affects the global economy and the global ecosystem.

This problem rears its ugly head all the more if the ecosystem in consideration is a fragile one. By fragility of an ecosystem is meant the inherent complexity embedded within the ecosystem which makes it impossible to predict or control the course of its development in terms of regeneration/degeneration (Baggethun et al, 2009). The fragility of the ecology of a region has a direct impact on its economy and vice versa. The reason as to why the economies of ecologically fragile regions are important is the fact that these regions which have a unique history, nature and landscape are more often than not home to a significant population of humans who in turn have deep social, cultural and economic ties with the complex and fragile ecosystems. It must be added that these significant population of humans are generally worse off socioeconomically

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<sup>5</sup> Local communities may not recognize or value ecosystem preservation when their benefits accrue at the regional, national and global scales (Myers, 1996), especially given that the costs of protection are mainly incurred at the local scale (Balmford *et al.*, 2002).

<sup>6</sup> One good example of this is the constant clashes between people settled on the fringes of wildlife sanctuaries and the wildlife/ecosystem of the sanctuary itself all across Africa and South East Asia. This Human-wildlife conflict damages the relationship between local communities and protected area administration (Songorwa, 1999; Linkie *et al.*, 2007) which in turn results in more restrictions to forest access for the local communities.

when compared to their counterparts residing in relatively lesser fragile ecosystems (Agarwal, 1985). It can also be argued that there are variations within such societies in terms of amount of socioeconomic returns.<sup>7</sup> Though the poor are often seen as the greatest threat to fragile ecosystems, they are more importantly the first victims of ecosystem degradation. This is because excessive exploitation can undermine the resource availability but at the same time, due to prevailing poverty, there is an urgent need of supplementary or alternative livelihoods and income generation. The contradiction between livelihoods and preservation remains as a function of market dynamics in the existing context of skewed distribution of assets and extreme pauperization<sup>8</sup>. Though some environmentally progressive change is possible within that configuration, assuming significant alteration of political dynamics, substantial progress would require quite fundamental rethinking of the relative values of growth per se, social justice, and political democracy in the context of environmental crisis (Herring, 1991). As important, human lives are short in terms of the evolution of ecosystems; it is difficult to imagine a fit between short-term interests and intergenerational "rationality," or justice, being generated by the market (Nadkarni, 1987: 360-61 et passim). Put in simple terms there is "market failure" when it comes to allocation of resources in an equitable way in ecologically fragile regions which are more often than not also referred to as "Commons".<sup>9</sup>

Coming to the question of "Commons" one must bear in mind that there is a clear demarcation between "Commons" situated in the Developed Nations and those in the Developing and Underdeveloped Ones. This demarcation can be straightaway brought out by the fact that the "Tragedy of Commons" has been more or less completely averted in the former whereas the tragedy seems to have been brought under some notion of control in the last two decades or so in the

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<sup>7</sup> Whilst the poorer members of a community rely more heavily on forest resources, the richer households often have the main share of resource use (DFID, 2002). In a community in the Brazilian Amazon, the three richest households were responsible for 24% of the total palm fruit harvest (Coomes *et al.*, 2004). The households receiving most income from bush meat hunting in Gabon are from the richer part of the community (Coad, 2007).

<sup>8</sup> See Herring, 1991.

<sup>9</sup> It does not mean that all fragile ecosystems are "Commons". However all "Commons" are in one sense fragile ecosystems with the probable exception of pastoral lands.

latter two.<sup>10</sup> This can be directly attributed to the lesser population pressure in the developed countries as compared to the developing and underdeveloped nations. This resulted in lesser anthropogenic pressures on the fragile ecosystems in the developed nations. One must also keep in mind that this “control” over the “Commons” which is exclusively exercised by the Governments both at the National and the State level has come, at times, in the face of an enormous cost in terms of loss of livelihoods and more importantly loss of land as well as loss of access to these “Commons” by the local communities residing near them (Guha, 2001). Costs can range from displacement of local communities to crop damage by wildlife, and sometimes include restricted access to resources and changes in land tenure. Thus preservation, conservation or regeneration of the commons at all levels be it local, national or global raises complex, enduring questions of institutional political economy and social values that transcend traditional political-administrative and disciplinary boundaries (Seidensticker et al, 1991). Herring (1991) describes three types of commons situations relevant for this discussion. First, there are situations in which benefits of cooperation are foregone despite the existence of some common good that could be obtained through collective action such as rationalization of irrigation and grazing. A second situation is described as failures of collective action that result both in foregoing benefits of optimal use of resources and more critically absolute degradation of the resource in question (The Tragedy of the Commons as formulated by Hardin in 1968). Third is the situation of failure of collective action to preserve nature itself. Interestingly this first order conflict results in a second-order conflict which basically pits human use of nature against ecological imperatives. Herring (1991) opines that there is indeed a trade-off between successful collective solutions to either of the first two types of “Commons” and the third type.

If we were to analyse the “tradeoffs” between the “Commons” and the livelihoods of the community at a very concrete level then it may well suffice to look at the dynamic interactions and interlinkages between the fragile ecosystem

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<sup>10</sup> Although historically the “Tragedy of Commons” was a phenomenon associated with capitalism in general and the Industrial Revolution in particular.

or the “Commons” and the employment diversification of the community residing there. This is because livelihoods in such regions tend to be mostly shaped by the diversification options the community has in terms of employment. A fragile ecosystem creates such a constricted economic space that it is impossible for people living within/ around that ecosystem to depend on just one source of employment as that would not lead to satisfactory earnings required for leading a decent livelihood. There can be two types of employment diversification: one out of Necessity and the other out of Choice (Ellis, 2001). The former refers to involuntary and desperate reasons for diversifying. Say environmental deterioration leads to declining crop output and hence employment diversification. On the other hand the latter refers to voluntary and proactive reasons for diversifying say people migrating to seek out seasonal (higher) wage earning opportunities. Also employment diversification can be inter/intra sector and can be looked at all levels of disaggregation: individual, household, community etc. The rationale for focusing majorly on employment diversification while looking at the livelihood strategies in ecologically fragile regions is that the ecological, socioeconomic and political effects (of government policies specifically prepared for these regions which more often than not relegate the people to the background) on the community are majorly reflected through its ability to achieve increasingly higher sustainable levels of income and in such a scenario this is only possible via employment diversification. This is not to suggest that non economic factors don't play any role. On the contrary it can be argued that there are key non economic factors which do influence the income diversification options of a household that ultimately boils down to employment diversification of the individuals in that household.

In the context of employment diversification in ecologically fragile regions ownership of cultivable land is quite important. Cultivable land in such a setting becomes a major asset not as potential wealth but also as a launching pad for employment diversification by choice and also out of necessity<sup>11</sup>. Moreover in such a fragile ecosystem the employment opportunities offered by the socioeconomic and political conditions are already severely constricted and

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<sup>11</sup> No land basically entails to loss of access to one form of employment: farming on own land.

owning (a significant amount of) cultivable land provides the owner with a sense of economic and food security. However the interaction between the cultivable land and the fragile ecosystem results in both positive and negative feedback loops which in turn affect both the socioeconomic structure in general and the cultivability of the land in particular. In order to understand the finer nuances of these persistent episodes of “cause and effect” one has to incorporate and inquire into the “land-use history” of the fragile ecosystem. Modern environmental problems bear striking resemblance to those faced by past societies and that to understand the environmental present we must consider the total sweep of anthropogenic environmental change on specific landscapes (Fisher & Feinman, 2005). The history of land-use as a dynamic element that plays a key role in influencing employment diversification in ecologically fragile regions gets its rationale from the very fact that land reclamation policies, land tenure policies and land reforms (if any) not only affect the socio-economic and political setup of the prevailing era in which they were implemented but also remain embedded in the land for generations. This embeddedness can be seen via the peculiar social, political, cultural and economic characteristics land seems to possess and exhibit in these regions<sup>12</sup>. In a nutshell it can be argued that Land is at the centre of lives in India. Land has inherent value, and it creates value. A plot of land in such a socioeconomic and ecological setting can provide a household with physical, financial, and nutritional security, and provide a laborer with a source of wages. Further it is a basis for identity and status within a family and community. Land can also be the foundation for political power (Hanstad et al, 2004).

To give an actual example of the tussle between the ecology and the economy we can think of an ecologically fragile region where the traditional livelihoods are limited by the fragile ecology. The coming of ecological, environmental and wildlife conservation perspectives has resulted in the shrinking of some of the traditional opportunities. This in turn has negatively influenced the employment

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<sup>12</sup> Foster et al (2003) posit that human activity and its effects are so varied, ranging from direct physical impacts such as logging to indirect consequences such as global climate change that, although a consideration of land use legacies could be boundless, four activities that have exerted widespread impact on terrestrial and aquatic ecosystems worldwide: forestry, agriculture, modification of natural disturbance regimes (especially fire), and manipulation of animal populations.

diversification options of the population residing there which was already constrained by the fragile ecology of the region. In India the Sundarbans in West Bengal is one such fragile and complex riparian commons. The Sundarbans bridging Bangladesh and India's West Bengal has been shaped by a central dynamic of human history: the pressure to carve new livelihoods and habitats from nature.

### **1.7 Methodology**

This study has primarily employed the analytical tools from History, Labor Economics and Ecological Economics. It can be divided into interconnecting categories: one part analyses the socioeconomic history of Sundarbans from the onset of colonial rule with specific focus on the effects of land reclamation and forest conservation policies on the people of Sundarbans while the other part deals with the situation of employment diversification in three villages of Sundarbans. The former employs the analytical tools of History while the latter employs the analytical tools of Labor Economics. The connection between these two “stories” of two different eras is achieved via the tools of Ecological Economics. In a nutshell this study is a modest attempt towards interdisciplinary work.

The part on history draws upon both published historical records and secondary and general academic literature on Sundarbans. For the part on employment diversification two data sources have been used. First block level data from the 2001 census has been used to look at the overall employment diversification trends in Sundarbans and then the primary level data from three villages in Sundarbans has been analysed at length. This primary level data was collected via an extensive field survey undertaken for a period of three months in three Sundarban villages. The questionnaire designing was modeled along the lines of Employment-Unemployment and Migration Survey questionnaire of National Sample Survey Organisation (NSSO). Further, relevant modifications were made to make the questionnaire more region-specific with respect to Sundarbans in West Bengal.

## **1.8 Structure of the Dissertation**

The first chapter gives a general idea about Sundarbans alongwith the research gaps and the subsequent research questions. The analytical framework used and the methodology employed for the study are also discussed here. The second chapter discusses the ecological complexity of Sundarbans as well as the socioeconomic condition of Sundarbans and tries to portray the economic space of Sundarbans restricted by its complex and fragile ecosystem. The third chapter deals with the colonial history of Sundarbans with particular reference to land reclamation and forest conservation policies. It examines bypassing of land reforms in Sundarbans post independence. The fourth chapter analyses the trends and patterns of employment diversification in three Sundarban villages. The dissertation concludes with the fifth chapter which summarizes the findings this study and uses them to argue for furthering interdisciplinary research in Sundarbans.

## Chapter 2

### The Ecology and the Socioeconomy of Sundarbans

#### 2.1 Introduction

The Sundarbans<sup>1</sup>, covering about one million ha in the delta of the rivers Ganga, Brahmaputra and Meghna at the point where it merges with the Bay of Bengal, is the single largest block of tidal halophytic mangrove forest in the world shared between Bangladesh (62percent) and India (38percent), which supports a large, biodiversity-rich unique ecosystem (Rahman, 2007). However, the complex ecosystem was named so is still a matter of debate (Sarkar, 2010).<sup>2</sup> It is the lowest part of the delta formed by the mighty rivers: the Ganga, the Yamuna-Brahmaputra and the Meghna and is an intricate web of islands and islets enmeshed in an extensive network of estuaries, criss-cross channels and rivers. In the 18<sup>th</sup> and even in the early 19<sup>th</sup> centuries the Sundarbans extended up to the outskirts of the present Kolkata metropolis. Chattopadhyay (1999) quite succinctly states that the Sundarbans is geographically bordered by the “far-flung estuarine Ganga-Brahmaputra deltaic region of the undivided lower Bengal bordering on the Bay of Bengal on the south”, by the Padma-Meghna rivers on the east and the Raimangal-Matla rivers on the east. Undivided Sundarbans comprised of Jessore-Khulna and Backarganj districts of Bangladesh and the 24 Parganas of West Bengal in India.

The Sundarbans delta spanning 355 km in width is the largest mangrove forest in the world at the mouth of the Ganges and is spread across areas of Bangladesh and West Bengal, India. The Bangladesh and Indian portion of the forest are listed in the UNESCO world heritage list separately as the Sundarbans and Sundarbans National Park respectively (Danda, 2001). The total area of the Sundarbans is around 40,000 sq. kilometers of which the total land area of the

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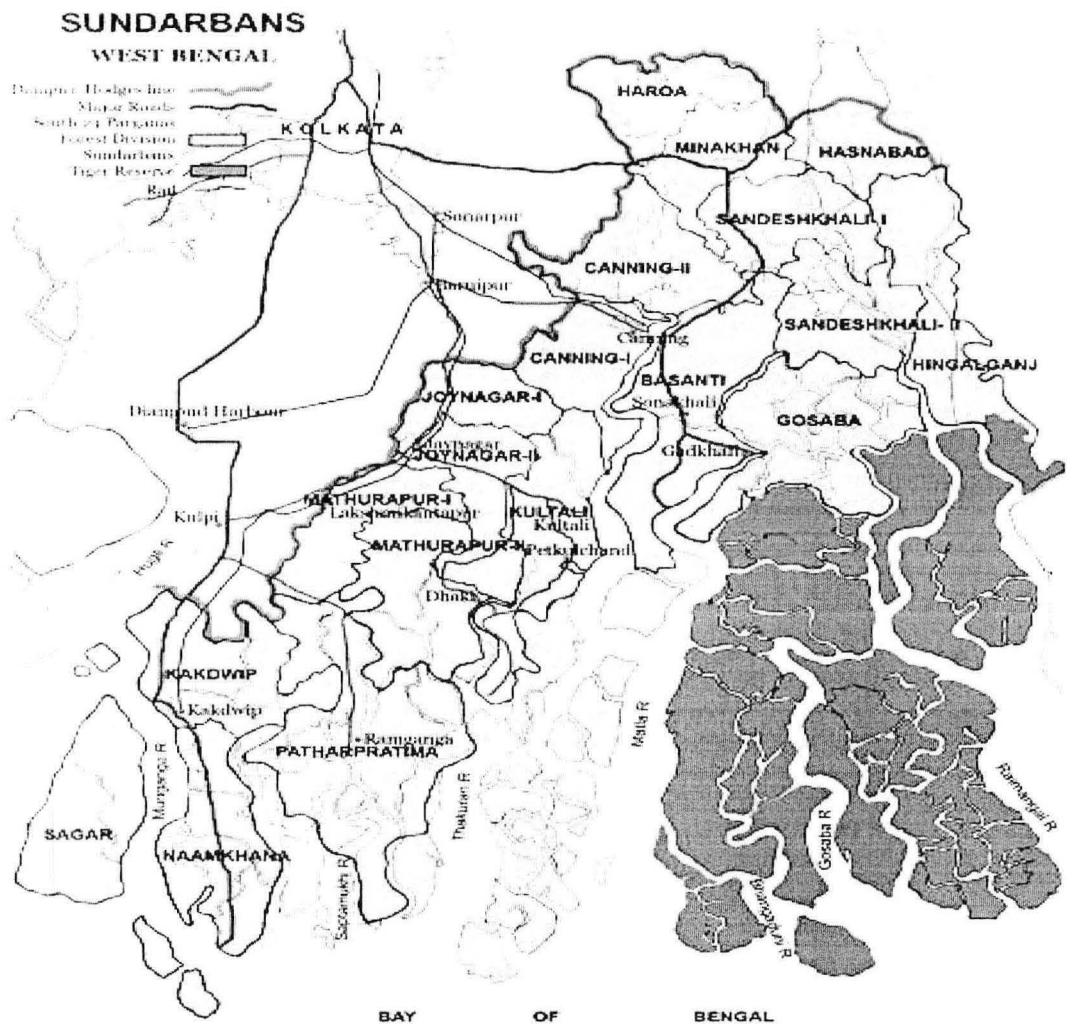
<sup>1</sup> The Bengali term for the region is Sundarban. However this thesis shall employ the Anglo-Indian term Sundarbans because the thesis is written in English and hence intentionally steer clear of the etymological debate that surrounds the nomenclature of the eco-region.

<sup>2</sup> Some are of the opinion that it is named after the principal tree Sundri (*Heritiera fomes*) found in abundance in the region. The second opinion is that it is derived from the words ‘Samunder Ban’ meaning sea forests. And finally some historians posit that it is simply ‘Sundar Bon’ meaning ‘beautiful forest’ (Choudhury, 1968).



Sundarbans in West Bengal is around 9630 sq. kilometers and the reserved and protected forests comprise roughly half of that as can be seen from Figure 2.1. The Indian part of Sundarban in 24 Parganas covers a total area of 9630 sq kilometers within the state of West Bengal. The total number of islands is 102 of which 54 islands are inhabited covering an area of 5363 sq kilometers and the

Figure 2.1: Map of Sunderbans



Source: Danda, 2007

remaining 48 islands comprising an area of 4267 sq kilometers is divided into Sundarban Tiger Reserve (STR) covering an area of 2600 sq. km. and the Reserve Forest Area covering an area of 1600 sq. km (WBFD 2003). It has a serpentine network of embankments of 3500 kilometers which is the lifeline for agriculture in the Sundarbans (Rudra, 2010).

This chapter is organised in three sections including introduction. Section 2.2 describes the complex and fragile mangrove eco-system of Sundarbans while

section 2.3 elaborates on its fragile socio-economy and the interaction between the two.

## **2.2 The Fragile Ecology of Sundarbans**

The Sundarbans consist of mangroves which constitute a very specialized forest eco-system found at the land-sea inter-face of the tropical and sub-tropical regions of the world. It encompasses about one million hectares of land and water across Bangladesh and India which in turn comprises one of the three most extensive mangrove forests in the world. In order to understand better the ecological fragility and complexity of the region we need to look at the physiography, hydrology and biodiversity of the region.

### **2.2.1 Physiography**

The Sundarbans along the Bay of Bengal has evolved over the millennia through natural deposition of upstream sediments accompanied by intertidal segregation. The physiography is dominated by deltaic formations that include innumerable drainage lines associated with surface and subaqueous levees, splays and tidal flats (Rahman, 2007). The physical development processes along the coast are influenced by a multitude of factors, comprising wave motions, micro and macro-tidal cycles and long shore currents typical to the coastal tract which vary during the pre-monsoon, monsoon and post-monsoon periods. These are also affected by cyclonic action. Erosion and accretion through these forces maintains varying levels of physiographic change whilst the mangrove vegetation itself provides a remarkable stability to the entire system (Katebi and Habib, 1987). Biotic factors here play a significant role in physical coastal evolution and for wildlife a variety of habitats have developed including beaches, estuaries, permanent and semi-permanent swamps, tidal flats, tidal creeks, coastal dunes, back dunes and levees. The mangrove vegetation itself assists in the formation of new landmass and the intertidal vegetation plays an important role in swamp morphology.

It can be seen from graph 2.2 that the Sundarbans is a part of the tidally active delta where the land building process is still incomplete (Mukherjee, 2002). The combination of interlacing channels, intervening islands and dense



estuaries are able to transmit the tidal waves far inland. The water in the estuaries is salty to a distance of 200 km inland or more, except when they receive a sizeable supply of fresh water from the Ganges or Brahmaputra Rivers, i.e. during the monsoon season. There are only six major fresh-water rivers in the area. The other estuaries are former river branches, cut off from their fresh-water supplies, and are gradually silting up (Sen and Oostebaun, 1992). Due to the tilted nature of the tectonic plate, there is a greater flow of fresh water to the eastern side of Sundarbans as compared to the western part. Rivers in the Sundarbans are meeting places of salt water and freshwater. Thus, it is a region of transition between the freshwater of the rivers originating from the Ganges and the saline water of the Bay of Bengal (Wahid et al, 2002). There are seven main rivers and innumerable watercourses forming a network of channels at this estuarine delta. All the rivers have a southward course towards the sea. The eco-geography of this area is totally dependent on the tidal effect of two flow tides and two ebb tides occurring within 24 hours with a tidal range of 3-5m and up to 8m (Ghosh & Mandal, 1989; Banerjee, 1998) in normal spring tide, inundating the whole of Sundarbans in varying depths. The tidal action deposits silts back on the channels and raising the bed, it forms new islands and creeks contributing to uncertain geomorphology (Bhattacharya, 1989). There is a great natural depression called "Swatch of No Ground" in the Bay of Bengal between 21°00' to 21°22' latitude where, the depth of water changes suddenly from 20m to 500m (Fergusson, 1963; Ghosh & Mandal, 1989). This mysterious depression pushes back the silts towards south and/or further east to form new islands.

### **2.2.3 Biodiversity**

Sundarban is the only mangrove forest in the world which is home to the Royal Bengal Tiger and also has the highest population of tiger in the world. This forest is an independent "Biom", enriched with different biodiversities along with a great variety of wild life. The forest has a unique biota comprising 334 species of plants, 49 species of mammals, as many as 400 species of fish, 315 species of birds and 53 species of reptiles; besides numerous species of phytoplankton, fungi, bacteria, zooplankton, benthic invertebrates, molluscs, reptiles, amphibians and mammals. Species composition and community structure varies

east to west, and along the hydrological and salinity gradients (Bhattacharya et al, 2005).

## 2.2.4 Ecosystem Goods and Services

The uses and values of mangroves are many and important. Wood products range from timber, poles and posts to firewood, charcoal and tannin. Non-wood products include thatch, honey, wildlife, fish, fodder and medicine. In addition, mangrove lands are often converted to salt ponds or to agriculture or aquaculture purposes (FAO, 1994). Barbier (1994) divided the environmental functions of mangroves and coastal wetlands into stock and flow functions. The regulatory functions of wetlands, such as nutrient cycles, microclimatic functions, energy flows, etc., are flows while the structural components of the wetlands, such as biomass, non-biotic matter, species of flora and fauna, are the stocks from which societies derive benefits. He then used the Total Economic Value (TEV) (comprising of use and non-use values) to derive the value of the environmental functions.

In the particular case of the Sundarbans the direct benefits accruing to the economy from the Sundarbans can be summarized as follows<sup>4</sup>:

- 1) Brackish water fishes, shrimps, crabs, honey, wax, and tannin, which cater to the local as well urban demand.
- 2) Export of dried fish, shrimps, crabs, and honey which brings in substantial foreign exchange.
- 3) The floral species serve as the major provider of fuel woods and valuable timber is used for domestic purposes and/or for making furniture, etc.
- 4) Presence of medicinal plants which are marketed.
- 5) The Sundarbans Biosphere Reserve offers ample scope for eco-tourism.

Other than these certain 'intangible' benefits (Choudhury 2010) are also derived from the mangrove ecosystem:

- 1) Coastal protection against wave and wind erosion and moderating the effects of coastal storms and cyclones

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<sup>4</sup> See Santhakumar et al,2005 and Chowdhury, 2010

- 2) Shelter and habitat for diverse wildlife. The mangroves with their under roots protect the young fishes from the predators and provide safety from the strong tidal waves. It also acts as shelter for different species of crustaceans (Sanyal, 2000; Naskar, 2002).
- 3) It is of strategic importance to the Kolkata Port as the lower Sundarbans delta provides adequate spill area in the estuaries.
- 4) Entrapment of upland runoff sediments thus protecting near shore reefs and reducing water turbidity. Mangrove vegetations check soil erosion resulting from inundation and strong wind that blows across the islands.
- 5) Nutrient sink-effect<sup>5</sup> and reduction in excessive amounts of pollutants.

All these potential benefits accruing from the mangrove are exploited to the hilt by the economy of Sundarbans. In spite of strict environmental regulations in the past three decades or so the threats to the Sundarban mangrove eco-system are arising due to both biotic and anthropogenic pressure. Rahman (2007) summarizes them as below:

- 1) Anthropogenic impacts like land reclamation and subsequent human settlement.
- 2) Geomorphic stress caused by the neo-tectonic tilting of the Bengal basin i.e. fresh water flows from the western part of the Sundarbans to the eastern part and thus increases the salinity of the water in the eastern part.
- 3) Recurrent coastal flooding due to climate change and changes in sea level.
- 4) High salinity, low water table and acidity problem, loss of soil fertility, coastal erosion and a steep fall in fishery resources.
- 5) Conversion of mangrove tracts for aquaculture and agriculture.
- 6) Increasing demand for timber and fuel wood for consumption.

It must be mentioned that some issues which were posing serious threats to the biodiversity of the region as well as the ecosystem itself seem like rampant poaching of tiger, spotted deer, wild boar, marine turtles, horse shoe crab etc, uncontrolled collection of prawn seedlings and uncontrolled fishing in the water

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<sup>5</sup> The mangrove leaves falling in the water provide rich nutrients for the young fishes besides acting as an ideal nursing ground for them. Water here is more enriched due to the presence of different micro-organisms as well.



of Reserve Forests seem to have been brought under control via increased awareness among local communities and stricter government regulations.

In a nutshell we can conclude that the Sundarbans mangroves have been considerably reduced due to several physical and biotic factors including geotectonic movement, change in river flow (Banerjee, 1964), natural disasters like floods and cyclones, and deforestation at a large scale (Harikrishnan, 1999). From the physiography, hydrology and biodiversity of Sundarbans one thing comes out quite clearly: it is a unique and complex ecosystem in the world. However this uniqueness and complexity of this mangrove ecosystem also gives rise to its immense fragility which in turn affects the socioeconomy the region. It is in this specific context that the fragile ecology of the Sundarbans and the fragile economy of the Sundarbans embedded within it have to be considered.

### **2.3 The Fragile Socio-economy of Sundarbans**

The socio-economic profile of the various blocks of Sundarbans is very similar across the two districts.<sup>6</sup> In recognition of it, the Government of West Bengal had set up the Sundarban Development Board in 1973 under the administrative control of Development and Planning Department for a comprehensive development of the region. With further emphasis on the development of this region, a new Department of Sundarban Affairs was created in 1994 and Sundarban Development Board was placed under its administrative control. That even after taking such measures Sundarbans is lagging behind the rest of the country on almost every aspect of development once again underlines the importance of considering the constricted economy of Sundarbans as embedded within the fragile ecosystem of the region. In this section the socioeconomic condition of Sundarbans is discussed with respect to demography, literacy, human development indices and the economy in general.

#### **2.3.1 Demography**

The Sundarbans in West Bengal is mostly inhabited by Hindus of Scheduled Castes (SCs) and Scheduled Tribes (STs) along with lesser number of

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<sup>6</sup> For a more detailed analysis see 24 North and 24 South Parganas District Human Development Reports, 2010.

high caste Hindus. There is also a sizeable Muslim (mainly Sunni) and Christian population. Mention also must be made of a sizeable population of Hindu emigrants from Bangladesh post 1947 and 1971.<sup>7</sup> The 24 North Parganas accounts for 26 percent of the total population whereas 24 South Parganas accounts for the remaining 74 percent. Going by the Census estimates (2001), the population density in the Sundarbans of 24 South Parganas is approximately 934 per sq. km as compared to 903 per sq. km for West Bengal. The number of females per thousand males stands around 946 while the same for West Bengal is 934.

Block	Population	SC (percent)	ST (percent)	Others <sup>8</sup> (percent)
Canning I	244627	50.66	1.26	48.08
Canning II	195967	24.58	5.95	69.47
Mathurapur I	164650	36.99	0.36	62.65
Joynagar I	219090	40.05	0.07	58.97
Joynagar II	209145	36.70	0.47	62.83
Kultali	187989	47.26	2.58	50.16
Basanti	278592	38.62	6.27	55.11
Gosaba	222822	64.28	1.15	26.50
Mathurapur II	198281	29.62	1.67	68.71
Kakdwip	239326	35.95	0.81	63.24
Sagar	185644	27.79	0.37	71.84
Namkhana	160627	26.02	0.44	73.54
Patharpratima	288394	23.69	0.98	75.33
Haroa	185522	24.43	5.91	68.04
Minakhan	168965	31.28	10.38	58.33
Sandeshkhali I	140476	32.25	25.97	41.77
Sandeshkhali II	136318	44.65	2.36	33.18
Hasnabad	177521	25.37	3.39	71.24
Hingalgañj	156400	64.95	6.66	28.39
Sundarbans	3760356	37.09	3.60	57.98

Source: District Human Development Report: North and South 24 Parganas,

From table 2.1 it can be seen that at the aggregate level Scheduled Castes comprise around thirty percent of the total population of Sundarbans as compared to twenty three percent for West Bengal. The combination of General Castes and Other Backward Classes (OBC) comprise more than half the population of Sundarbans (57.98 percent) as compared to 71.5 percent for West Bengal. The presence of Scheduled Castes in Sundarbans (3.6percent) is lower than the West Bengal average (5.5 percent). At the block level, however, some interesting patterns emerge. Some blocks which are adjacent to the forest like

<sup>7</sup> See South 24 Parganas District Human Development Report (DHD), 2010.

<sup>8</sup> "Others" is a combination of General Castes and other Backward Classes (OBC).



Hingalganj (64.95 percent), Gosaba (64.28 percent), Kultali (47.26 percent) and Sandeshkhali II (44.65 percent). have quite a high proportion of Scheduled castes and a very low proportion of General Castes and Other Backward Classes (OBC). The proportion of Scheduled Castes is highest in Sandeshkhali II (25.97 percent) and Minakhan (10.38 percent). However semi urban areas like Canning and Kakdwip also have quite a high proportion of Scheduled Castes.

### 2.3.2 Literacy

As far as literacy is concerned the overall literacy rates range from fifty to seventy percent. Table 2.2 shows that Namkhana (79.38 percent) has the highest

Block	Male	Female	Total
Canning I	73.24	48.53	61.23
Canning II	64.43	40.35	52.72
Basanti	70.12	45.48	58.12
Gosaba	81.39	57.43	69.67
Joynagar I	78.01	54.4	66.67
Joynagar II	72.99	46.21	60.09
Mathurapur I	77.88	78.15	66
Mathurapur II	81.03	53.19	68.94
Kultali	74.9	55.85	60.81
Patharpratima	84.99	45.56	73.44
Kakdwip	82.22	61.31	71.35
Namkhana	89.55	59.86	79.38
Sagar	88.87	68.69	78.92
Haroa	71.66	53.34	62.82
Minakhan	69.25	47.23	58.65
Sandeshkhali I	70.1	46.15	58.45
Sandeshkhali II	71.03	56.75	59.31
Hasnabad	72.03	54.41	63.45
Hingalganj	81.34	58.18	70.07
West Bengal	77.02	59.61	68.64

Source: District Human Development Report: North and South 24 Parganas, 2010

literacy rate among all the blocks in Sundarbans while Canning II (52.72 percent) has the lowest. Interestingly blocks near to the forest like Basanti (58.12 percent), Kultali (60.81percent), Sandeshkhali I (58.45 percent) and Sandeshkhali II (59.31 percent) have lower literacy rates than those which are nearer to the main lands of West Bengal like Kakdwip (71.35 percent), Patharpratima (73.44 percent) and Namkhana (79.38 percent). Canning and Gosaba are, however, exceptions to this pattern. At the disaggregated level in terms of gender there is a clear gap in literacy rates with male literacy rates generally ranging from seventy to eighty

percent and female literacy rates forty to sixty percent. The earlier pattern of blocks nearer to mainland having higher literacy rates is also observed for both males and females. As compared to the West Bengal literacy rates the male literacy rates for Sundarban blocks are generally higher while the same for females is mostly lower. The gender gap in terms of literacy rate persists at the state level as well.

### 2.3.3 Human Development Indices

Human development indices for the blocks in Sunderbans are shown in 2.3. From table 2.3 it can be seen that in the context of Human Development Index all blocks except Canning I (0.64 percent) and Joynagar I (0.61percent) have HDIs which are lower than that of West Bengal which brings to light the fact that the Sundarbans in 24 South Parganas <sup>9</sup> is indeed one of the most backward regions of West Bengal.

Block	Standard of Living	Education	Health	HDI
Canning I	0.41	0.8	0.7	0.64
Canning II	0.32	0.76	0.44	0.51
Basanti	0.3	0.78	0.43	0.5
Gosaba	0.38	0.86	0.39	0.54
Joynagar I	0.41	0.83	0.59	0.61
Joynagar II	0.39	0.8	0.46	0.55
Mathurapur I	0.4	0.81	0.49	0.57
Mathurapur II	0.37	0.85	0.56	0.59
Kultali	0.35	0.89	0.53	0.59
Patharpratima	0.35	0.9	0.43	0.56
Kakdwip	0.41	0.88	0.66	0.65
Namkhana	0.34	0.93	0.46	0.58
Sagar	0.34	0.91	0.41	0.55
West Bengal	0.43	0.70	0.79	0.61

Source: District Human Development Report: South 24 Parganas, 2010

Once again the blocks nearer to the forests or the sea like Basanti (0.50), Gosaba (0.50) and Sagar (0.55) have much lower HDI values than those nearer to the mainland like Canning I and Joynagar I. Coming to the three components of the HDI surprisingly all the blocks have performed quite well with respect to education and in fact many of the blocks have a higher value than that of West Bengal. However with reference to health and standard of living the story is quite

<sup>9</sup> Two different HDIs have been calculated for the Sundarbans lying in 24 North and South Parganas and hence they cannot be compared.

the opposite. In health except Canning I (0.7), Mathurapur II (0.56), Kakdwip (0.66) and Joynagar I (0.59) all the other blocks have values of less than 0.5 which basically means that the healthcare achievements of Sundarbans in 24 South Parganas as a whole is abysmal to say the least. As far as standard of living is concerned only the blocks adjacent to mainland like Canning I (0.41), Joynagar I (0.41) and II (0.39), Mathurapur (0.41) and Kakdwip (0.41) come close to the overall index value for West Bengal (0.43). Once again the areas adjacent to the forests and sea have performed badly with the sole exception of Gosaba (0.39).

Block	Livelihood Opportunity Index	Combined Education Index	Combined Health services Index	HDI
Haroa	0.52	0.47	0.54	0.51
Hasnabad	0.55	0.46	0.57	0.53
Hingalganj	0.47	0.51	0.5	0.49
Minakhan	0.51	0.43	0.59	0.51
Sandeshkhali I	0.51	0.44	0.57	0.51
Sandeshkhali II	0.43	0.44	0.49	0.45

Source: District Human Development Report: North 24 Parganas, 2010

As far as the Sundarbans in 24 North Parganas is concerned the picture is no better. In fact the HDIs for all the six blocks range from 0.45 (Sandeshkhali II) to 0.53 (Hasnabad). In terms of livelihoods opportunity Hingalganj (0.47) performs worst while Hasnabad (0.55) has the best score. The education index shows all the blocks in poor light while the health services index is comparatively better. Once again areas adjacent to forests like Sandeshkhali I are worse off than the other blocks.

### **2.3.3 The Fragile Economy of Sundarbans<sup>10</sup>**

Though about 95 per cent of the population depends on agriculture, the productivity of this dominantly mono cropped region is very low. Cultivation of crops (mainly paddy) and vegetables is mostly for self consumption. During rabi, most of the land is left fallow, and is used to graze cattle but some smaller areas are irrigated from village ponds, where water from the monsoon season is stored. Only in the areas near the few fresh-water rivers, and mainly in their upstream part, is irrigation possible through diversion canals (Chattopadhyaya, 1999). The

<sup>10</sup> This section draws extensively from Chapter 9 of 24 South Parganas DHD.

groundwater conditions as well as high salinity of soil contribute to the low agricultural productivity of the region. It must also be mentioned that the region is particularly vulnerable to cyclonic storms during the rainy season which affects paddy as well.

It has to be understood that the colonial reclamation of forests alone was not enough for the beginning of agriculture on these islands which were/are subject to saline water ingress during high tides. The British built embankments along the bank of creeks to prevent ingress of saline water and thus the spill-over of silt-laden water on floodplains was restricted, but the practice impeded the dynamics of sedimentation (Rudra, 2010). The silt which got trapped within the embankments and river beds started getting gradually filled up making the channels increasingly shallow. As a result river beds were elevated but at the cost of the flood plain which remained at the same height. Hence rainwater falling on the floodplains remained stagnant for a longer period transformed the tidal flow into a tidal bore which had the power to breach the embankments (Mukherjee, 2002). Presently the water level in many embanked creeks remains at least two meters above the adjoining flood plains during high tides. And if the cyclone occurs during high tide (as in the case of Aila 2009) it can cause immense damage to the human settlements in general and agricultural productivity in particular.

About fifty per cent of agriculturists are landless laborers. The proportion of landless laborers and marginal farmers is much higher in the Sundarbans compared to the West Bengal State average. For the blocks bordering the reserve forest, during agricultural lean season, substantial part of the population depends on forest and river resources. During April - May, some people enter the forests with permits for collection of honey and bee-wax which is partly purchased back by Forest Department.<sup>11</sup> Some households entirely and some partially engage in catching fish and crab in the rivers and creeks. Both of these operations are perceived to involve considerable danger due to tigers in the forest and crocodiles in the rivers. Income from these occupations is often supplemented by catching "meen" or shrimp seedlings which are very much in

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<sup>11</sup> It must be mentioned that getting access to these permits is getting difficult with the passage of time as the Forest Department is making access to the protected forests more and more difficult via extremely stringent rules and regulations.

demand by the inland prawn farms and fetch hard cash for the poor. A large section of women and children from poor households are involved in this activity in spite of the life threatening hazards involved like crocodile and shark attacks.

The income that the majority of the people derive from agriculture helps them to make their ends meet for a period of four to six months on an average. So the people of the region try to tap other income sources options via employment diversification chiefly in the sectors like livestock, forestry, fishing, honey collecting, hunting, etc. In a nutshell, the mangrove forests of Sundarbans play a very important role economically in the lives of the local inhabitants. It can be surmised that there are basically six major population groups associated with the ecosystem of this delta: Agriculturists; Captive/capture breeders of fish; Fishermen and collectors of fish; Collectors of honey; Collectors of timber and fuel wood; and Collector of non-timber minor forest products (Santhakumar et al 2005).

<b>Block</b>	<b>Percentage of households with access to electricity</b>	<b>Length of surfaced roads (in km.) per sq. km. area</b>	<b>Number of Branches per 10000 population</b>
Canning I	13.8	0.73	0.29
Canning II	3.09	0.26	0.3
Basanti	0.44	0.46	0.18
Gosaba	0.92	0.13	0.27
Joynagar I	15.21	1.75	0.5
Joynagar II	5.8	0.64	0.29
Mathurapur I	11.18	2.06	0.24
Mathurapur II	5.75	0.6	0.2
Kultali	0.15	0.41	0.21
Patharpratima	0.72	0.23	0.34
Kakdwip	12.82	1.21	0.29
Namkhana	5.8	0.31	0.27
Sagar	1.29	0.59	0.32

Source: District Human Development Report: South 24 Parganas, 2010

Table 2.5 gives a fair idea about the abysmal condition of Sundarbans in 24 South Parganas in terms of basic infrastructural and banking facilities. The semi urban areas like Canning I (13.8 percent), Joynagar I (15.21 percent), Mathurapur I (11.18 percent) and Kakdwip (12.82 percent) fare slightly better than the other blocks in terms of access to electricity. As far as surfaced roads per

square kilometer and access to banking facilities are concerned these four blocks once again perform much better than others in the Sundarbans. However one fact which must be kept in mind is that all these thirteen blocks perform miserably in terms of basic infrastructural and access to banking facilities when compared to the state averages of West Bengal. Although similar data is not available for the six blocks of Sundarbans in 24 North Parganas it can be very well argued that their condition in this context would not be much better.

The remoteness of the area is amply understood by the fact that out of the entire inhabited area of 4500 sq.km, there is only 42 kilometers of railway line and about 300 kilometers of pucca road network. The only means of communication between the islands is through the water ways which is poorly organized and people have to depend on mechanized private boats. Given such abysmal condition of basic infrastructure in Sundarbans and lack of access to urban markets due to its remoteness and also extremely poor communication facilities it is hardly surprising that there is no industrial set up in the Sundarbans. This again translates into lack of employment diversification options within Sundarbans. Given the high saline content of the soil and, also the fact that, most of the region is monocropped translates into the people seeking other avenues of income. However the near complete absence of any industrial establishment in Sundarbans results in all the other local sources of income are dependent on the mangrove forests to quite an extent. The fact that these mangroves are protected forests translates into non accessibility to these forests for the major duration of the year. Add to that the constant threats to life and health from accessing these forests it can clearly be seen that the complex ecosystem gives rise to a very constricted economy in the Sundarbans.



## Chapter 3

### Land, History and Development

#### 3.1 Introduction

The human settlements in the Sundarbans go back to ancient times.<sup>1</sup> Eaton (1990) points out that the Sundarbans was a sort of political and cultural frontier<sup>2</sup> for both the Delhi Sultanate (1204-1575) and the Bengal Sultanate (1575-1765). During these two periods efforts were put in for land reclamation in the Sundarbans which ultimately failed to yield any substantial results. Reclamation of land was properly initiated by the British after they secured the Diwani rights of 24 Parganas in Bengal in 1757. This basically meant they had the right to collect revenue from the region. With the different land reclamation policies adopted by various Collector Generals there was a gradual transformation of the jungles of Sundarbans into rice and paddy growing fields which brought revenue into the colonial coffers. This land reclamation project also resulted in the creation a labor force comprised of various tribes, scheduled castes: some indigenous and some immigrants. These tribes and scheduled castes were lured here with the incentive of being able to own and till the land after clearing it.

The colonial land reclamation process in undivided Sundarbans can be divided into three distinct periods: 1770 to 1828, 1828 to 1878 and 1878 to 1915. In all these phases revenue maximization was the primary motive why the colonial rulers decided to embark upon the risky project of clearing the Sundarbans.

This chapter is organised in nine broad sections. Section 3.2 to 3.4 discusses three different phases of land reclamation in Sundarban. Section 3.5 discusses the emergence and the gradual dominance of colonial forest conservation policies. Section 3.6 highlights the issue of “waste” in the context of development of Sundarbans. Thereafter section 3.7 deals with the socio-economic

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<sup>1</sup> Archeological evidence of what was once flourishing civilizations (according to nationalist Bengali historians) are still to be seen. But this claim has been thoroughly contested by other historians especially the colonial ones who thought that these settlements were merely trade outposts which were sparsely populated.

<sup>2</sup> “Frontier” is described as the border between the settled and unsettled, the “civilized” (Turner, 1962/1996; p. 205) and the “wilderness” (Turner, 1962/1996; p. 4).

hierarchies of land while sections 3.8 discuss three case studies regarding the bypassing of land reforms post-independence. The last section focuses on the land and its “hysteresis”.

### **3.2 The Period of Constrained Revenue Maximization (1770-1828)**

Collector General Claude Russell was the first person to consider the issue of reclamation of the Sundarbans in 1770. It must be mentioned that during that period that the Sundarbans was not a separate district and the three districts of 24 Parganas, Jessore and Backarganj exercised concurrent revenue, magisterial and civil jurisdiction in the area. Russell started the process of granting leases to individuals during 1770-1773 and made them rent free for a period of seven years after which the rent would increase progressively depending upon the quality of the land reclaimed (Sarkar, 2010). This was done with the obvious intention of incentivizing the process of reclamation of forest land in an area which was actually dangerous due to the presence of various wild animals and natural calamities like frequent cyclonic storms. This initiation of what would turn out to be a century old process was carried forward with great intent and determination by the Judge and Magistrate of Murli, Tilman Henckell (Chattopadhyaya, 1999) who has been portrayed as a sort of “Colonial Paternalist” (Sarkar, 2010).

Henckell, like all early colonial administrators, was of the view that the forests belonged to the state and was outside the ambit of the local landlords settled beside them (Hunter, 1875). His plan was to lease out plots of forest land to individual cultivators who would clear the dense forests and start tilling the land and in this way a multitude of own-land cultivators would be created and they would be directly under the jurisdiction of the Colonial state (Pargiter, 1934). This plan was approved the then Governor General Warren Hastings in 1784, nearly a year after they were submitted (Pargiter, 1934) and Henckell started awarding land grants from 1785 (Sarkar, 2010). A total of 600,000 bighas was reclaimed in just seven years and the corresponding colonial revenue collection was pegged at 7.5 lakhs INR (Sarkar, 2010). But the going was not smooth at all. This can be very well understood from the fact that the amount of forest land being leased out fell progressively from 21,000 bighas in 1785 to just 1603 bighas in 1789 (Chattopadhyaya, 1999). The main reason was the constant



boundary disputes with the local zamindars who would more often than not trespass and try to forcibly take over plots of land granted to individual ryots. They were helped by the fact that there was no proper demarcation of Sundarbans in the official records and hence they could stake claim to those plots by fudging their own boundaries (O' Malley, 1914). It resulted in a situation where a large number of applications for land grants could not be acted upon (Sarkar, 2010) which in turn diminished the revenue collections of the state. During this period an interesting socioeconomic development took place as well with the birth of the "Talukdar" in the Sundarbans (Sarkar, 2010). This social group was the byproduct of the constant disputes between the colonial state and the local landlords. They were those individual cultivators who had both the guts and more importantly the resources to stand up to the trespassing and land grabbing zamindars. Those ryots who couldn't do so left because it was untenable on their part to pay revenues for plots which they couldn't till due to the continuing legal disputes. In 1790 this land reclamation scheme was officially abandoned.

It must be mentioned that ever since the British got the Diwani rights in 24 Parganas, they had been trying very hard to come out with a systematic and effective way of revenue collection (Guha, 1982). After a period of nearly 40 years of administrative experimentation and public debate the Permanent Settlement Act (PSA) of Bengal was legislated in 1793 which stipulated that the zamindars would have to pay taxes in perpetuity on any landed property they possess and as long as they did so they held complete rights of alienation, mortgage, lease and inheritance over their estates; otherwise these estates would be confiscated by the colonial government and sold to interested candidates (Richards and Flint, 1990). This Act which created a conservative (and exploitative) class of landlords or zamindars was not enacted in the Sundarbans as it fell under the category of wasteland (Chattopadhyay, 1998). As there were no clear boundaries between the landed estates and the Sundarbans, the zamindars of those estates started encroaching, clearing and claiming forest land which ultimately resulted in loss of revenue to the colonial rulers. This got them started with the project of clearly defining the boundary of Sundarbans, legislating rules and regulations to

create the post of the Sundarbans Commissioner and also the right of the state on the Sundarbans. This process started in 1811 and finally ended in 1828 with the establishment of the Dampier-Hodges line<sup>3</sup> as the boundary between the Sundarbans and the mainland (under the PSA) and also the enactment of Regulation III of 1828 which firmly asserted that the Sundarbans was the property of the state.

During this period of 50 years, in a nutshell, the colonial imperative of revenue maximization was severely constrained by local level socioeconomic dynamics which manifested itself in two ways: first through the problems relating to boundary issues and secondly through the creation of the “Talukdar”: an adding of stratification to an already stratified frontier society (Sarkar, 2010). Another aspect worth mentioning was the non-implementation of the PSA in the Sundarbans as it was considered to be and designated as “waste” land.

### **3.3 The Period of (relatively) Unconstrained Revenue Maximization I (1828-1878)**

As mentioned before the PSA was not implemented in the Sundarbans. Instead the system of “Sundarbans Lots” was introduced. This was indeed a logical step after the segregation of the entire forest into blocks. Each block comprised of lots which were to be sold/auctioned off. This period of reclamation was much more dynamic in nature and yielded better results in terms of both the total amount of land reclaimed and the total amount of colonial revenue collected.<sup>4</sup> This dynamism is best portrayed by the fact the rules for land reclamation got changed three times in this period of 50 years. The main features of these rules are given in the table 3.1 in the next page.

It can be seen that initial lease period changed from perpetuity in 1829 to 99 years in 1853 and were ultimately abolished as the colonial authorities resorted to outright selling of lots to the highest bidder or in the case of existing grant holders an once and for all payment of revenue. Also the rate of revenue was also slashed considerably. The main reason for these shifts can be attributed

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<sup>3</sup> This boundary line was established after the entire forest area was divided into 236 blocks whose combined area was calculated to be around 1,70,24,20 acres (Pargiter, 1889).

<sup>4</sup> Revenue collection increased because the sources of revenue were double now: forests and cultivable (reclaimed) land.

to the fact that both the rate of land reclamation and the collection of revenue were below expected levels which can also be seen from table 3.1. These changes resulted in dramatic improvement as far lots allotted and total land reclaimed were concerned. The number of grants allotted increased by nearly 168 % in a span of ten years from 1853 to 1863. One must however bear in mind that the number of lapses in grants due to inability to meet the minimum reclamation stipulations was around 19.4 % only which again was considerably lesser than in the previous period of 1829 rules. Although there is no data available for the above assertion it can be logically deduced by just looking at the other figures in table 3.1.

<b>Grant Rules</b>	<b>1829 Land Grant Rules</b>	<b>1853 Land Grant Rules</b>	<b>1863 Wasteland Rules</b>
<b>Categories</b>			
<b>Period of Grants</b>	perpetual	99 years	No Grants; outright selling of Lots
<b>Maximum Revenue Rate</b>	Rs. 1-8/ acre	6 annas/acre	No revenue in case of outright selling; once and for all payment of revenue by existing grant holders.
<b>Rent Free Period</b>	20 years	21-51 years <sup>5</sup>	0 years
<b>Reclamation Stipulations</b>	25% of land in 5 years.	25% of land in 10 years.	NA
<b>No. of Grants Allotted</b>	138	360	33
<b>Total Area Reclaimed</b>	490 sq km	1510 sq km	
<b>Major type of Grant Holder</b>	Europeans, Indian Landlords	Europeans and very rich Indian Landlords	Europeans and very rich Indian Landlords

Source: Hunter, 1875; Richards & Flint, 1990; Chattopadhyay, 1998; Sarkar, 2010 and author's own calculations.

The average area reclaimed per year from 1829 to 1853 is 35 sq kilometers whereas the same for the period from 1853 to 1873 was 75.5 sq. kilometers i.e. an increase of 115 percent. This obviously means two things: one the number of grants given must have increased a lot which can be seen from the above table but it also came down drastically to just 33 after the 1863 rules were implemented. So in order for the average land reclaimed to have increased it is imperative that the proportion of lapses must have been lower from 1853 to 1873. This reduction in lapses can be directly attributed to the fact that the minimum

<sup>5</sup> Full payment of revenue was to be made only in the 51<sup>st</sup> year starting with a slow but progressive revenue collection from the 21<sup>st</sup> year (Chattopadhyay, 1998).

stipulations for reclamation were relaxed to a large extent. Further since 1853 the rules were framed in such a way so as to favor European settlers and very rich Indian (from Undivided Bengal) landlords.<sup>6</sup> One way in which it was done is that the area of estates being sold was increased so as to make it nearly out of bounds for smaller landlords. This is precisely why the number of lots allotted after 1863 fell so drastically. At this point the procedure of leasing out land was done away with; instead the 1863 Wasteland Rules promulgated that the lots be sold outright or an once and for all payment of revenue by existing grant holders. Thus the onerous job of collection of revenue was done away with. Further it was no longer the state's headache if the incumbent was unable to reclaim the land successfully.

Thus it can be seen that during this period the revenue flow to the government was streamlined by implementing the PSA in the reclaimed lands and applying the "Lots system" in the Sundarban jungles and all these was done by an extremely active colonial government which kept on changing the rules and regulations pertaining to reclamation of forest land in the Sundarbans. As a result of steady revenue flow from both the cultivated land and the jungles it can be argued that this period of 50 years was marked by more or less relatively unconstrained revenue maximization.

### **3.4 The Period of (relatively) Unconstrained Revenue Maximization II (1878-1915)**

The third period of land reclamation turns out to be the most interesting and much more importantly most significant from the point of view of the inhabitants of Sundarbans. Following the failure of the ambitious scheme of F. Schiller and others to float a company for the specific purpose of land reclamation in the Sundarbans<sup>7</sup>, the colonial authorities approached the problem of land reclamation with a two pronged strategy. The Rules of 1879 came out with two sets of land grants: one for the smaller landlords and the other for the

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<sup>6</sup> Both Chattopadhyay (1998) and Sarkar (2010) use the term "capitalist" but the word "very rich landlord" seems to be more apt.

<sup>7</sup> See Chattopadhyay, 1998.

rich landlords (Sarkar, 2010). There were quite naturally two different sets of regulations for both classes which are shown in table 3.2 below.

Categories	Set of Rules: Rich Landlord	Set of Rules: Small Landlord
Grant Size	Upto 200 acres.	200 to 1650 acres
Lease period	30 years	40 years
Renewed Lease Period	30 years	30 years
Rent Free Period	2 years	10 years <sup>8</sup>
Maximum Revenue Rate	Rs. 12 to Rs. 24/ acre	Rs. 12 to Rs. 24/ acre
Reclamation Stipulations	Entire land must be brought under cultivation in 2 years.	1/8 <sup>th</sup> of entire area must be brought under cultivation in 5 years.
Rent on Wood and Timber	None	None
Duty on Exported Products	Yes	Yes

Source: Hunter, 1875; Richards & Flint, 1990; Chattopadhyay, 1998; Sarkar, 2010 and author's own calculations.

From the table 3.2, it can be seen quite clearly that the colonial authorities tried to bring about a synthesis of sorts as far as land reclamation was concerned by trying to incentivize it to both categories of landlords. This did bring some positive results as the amount of land grants made in this period of 25 years was around 3168 sq kilometers<sup>9</sup> out of which 2008 sq kilometers was reclaimed for cultivation which means that the average rate of reclamation per year was around 80 sq kilometers which was the highest rate in the entire reclamation history of Sundarbans. The chief reason for this high rate can be attributed to the fact that both small and big landlords were in action during this period. However there were some serious problems as well with two pronged reclamation strategy especially so in the case of the big landlords. This scheme provided enough leeway for land jobbers and speculators to exploit the arbitrage in the land market so created<sup>10</sup>. Moreover the issue of rackrenting also emerged wherein the original grant holder would sublet his land to smaller lessees (in order to recover their investment expenditure rather quickly) and these lessees would in turn again sublet them and this process would go on till the land was actually cultivated by small peasants paying rack rents (Chattopadhyay 1998). As a result in 1904 the colonial authorities decided to pursue further reclamation of land only via the Ryotwari Settlement Act. But the initiation of Ryotwari Settlements

<sup>8</sup> 1/8th of the entire grant was rent free in perpetuity (Chattopadhyay, 1998)

<sup>9</sup> See Richard and Flint, 1990.

<sup>10</sup> See Chattopadhyay (1998).

was an astounding success in Backarganj and an abject failure in 24 Parganas (Richards and Flint, 1990). The failure of Ryotwari settlement in 24 Parganas led to the resumption of 1879 reclamation rules (albeit with slight modifications) in 24 Parganas in 1909 (Sarkar, 2010). This move was criticized by people within the colonial administration and in 1915, after much deliberation, the colonial government decided to proceed with further settlement in the Sundarbans only via the Ryotwari system.

This third phase which saw a minimum of 2300 sq km being reclaimed and cultivated in the Sundarbans was easily the best phase for the colonial rulers in terms of revenue generation. Now they had three sources of revenue namely reclaimed cultivable lands, forest lots and tariff on exports of forest produce. This phase also witnessed a flurry of regulatory and law making activities on the part of the colonial authorities as they first introduced both a two tiered Lots system, then introduced the Ryotwari system in its favour and then had different settlement systems in different districts and finally culminated with the Ryotwari system in the whole of Sundarbans. This had a dynamic impact on both the ecology and the socio-economy of Sundarbans.

### **3.5 The Socioeconomic Force of Forest Conservation**

So far the focus regarding land reclamation has been on facts and figures at the aggregate level i.e. about undivided Sundarbans on the whole. However looking at aggregate figures of reclamation does not give us the entire picture. At the disaggregate level in terms of districts interesting patterns emerge. The three districts of Sundarbans namely Khulna, Backarganj and 24 Parganas show varying levels of reclamation and cultivation. Of these three districts land reclamation was most successful in Backarganj in Bangladesh and was the worst in Khulna while 24 Parganas fared moderately (Richard and Flint, 1990). By 1915 jungles in Backarganj had been cleared nearly completely while in Khulna there was hardly any clearance. As far as 24 Parganas was concerned, only 40% of it had been reclaimed (Sarkar, 2010). One main reason as to why Backarganj performed so well was purely geographical in the sense that the positioning of the tectonic plates were such that there was a tilt towards the eastern part of Sundarbans from the western part. As a result most of the freshwater flowed



from the western part where 24 Parganas is located to the eastern part where Backarganj and Khulna are located which made the water less saline and agriculture more tenable in these parts (Chattopadhyay, 1998). Moreover as land in Backarganj was higher and better drained it meant that embankments of moderate size were only required as compared to 24 Parganas where steep embankments were the order of the day due to lower land levels and damaging tidal action (Richards and Flint, 1998). But this does not give any explanation as to why there was hardly any reclamation in Khulna. It can at best be one major factor in the case of 24 Parganas. There was indeed another major force at work: the socioeconomic force of forest conservation.

The process had actually started back in 1869 when the Forest Department lobbied for a tax on timber and other NTFPs (Non Timber Forest Produce) which were being exported out of Sundarbans but to no avail (Ascoli, 1921). However in 1874 the scenario changed drastically as the duo of Richard Temple, the Lieutenant Governor of Bengal and William Schlich, the Conservator of Forests were of the view that conservation of the forest was as important as reclaiming them for cultivation because the entire of Southern Bengal was dependent on the Sundarbans for fuel and timber (Richards and Flint, 1990). Between 1875 and 1876 a total area of 4094 sq km of Khulna was converted into the Sundarbans Forest Division. Then came the Forest Act of 1878 and with it the concepts of “reserved” and “protected” forests which were applied in the Sundarbans too. In Khulna the entire area under the forest Department was converted into reserved forests. Table 3.3 gives us a better picture:

District	Class of Forest	Area in Square Kilometers		
		1890	1904	1938
Backarganj	Protected	0	0	50
Khulna	Reserved	4095	5390	6000
24 Parganas	Protected	4480	4500	4500

Source: Richard and Flint, 1990 and author’s own calculations

From the above table it can be seen that that in Khulna the area of reserved forests increased over time at a rate of 46.52 percent between 1890 and 1938. In 1938 nearly 86 percent of the total area of Khulna was under the Reserved Forests which explains quite easily as to why there was hardly any land

reclamation here for cultivation since 1870s. As far as 24 Parganas the area of protected forests remained more or less the same throughout the entire period. Backarganj which had almost been completely reclaimed for cultivation naturally had a very low protected forest area and no reserved forests.

It is important to understand that this creation of reserved and protected forests in Sundarbans brought about a huge amount of revenue for the colonial authorities as they managed a steady profit by selling of forest produce. The products had a huge market in Bengal most notably in Kolkata (Chattopadhyay, 1998). This can easily be understood from Graph 3.1 which shows the gross revenues of the Forest Department<sup>11</sup> in three time periods: 1875-1891, 1893-1910<sup>12</sup> and 1911-1927. It can be seen that the increase in gross revenues was phenomenal in the last period. The gross revenue earned in the last period was a staggering Rs 1, 17, 69, 007 while it was an impressive Rs. 10, 59, 754 in the preceding period. The first 17 years of forest conservation in the Sundarbans brought gross revenues of Rs. 3, 03, 498. The growth rate of forest revenue was an impressive 249 percent in the second period and an astounding 1010 percent in the third period.

**Figure 3.1: Gross Revenues of Forest Department**



Source: Richards and Flint, 1990; Chattopadhyay, 1998 and author's own calculations

<sup>11</sup> Here it implies revenue realized by selling different types of forest produce.

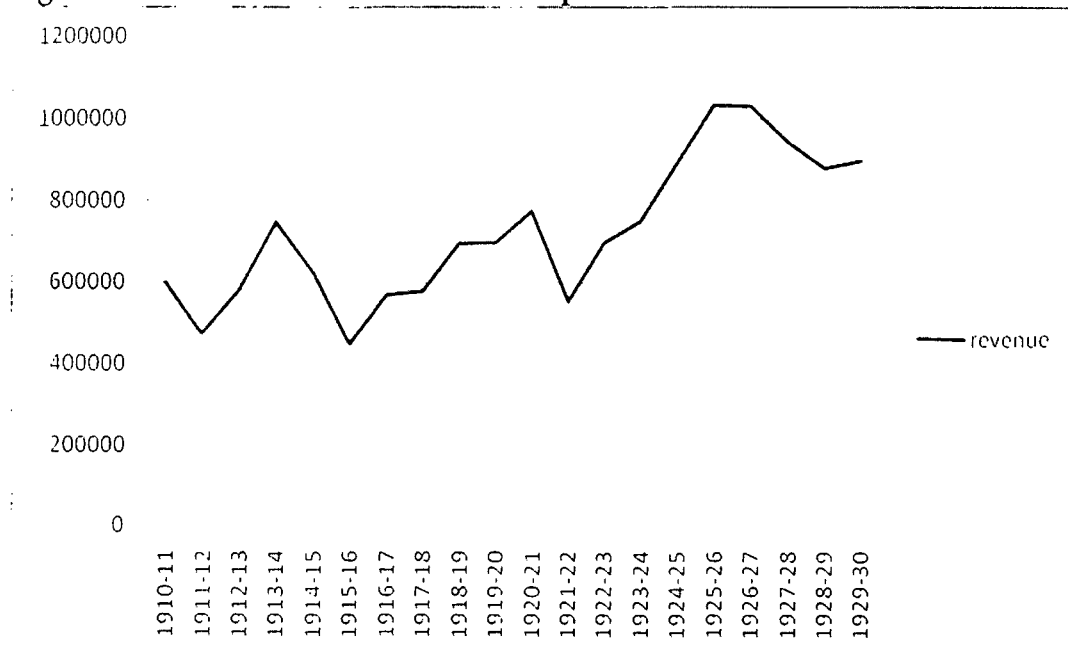
<sup>12</sup> The year 1892 has been intentionally left out as the author is not sure about the authenticity of the data.



This gives a clear impression of the correctness of the revenue logic behind the movement of forest conservation and quite clearly this must have been the greater source of revenue from Sundarbans when compared with that of land revenue at least in the third period.

Looking at Gross Revenues from the forest Department at a more disaggregated level shows some fluctuations but the overall picture is one of tremendously accelerating revenue earnings as can be seen from Graph 3.2. This graph shows the yearly gross revenues for the period 1910-1911 to 1929-1930. The average yearly gross revenue during this period was Rs. 724577.60. The highest gross revenue was collected in the year 1925-26 at Rs. 10,33,737 and the lowest was collected in 1915-16 at Rs. 4,50,763. The growth rate of gross revenues from the forest department in this period was nearly 50 percent.

**Figure 3.2: Gross Revenues of Forest Department from 1910-11 to 1929-30**



Source: Chattopadhyay, 1998.

So overall this decision to conserve certain part of Sundarbans paid rich dividends for the colonial authorities in terms of revenue generation for the state. As a result after 1915 not much land reclamation took place in the Sundarbans in Bangladesh. The case however was different in the 24 Parganas which is in India where extensive reclamation took place till 1939 as it was a protected forest and not reserved and hence the colonial authorities could clear it after obtaining necessary clearances from the Forest Department. After Indian independence a

few pockets were also reclaimed in this area primarily for refugee rehabilitation in the period 1951-71 (Mukherjee, 1983). Post 1971 there has been no reclamation whatsoever in the Indian Sundarbans.

The Forest Act of 1927 which established monopoly control of the Forest Department over most of the forest lands save the forests owned by the zamindars remained the same till early 1970s in post independent India after which a series of acts were passed for wildlife protection and management of forest (Bhattacharya, 2005). Before 1980 management in Protected Areas basically consisted of measures related to security and tourism and the issue of forest people's welfare was driven into the background. Innovative measures like 'social forestry' that was taken up in the 1980s all over India met its doomed fate rather quickly in the Sundarbans as once again there was not much participation from the local communities of Sundarbans (Bhattacharya, 2005). The National Forest Policy, 1988 finally stressed the need for reorientation of forest use policy to convert the people within and around the forest into the main stakeholders. Finally, in 1990 following a Government of India order, provision was created for Joint Forest Management (JFM) through the creation of Forest Protection Committees (FPCs). Further a Government order in June 1996, resolutions for formation of Eco-Development Committees (EDCs) in and around national park and wildlife sanctuaries was undertaken. FPCs are for the people living in the fringe areas of the forest and EDCs are for the people living within the wildlife areas. This has turned out to be a considerable success in West Bengal in general and the Sundarbans in particular.<sup>13</sup>

### **3.6 Development Paradigms and "Waste"**

Coming to the question of development paradigms operating in the Sundarbans during the colonial era one can see that there were two distinct paradigms which had differing effects on both the ecosystem and the socioeconomy of Sundarbans. These two paradigms brought out two different interpretations of "waste" which in turn were used to justify the application of the development process in the two periods (Whitehead, 2010).

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<sup>13</sup> For details see [http://www.sundarbanbiosphere.org/html\\_files/introduction.htm](http://www.sundarbanbiosphere.org/html_files/introduction.htm)

For nearly a century till 1870s the dominant development paradigm was to clear the forests, establish secure tenures and replace them with paddy fields which would bring in a steady supply of revenue to the colonial coffers. This meant the same fate awaited the dense forest of Sundarbans for that period. However being dense mangrove forests they were uninhabited and hence to clear these forests the colonial rulers had to first create a labor force. Bulk of the small farmers, share croppers and landless laborers migrated from the drought and famine prone areas of the eastern plateau region. They came from Jhargram area, western Medinipur, Bankura, Singhbhum and Santal Parganas. Most of the immigrants were tribal people, such as, the Santals, Mundas, Oraons, Kurmis and Koras.<sup>14</sup> There were also some depressed Hindu caste groups (Scheduled Castes) comprising mainly of Paundra Kshatriyas and Namasudras who are believed to be the original settlers on the fringes of Sundarbans (Sarkar, 2010). During this century of reclamation the colonial idea was to convert the “waste” lands of Sundarbans into paddy fields and then bring these paddy fields under a structured revenue regime which would ensure a continuous flow of colonial revenue.

However the socioeconomic milieu changed after the early 1870s as the development paradigm of forest conservation gained traction gradually from the mid 1860s and by the late 1870s had replaced the previous development paradigm as the dominant one. Now the development focus shifted to conserving the forests so that it could provide a sustainable supply of timber and NTFPs which would in turn be commercially exploited for generation of revenue. It is interesting to note that what was considered as “waste” land for over a century got radically transformed into its binary opposite “value” as the “waste” jungles which were to be cleared at any cost suddenly became “valuable” jungles which were to be conserved and commercially exploited. It can be argued that this syngamy of “waste” and “value” originates from the discourse of modernism in 17th century Europe which conceptualized land as the ultimate source of wealth, private property as the instrument which would “unlock” the “value” of both land and labor and finally the “capitalist” as the agent of

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<sup>14</sup> See Chattopadhyay, 1987

socioeconomic emancipation (Gidwani, 1992). This was a not so obvious but classic example of “utopia and wasteland turn out to be the same place” (Brantlinger and Higgins, 2005).

It must be said that the concept of 'waste' originated in England the late 13th century and its specific purpose was to curb the rights to use (of land) enjoyed by tenants (Gidwani, 1992). This concept that underwent subtle but important changes in meaning over time: pre-Enlightenment “waste” referred to ecological spaces which were subject to lower or no feudal dues whereas post-Enlightenment notion of “waste” was a mix of Lockean, Physiocratic and Benthamian doctrines and was ultimately referred to as “neglected utility” i.e. something which can be improved upon using the discourse of modernism (Cooper, 2011). It can be argued that the interpretation of “waste” had such innate fluidity that it not only represented different notions in different development paradigms, rather it had different layers of meaning operating at different levels of the world economy vis-à-vis the Sundarbans.

At the global level “waste” represented the “uncolonized” lands whose native inhabitants didn't possess the requisite skill and knowledge alongwith the industriousness to “exploit” the land (and other natural resources) to further their own economic development (Adas, 1989). In otherwise words, the interpretation of “waste” at the global level provided the rationale, ideology and impetus for colonial conquest as the colonists had what it takes to realize the locked in “value” of lands. At the national/state level, in India's case, the interpretation of “waste” when it arrived with the British in 1757 (in Bengal) was in the context of “waste lands” which primarily meant a category in the land revenue records not contributing to government revenue through crop cultivation (Shiva, 1986). This provided the logical basis for clearing of forests for nearly a century in the Bengal initially and then the whole of India. The value loaded term seamlessly transformed from 'waste' as simply a category of land-use to 'waste' as a representation of the cultural inferiority and physical infirmity of Indians (Gidwani, 1992). However at this period of time not all Indians were “waste”: the colonist hoped to create a new breed of “efficient landlords” via the PSA who would extract maximum “value” from the land. When this utopia

didn't work out, the zamindars became "idle" and possessor of "indolent" habits which created the fetters in the path of maximum revenue generation.<sup>15</sup> Thus the focus of colonial improvement shifted to the "ryot" who was now portrayed as "the individual cultivator oppressed [sic] for centuries (not by the colonists of course but by the "idle" and "indolent" Indian landlords)" fervently awaiting socioeconomic emancipation at the hands of the value extracting (and realizing) benevolent colonial rulers and thereafter would unleash his innate innovative capacities with the help of private property rights and commercialization gifted to him by the colonial authorities (Chaturvedi, 2007). However with the advent of the second development paradigm the forces of forest conservation gained much more prominence throughout India and a new "interpretation" of waste was born to justify/rationalize this particular development project. This interpretation as Whitehead (2010) points out categorized the scheduled castes as the ones inhabiting a "structured semi-civilized agrarian society" whereas the tribes were "savages". This was nothing but a political project to strip the ancient rights of the tribes to the forests which suddenly had become a source of unimaginable value to the colonial rulers and not "waste" lands.<sup>16</sup> Thus in a nutshell the expansion of the railways in India alongwith the demand for high quality teak from the Imperial Navy resulted in the ushering of a different development paradigm which accorded greater importance to conservation of forests rather than reclaiming them for cultivation. Corresponding to this the interpretation "waste" transcended from the forest itself to the forest dwellers who were the new "waste" from whom value (forest) had to be reclaimed. If one takes into consideration the local level as well we have what can be termed as what Gidwani (1992) calls "a catalogue of negatives". In more precise terms, "waste" has both ecological as well as socioeconomic interpretations at three levels namely global, national/state and local.

The local level (in this case Sundarbans) interpretation of waste is even more complex. Here after 1870s both the development paradigms were in application albeit at varying degrees of effectiveness. However since there were

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<sup>15</sup> See Gidwani, 1992 and Whitehead, 2010

<sup>16</sup> See Guha 2001.

no indigenous people of the forest the application of socioeconomic interpretation of “waste” was in a way much more legitimized than in other parts of the country. But the similar story of gradual stripping of rights to access to the forest and forest products was carried out in the Sundarbans as well (Santhakumar et al, 2005). Thus in a nutshell after a century of portraying the Sundarbans as “waste” it turned valuable and conservation kicked in with great force especially in Khulna. Further unlike the forests inhabited by tribes in other regions, where the conflict was between utilization of an existing habitat-cum-common-property resource and historically novel statist claims to conservation and management, the remaining (and shrinking) mangrove forests became an object of conflict between social forces seeking an extension of livelihoods on the one hand and a state that sought to limit that process on the other (Richards and Flint, 1990). Thus ironically the very group of people who were assembled in the Sundarbans to convert the “waste” jungles into “value” producing paddy fields became “waste” themselves as the development paradigm changed.

But there is indeed a final twist in the narrative. If one were to closely analyse the formation of the labor force of Sundarbans during the first two phases of land reclamation it can be clearly seen that the labor force comprised of a majority of scheduled castes and a few groups of immigrant scheduled tribes. Among the scheduled castes the majority were Paundra Kshatriyas and Namasudras both of whom are the lowest of the low in the Hindu caste hierarchy (Risley, 1981). In other word these were the people located at the margin of their respective societies. In other words they were “waste” as well in the socioeconomic context of their regional Indian society. Thus in a way the story of land reclamation in Sundarbans is the story of a labor force of “waste (in Indian context)” people who cleared “waste” lands of Sundarbans so that the colonial rulers could unlock, extract and realize the value of land via the instrument of private property. However this labor force of “Indian waste” got converted into “waste” in the socioeconomic context of the dominant imperial paradigm and was further reduced to the margin. This exploitation in terms of stripping of rights of forest access affected their livelihood opportunities quite drastically.

Ironically the laws which allowed for the marginalization of the “already marginalized” were in vogue even after independence and it was only after the initiation of the Joint Forest Management paradigm in the Sundarbans that their voices were heard to a certain extent. But still a lot needs to be done especially with respect to caste and gender exploitation in the Joint Forest Management paradigm.<sup>17</sup> There is however another important dimension to this story: the dimension of the hierarchies of land tenure system and the land reforms program in the Sundarbans in West Bengal.

### **3.7 The Socioeconomic Hierarchies of Land**

From the three revenue phases discussed in the sections 3.1, 3.2 and 3.3 it can be seen that although the PSA was not implemented in the Sundarbans a very similar system of land tenure namely “Sundarban Lots” system was introduced. This system resulted in the creation of socioeconomic hierarchies which were nearly identical to those created by the PSA. Just like the PSA resulted in the creation of an intermediary landholding class the Sundarbans “Lots System” also created the same in the form of “Lotdar” who was basically an absentee landlord. In the case of PSA the stratification and creation of classes in the land economy comprised of the Zamindar at the top followed by the Talukdars and went all the way down to the landless laborers and share croppers whereas in the case of the Sundarbans the “Lots System” created a society with the Lotdar at the top instead with the other stratifications remaining very much identical. The idea behind this as elaborated before was that the landlord would provide the entrepreneurship, the cultivator would provide the labour and the state would be the arbiter between the two as well as maintain the rule of law (Bandhopadhyay, 1981). Thus the PSA as well as the Lots System created a land tenure where the supreme proprietary rights of land were vested in them (Guha, 1962) and the zamindars/ lotdars were the agents of the state who would have to make a fixed payment of revenue in perpetuity to the state in lieu of which the power to extract rent from the actual tillers of the land was vested in them (Bandhopadhyay, 1981).

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<sup>17</sup> See Santhakumar et al, 2005.

There were however a few subtle differences in the way the socioeconomic dynamics of the two land tenures operated at the local level although their logical background (revenue maximization) was very much the same. Further it must be mentioned that the system of socioeconomic (and political) stratification of the frontier society in the Sundarbans varied in the eastern and western part in terms of reference used to denote the different classes created by the colonial land reclamation policies. The table below gives a fair idea about the tenure system in the Sundarbans in Bangladesh during the colonial era in the 1900s.

<b>Socioeconomic Group</b>	<b>No.</b>	<b>Land Under Control (acres)</b>	<b>Revenue Paid/ Acre (Rs.)</b>
Zamindar/ Lotdar	1	2000	0.1
Talukdar	4	500	0.2
Osat Talukdar	20	100	0.25
Haoladar	80	25	1
Nim Haoladar	160	12.5	1.6
Ryots	320	6.25	2.4

Source: Richards and Flint, 1990 and author's own calculations.

That the poor cultivator had to pay revenue per acre which was twenty four times that of what the Zamindar paid to the colonial government is a fair indicator of the extreme economic exploitation inherent in this land tenure system. Interestingly only two socioeconomic groups were laden with risk: the Zamindar to some extent and the ryot bore the brunt of the risk of crop failure and other such factors. Thus the socioeconomic group which had to pay the highest amount of revenue per acre was also saddled with the highest level of risk while the intermediaries were basically small investors who gained modestly and steadily and yet did not have to commit much time or energy or apply managerial skill (Richards and Flint, 1990).

The land tenure system in the 24 Parganas of the Sundarbans had different terms of reference for the different intermediaries although, needless to say, the level of exploitation was the same if not greater. In the 24 Parganas, the lotdars were followed by the Chakdars who in turn sublet their lands to the Jotedars who were big ryots and who in turn managed the actual cultivation of land either with sharecroppers or agricultural laborers (Sarkar, 2010). With both



the Lotdar and Chakdar based in urban or semi urban areas the Jotedar became the de facto landlord in the Sundarbans who maintained his hegemonic influence via his managers and armed guards. In the 24 Parganas the incidence of sharecropping was much higher than other parts of Bengal. Dasgupta (1984) attributes this high incidence to both demand and supply side factors: on the demand side the prominent factors were the increasing concentration of land in the hands of non-cultivating and absentee landlords, creation of urban jobs for the village landed gentry elite and in land reclamation economies (as in the case of the Sundarbans) where there was in fact labor scarcity it was quite profitable to settle the people who cleared the jungles as sharecropper; as far as supply side is concerned the main factors were a succession of famines and epidemics, the obliteration of traditional small scale industries in India and immigration of tribes from Chota Nagpur who came to clear the jungles for cultivation with the expectation and promise of owning the tract of land which they cleared.<sup>18</sup>

In short fragile land reclamation economies like the Sundarbans suffered from an inherent scarcity of labor and extremely limited availability of technology which in turn resulted in a socioeconomic situation conducive for the proliferation of share croppers<sup>19</sup>. From the point of view of the share cropper it was the guarantee of employment throughout the year even though at lower wages, relative independence and higher social ranking as compared to agricultural laborers which led him to remain as the former and prevented him from joining the ranks of the latter (Dasgupta, 1984). Further legislative protection for fixed-rent under tenants from 1928 and the fact that most of the landed gentry doubled up as grain traders further swung the balance in the favour of sharecroppers. However from the 1930s onwards the land man ratio started improving throughout West Bengal and ironically at a time when the reclamation economy had been sacrificed at the altar of the conservation economy. Moreover the Great Depression in the 1930s followed by the Great Famine in 1943 resulted in a situation of excess supply of both agricultural laborers and share croppers in West Bengal coupled with extremely high land

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<sup>18</sup> Once the land was cleared they were either asked to settle on the tract as share croppers or forcibly moved to the next clearing zone (Bandhopadhyay, 1977).

<sup>19</sup> Rammohan (2006) discusses a similar situation in the case of Kuttanad, Kerala.

concentration (Mukherjee, 1973). This was a boon for the landed gentry who had been hit aversely by the legislative protection accorded to fixed-rent tenants and they simply started replacing them by the ever growing army of agricultural laborers. This demonstrated to the sharecroppers that a similar fate awaited them in the near future and neither the government nor the major national political party would fight for them if such a situation arose (Dasgupta, 1984).

Given such a precarious scenario coupled with stifling socioeconomic exploitation it was no wonder that the Tebhaga<sup>20</sup> movement broke out in various parts of rural Bengal. That the socioeconomic condition of the sharecroppers and agricultural laborers in the Sundarbans was no less worse than their counterparts in other areas of Bengal can be very well gauged from the fact there was vociferous support and participation in the Tebhaga movement throughout the Sundarbans. Although this movement ultimately failed it ultimately laid the foundation for land reforms in the next few decades. Following independence Zamindari and all forms of intermediary tenure were abolished in 1955 throughout the country and those who were recorded as settled or occupancy tenants and their under tenants became proprietors of land under the state (Bandhopadhyay, 2003). However through "benaami" transactions and other illegal practices the intermediary class lost its intermediary rights but not its socioeconomic and political clout. In West Bengal the land reforms took place in two phases: 1967-1970 and 1977 onwards.

It is important to note that the West Bengal Land Reforms (WBLR) Act 1955 had two important loopholes: the land ceiling exemption given to land registered under religious or charitable trusts, and the exemption given to fisheries and plantations (Lieten, 1990). In order to plug these loopholes the new WBLR (Amendment) Act 1981 was passed but it was approved by the president of India only as late as 1986 (Bandhopadhyay, 2003). Although the amendment became effective from 1969 the delay in receiving the president's assent resulted in the landlords using the "benaami" route to bypass the reforms to a certain extent (Dasgupta, 1991). This especially seems to be the case in the Sundarbans

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<sup>20</sup> The Tebhaga revolt of the sharecroppers principally was a demand for two-thirds share of the crop for the sharecropper and one-third for the landlord as opposed to the traditional division of two equal parts even when the sharecropper bore all production expenses (Bhattacharya, 1978).

where it is alleged that around 60,000 acres of paddy fields was converted into commercial fisheries (Chattopadhyay, 1998). The fact that in the district of 24 Parganas 54,000 acres are said to have been transformed into fisheries (Dasgupta, 1991) to bypass the land reforms can be very well used to argue that a significant proportion of the commercial fisheries in the Sundarbans were created for the same purpose. Although this is impossible to ascertain via land records of the government one can try to look into the various ways in which the land reforms were subverted in the Sundarbans. This in turn will help to understand the socioeconomic dynamics operating at the local level in the Sundarbans. For that to be done fully an extensive ethnography and other forms of qualitative and quantitative research that utilizes a broader variety of resources would be required. However that is beyond the scope of this dissertation and hence a modest initial foray is being made via the three case studies which have been undertaken. These case studies will be discussed in the following section.

### **3.8 Case Studies**

In this section three case studies will be discussed in detail in order to understand some of the ways in which the land reforms were bypassed by the landed gentry in the following three villages of Sundarbans: Ramganga and Herambogopalpur of Patharpratima Block and Kumirmari of Gosaba Block. These families were not chosen on the basis of random sampling rather on the basis of who were willing to talk about these issues among the landed gentry. An effort was also made to crosscheck some of the claims.

#### **3.8.1 Case Study 1**

Family A in village Ramganga of Patharpratima Block has been living here for nearly a century i.e. their forefathers came here from Medinipur in West Bengal to manage the tilling of the land as Chakdars<sup>21</sup> after the jungles had been cleared and settled here eventually. The present family comprises of the male patriarch who is a retired school teacher and now manages his 20 Bighas of land (a lot by Sundarban standards) and his wife who is a homemaker. They have two sons who run their electrical stores and grocery stores respectively in the busy

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<sup>21</sup> The relative proximity of this place to the Kolkata metropolis may be a reason as to why the Chakdar settled here as they were normally absentee landlords just like the Lotdars.

commercial market of the village. Their wives are homemakers too and each couple has two children: one son and one daughter. There is also a daughter of the patriarch but she got married nearly 4 four years ago to a schoolteacher's son in Kolkata. That the family lives a life of relative comfort and self sufficiency can be gauged from the following statement of the patriarch: "We do not have to buy any food-grains, vegetables or fruits. We grow everything on our land and the produce lasts for the entire year. The only thing that we procure from the market is red meat". The two sons earn around a lakh per year from their business and the patriarch brings home similar sum of money in the form of pension<sup>22</sup>.

The patriarch's grandfather was a Chakdar which meant that he had atleast 900 bighas of land under his control. The Chakdar had three sons each of whom had quite large families as was the norm during those days. Interestingly the Chakdars family stayed together till the advent of land reforms in the villages in the early eighties. The implementation of land reforms in other parts of West Bengal and its non implementation in the Sundarbans till the early 1980s gave the patriarch's grandfather and father enough time to covert majority of the excess land into benaami holdings. They went a step further and put some benaami holdings in the names of their yet to be born grandchildren. They were actively helped in this endeavor by government officials who were patronized by the landed gentry. So when finally the land reforms were implemented they had to part with very little of their land. However they were able to successfully protect their land in the village in which they resided. The lands which they owned in other islands and which also had been converted into benaami holdings were soon found out by the militant peasants and forcibly confiscated by them. It is however interesting to note that the patriarch was able to get a settlement done with these sharecroppers and get some payment in return for the deeds of the confiscated lands in the late nineties.<sup>23</sup> He was also quite forthcoming of his "leftist" political orientation and is indeed quite an influential political worker as is the wont with most of the schoolteachers in rural West Bengal.

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<sup>22</sup> An income of 3 lakhs per year in the Sundarbans is extremely high by any standard more so since the family hardly incurs any expense from buying food. Add to that the selling of grains, vegetables and fish which basically entails to a yearly income of around 5 lakhs.

<sup>23</sup> The patriarch was adamant throughout the conversation that the sharecroppers got away by paying very little and he couldn't do much about it.

### 3.8.2 Case Study 2

Family B in village Herambogopalpur of Patharpratima Block has a story which is quite similar to that of family A of Ramganga village in the sense that their forefathers also migrated from Medinipur nearly at the same time.<sup>24</sup> Their family comprises of the head of the household, his wife who is a homemaker and their two children who have enrolled in high school.<sup>25</sup> The main source of income for the family is their fisheries (of around 6 bighas) and farm land (of around 4 bighas) which allows them to live in relative comfort as compared to most of the other people in the village. The head of the household's grandfather was a Naib (manager) to the Jotedar in that area and was a recipient of a large amount of benaami land transfers which originated all the way from the Zamindar in Medinipur in connivance with the government officials. However in this case nearly all of his benaami cultivable land was confiscated by the peasants and the government officials. However Naib was able to convert 20-30 bighas of land into fisheries before the drive on benaami land had started and that has stayed on with the family and become their most valuable resource giving them a yearly income of around one lakh rupees. Another interesting difference is that this family was unable to get any payments for the benaami lands confiscated in other islands. The head of the household used to be a RSP (Revolutionary Socialist Party) supporter but is a Trinamool supporter now as "the winds have changed course in Bengal" according to him.

### 3.8.3 Case Study 3

Family C of Kumirmari village in Gosaba Block consists of four family members: Household head who is a contractor by profession, homemaker housewife, mother of head of the household and a maid. The family has two daughters who are married and settled near Kolkata and a son who is pursuing higher education in Kolkata. The family has cultivable land of around 60-70 bighas of which half is mortgaged for various family needs and expenses and rest is employed for cultivation. It must be mentioned that the family also has a

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<sup>24</sup> Most of the reclamation work in Patharpratima Block was done by a Zamindar hailing from Medinipur and hence the high incidence of people whose original home is Medinipur.

<sup>25</sup> This man and his family got separated from his father's joint family a couple of years ago due to some property disputes.

business of cutting wood and more importantly the household head is an influential political leader of RSP in Gosaba.

This family has its ancestral roots in Bangladesh from where they migrated not during the partition era but in the early 1900s. The grandfather of the head of the household was a Jotedar and was responsible for the clearing the jungles and setting up of nearly half of what is now the village of Kumirmari. As soon the Jotedar started to realize that the implementation of land reforms was inevitable he struck a deal with the agitating peasants.<sup>26</sup> According to the deal he released half of his lands to the agitating sharecroppers and the remaining land he converted into benaami holdings which the peasants ignored throughout the period of search for benaami holdings. These lands were then divided among the siblings and family C has now around 60-70 bighas. It must however be mentioned that post Aila this huge amount of land has actually become a liability owing to the increased salinity of the soil which has resulted in a peculiar situation in the village: those families who have lesser amounts of land and have atleast two or three seasonal migrant workers are far better off than those of the landed gentry who have not diversified their income sources beyond farming and fisheries. This particular family has also been hit by very little production of paddy in their fields. It is so less that it won't last for their self consumption throughout the year. However the head of the household is quite a successful contractor and owing to his political clout manages to get contracts for building river embankments which is considered to be the most lucrative sector for making money in the Sundarbans.

From these three case studies discussed above one can see quite a few patterns emerging as far as the socioeconomic and political dynamics of subverting of land reforms in the Sundarbans is concerned:

- 1) First and foremost is the fact that land reforms was quite effective in unearthing benaami land in cases where the landed gentry owned considerable amounts of land across different islands. Things however seem to be quite different as far as the village in which they resided is concerned. Here their

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<sup>26</sup> According to the head of the household this was possible mainly because the Jotedar "was kind and generous unlike the others of his clan".

political and socioeconomic clout seems to have helped them immensely in bypassing the land reforms.

2) It seems to be the fact that the real gainers from the land reforms in these villages were the middle level intermediaries like Jotedars and their Naibs. This is because the absentee landlords and Lotdars lost their excess land when the sharecroppers revolted but the Jotedars and the Naibs managed to manipulate both the government officials as well as some of the sharecroppers themselves to make sure that they were able to hold on to as much land as they could.

3) The exemption given to fisheries in the initial part of reforms gave ample time and scope to the landed gentry in the Sundarbans to create ways and means to bypass the land reforms. Further even after the exemption on fisheries was lifted in the mid 1980s there was hardly any effort to implement the amendment to the act in the Sundarbans. Bandhopadhyay (2000) points out that the immense power and influence of the commercial fishery owners prevented the amendments from becoming effective. He further points out that since the 1980s national and multinational companies are actively participating in the fishery sector which has converted it into a dollar earning sector which gives all the more reason for the government to ignore bypassing of land reforms.

4) The landed gentry's authority over the sharecroppers, peasants and agricultural laborers was sourced from three distinct factors: ownership of means of production (land), local level political dynamics and hierarchical structure of caste. Here it must be mentioned that caste comes into play in the villages of Ramganga and Herambogopalpur where the landed gentry belong to the general castes and the share croppers were primarily SCs and STs whereas in Kumirmari it was more of the first two factors as the entire village comprises of SCs, STs and a few Muslims. As far as Kumirmari is concerned the relative magnitude of political power of the peasants vis-à-vis the landed gentry played an important part through its influence on the bargaining power of both the parties. Put differently reduction in political inequality is an indispensable precondition for reforms seeking to change both tenure and terms of tenancy to be effective.

5) The legal insecurity of tenures of sharecroppers has to be seen in the light of the massive power difference which originated from the vicious triad of

ownership of land, local level politics and caste hierarchy. This power enabled the landed gentry to have a greater range of economic alternatives than the bargadar in the sense that they could replace one bargadar with another, move to a different production organization by employing wage laborers convert their agricultural holdings into fisheries (Bhattacharya, 1979).

Further the conversion of agricultural land into fisheries must be viewed through the prism of intra class economic tensions in the sense that it created employment for the landless laborer but pauperized the sharecropper. For the landed gentry cultivation by bargadar and cultivation by laborers were two mutually substitutable production relations which could be manipulated to suit their needs in times of economic and political uncertainty.<sup>27</sup>

6) Finally the socioeconomic condition of the erstwhile landed gentry seems to be much better off as compared to that of the general trends seen in these villages. In terms of education these families were much ahead of others which in turn again becomes a very useful tool to implement their hegemonic influence upon the poorer sections of the society (say schoolteacher involved in local level politics). Further these families seem to have a much diversified source of income and employment without resorting to seasonal migration as compared to others.

### **3.9 Land and its Hysteresis<sup>28</sup>**

This chapter traced the history of the land reclamation economy of Sundarbans since the colonial era and tries to show how the different imperial development paradigms had different socioeconomic and ecological effects across the landscape of Sundarbans. The socioeconomic effects were transmitted through two channels: first through clearing of "waste" land for cultivating and then through conservation of forests. The first paradigm resulted in the creation of a labor force comprising chiefly of scheduled castes, scheduled tribes and Muslims who started clearing forests, cultivating paddy and ultimately created populated villages at the fringes of the forests. However with the advent of the second paradigm of conservation this entire labor force slowly came to be viewed as impediments to the path of generating colonial revenue which in turn

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<sup>27</sup> For a more detailed discussion see Bhattacharya, 1978 and Bhattacharya, 1979.

<sup>28</sup> The term "hysteresis" is sometimes used in other fields, such as economics or biology, where it describes a memory, or lagging, effect.



prompted the colonial authorities to severely curtail the traditional rights of access to the forest. This is quite ironical since the colonial state first created the property rights of the forest via the Lots system and gave the settled population both access to forest resources and cultivable land and then gradually started stripping the population of its rights once its “development” needs underwent a change. This gradual striping of rights continued till the 1990s when the implementation of the JFM in the Sundarbans brought about some much needed relief to the people of Sundarbans as well as to the tiger. Another important effect of these colonial development paradigms was the creation of the “Lots” system of land tenure which was basically the PSA with one extra step in the beginning i.e. clearing of jungles for cultivation. Hence it was no wonder that the In other words the effect of the Lots System on the socioeconomic fabric of Sundarbans was not all different from that of PSA in other parts of the Bengal Presidency (Bhattacharya et al, 2005). Interestingly the skewed pattern of ownership of land persists to this day which can be seen from the fact that nearly 56 percent of the total population is landless in Sundarbans (Census, 2001).

While a detailed history of the labor force in the Sundarbans is not available it can be argued that the history of the labor force who were in fact the original settlers of Sundarbans is completely intertwined with the history of land reclamation in Sundarbans. During the first two phases of land reclamation the labor force primarily comprised of a majority of scheduled castes and a few groups of immigrant scheduled tribes. Among the scheduled castes the majority were Paundra Kshatriyas and Namasudras who historians claim are the original settlers of Sundarbans. Other than that there was immigration from Orissa, Chota Nagpur and Bihar. The Oraons and Bunas were brought in by the colonial rulers for the specific purpose of clearing the forests (Sarkar, 2010). During these two phases this socially heterogeneous labor force cleared one lot and either settled on it as a cultivator or share cropper or moved on to clear the next lot of the jungles. However with the advent of the third phase the forest conservation movement gained more traction and land reclamation process started winding down. Moreover the once “waste” jungles sudden gained economic “value”. In order to realize this “value” the colonial authorities started imposing gradual

restrictions on access to forest and forest produce by the people settled on the fringes of these forests. Interestingly these people comprised a significant portion of the very labor force which started the land reclamation process and had been moving further south towards the sea and suddenly were restricted from clearing the forests. As these people settled down on these freshly reclaimed tracts the earlier cleared tracts were taken over by the next wave of immigration mainly from the Bengal heartland which comprised of people from the general castes as well (Sarkar, 2010). Thus the latter group of immigrants settled on tracks of land which were geographically located closer to mainland Bengal as compared to the earlier settlers who had no option but to settle adjacent to the forests. As amount of cultivable land became more or less the land man ratio started to decline steadily as life expectancy increased gradually and more importantly population started rising at a very high rate. This combined with the coming of wildlife and conservation policies in the last thirty to forty years has resulted in the creation of a severely constricted economic space where people have no option but to diversify from traditional livelihoods like agriculture and forestry to modern sectors. However these modern sectors hardly exist in Sundarbans except in a few pockets which make the issue of employment diversification in the Sundarbans highly contentious.

Ecologists, conservationists, and natural resource policymakers now recognize that the legacies of land-use activities continue to influence ecosystem structure and function for decades or centuries-or even longer after those activities have ceased (Foster et al, 2003). On the other hand livelihood activities are important drivers of change in the landscape, as writers of various theoretical persuasions have argued (Batterbury, 2001). Social, economic and environmental forces work together and overlap in societies dealing with difficult choices to ensure their survival and welfare. In the last decade most scientists engaged in ecology, conservation, and natural resource management, have come to recognize that environmental history is an integral part of ecological science, and that historical perspectives inform policy development and the management of systems ranging from organisms to the globe (Casperson et al. 2000, Tilman et al.

2000, Goodale and Foster 2002).<sup>29</sup> Hence it can be argued that as the economy is embedded within an ecosystem whether at the global level or at the local level (as in the case of Sundarbans) not only will the legacies of land use activities have its impact on the economy. This impact will occur not only from the aspect of its feedback effects which will be transmitted via changes in the ecosystem itself in general and ecosystem services in particular, it will also impact the economy through peculiar socioeconomic characteristics which get embedded within the economy and transmit across space and time through land itself. Consequently, recognition of these historical legacies adds explanatory power to the understanding of modern socioeconomic conditions at scales varying from the global to the local (in this case Sundarbans) and reduces missteps not only in anticipating or managing for future conditions but also analysing present socioeconomic conditions especially in fragile ecosystems.

Hence it can be very well argued that there is a hysteresis of the effects of colonial land tenure and forest conservation policies in the Sundarbans which manifests itself in the present via the overall geographical location of the people in the different regions of Sundarbans in terms of socioeconomic hierarchy especially caste and the skewed pattern of ownership of land. The next chapter investigates whether this hysteresis has any impact on the socioeconomic condition of Sundarbans by trying to locate its impact on employment diversification in the region in particular.

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<sup>29</sup> As there was an expansion of ecological studies to regional scales current and historical human activity is unavoidable. This in turn led to the realization that most "natural areas" have more cultural history than assumed and also that legacies of land use are remarkably persistent.

## Chapter 4

### Employment Diversification in Three Villages of Sundarbans

#### 4.1 Introduction

The term “diversification” is defined as either an increasing multiplicity of activities (regardless of the sector), or as a shift away from traditional rural sectors such as agriculture to non-traditional activities in either rural or urban space i.e. sectoral change (Start and Johnson, 2004). When it also involves moving the location of livelihood, or some other intrinsic economic quality, it is termed as adaptation. Rural diversification can be defined as economic development of non agricultural activities or a livelihood which has multiple, part-time components. It can be associated with a booming or recessionary economy or with accumulating or immiserating livelihood strategies (Start, 2001). In adjusting and unstable economies, which is most often the case in case of ecologically fragile regions, flexibility and adaptability are the order of the day because in these economies neither agriculture nor non-agriculture employment provide the scope for full employment. Hence multiple livelihoods may be the only answer.

#### 4.2 Rural Livelihood Diversification

Chambers and Conway (1992) proposed that a livelihood comprises of the capabilities, assets (stores, resources, claims and access) and activities required for a means of living. Livelihood is also considered as method of sustainability which can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation. Further, it contributes net benefits to other livelihoods at the local and global levels and in the short and long term. Ian Scoones (1998) of IDS defined sustainable livelihood as one, which can cope with and recover from stresses and shocks, maintain or enhance its capabilities and assets, while not undermining the natural resource base. As an approach to understanding and facilitating rural development the ‘sustainable livelihoods approach’ captures the concern about food and nutrition security, income security, health and education security as well as security of shelter and water resources (Datta and Singh,

2011). This is in conformity with a shift in stress from a materialist perspective focused on food production to a social perspective which focuses on the enhancement of people's capabilities to secure their own livelihoods (Drinkwater and Rusinow, 1999).

Livelihood diversification is a pervasive and enduring characteristic of rural survival which reflects the continuing vulnerability of rural livelihoods. Barrett, Reardon and Webb (2001) posit that multiple motives prompt households and individuals to diversify assets, incomes, and activities: The first set comprises of "push factors" namely risk reduction, response to diminishing factor returns in any given use<sup>1</sup>, reaction to crisis or liquidity constraints, high transactions costs that induce households to self-provision in several goods and services, etc. The second set comprises of "pull factors" like realization of strategic complementarities between activities, such as crop-livestock integration or milling and hog production, specialization according to comparative advantage accorded by superior technologies, skills or endowments, etc. The authors further point out that these micro level determinants have their aggregate counterparts at the macro level of the economy. In the case of "push factors" diversification is driven by limited risk-bearing capacity in the presence of incomplete or weak financial systems that create strong incentives to select a portfolio of activities in order to stabilize income flows and consumption, by constraints in labor and land markets, and by climatic uncertainty. Whereas for "pull factors" diversification occurs due to local engines of growth such as commercial agriculture or proximity to an urban area create opportunities for income diversification in production and expenditure-linkage activities. In the case of the economy of Sundarbans it is clearly the "push factors" which play a central role in livelihood diversification owing to the fact that it is situated within an ecologically fragile region.

Further in the case of Sundarbans both individual and farm household diversification into nonfarm activities emerges from *ex-ante* risk management and *ex-post* coping with adverse shocks (Webb *et al*, 1992). The former relates to

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<sup>1</sup> On example in ecologically fragile regions like Sundarbans is the family labor supply in the presence of land constraints in terms of increased saline content.

chiefly the various “pull factors” while the latter deals with factors like super cyclones, breaching of river embankments during the monsoon etc.

If one were to put rural livelihood diversification in the Sundarbans within the context of a broad distinction between necessity and choice as motivations to diversify livelihoods away from reliance on farming one has to consider six main determinants namely seasonality, risk, labour markets, credit markets, asset strategies, and coping behaviour which in turn are mediated through social relations<sup>2</sup> and institutions.<sup>3</sup> Moreover one has to look at the interplay of these determinants within the wider context of global and national socioeconomic and political dynamics and the fragile ecology of the region. In the case of Sundarbans seasonality, risk and coping behaviour play important roles but primarily via the labor markets and that’s why looking at employment diversification in the Sundarbans is of paramount importance if one has to understand livelihood diversification in terms of both individual and household.

#### **4.3 Employment Diversification**

Employment diversification means shifting of labour force from one sector to another for employment (Mukhopadhyay and Rajaraman, 2007). It must be noted further that employment diversification can have two units of analysis: the household and the individual i.e. we can analyse employment diversification in terms of the household where each individual might very well be employed in only one sector but the household overall gets income from various sectors of employment or in terms of the individual who might be employed in single or multiple sectors. In India, agriculture is the single largest employment providing sector, which employs approximately 58 percent of the total workforce. Over the years there has been considerable inter-sectoral movement of workforce, which has somewhat declined the importance of agriculture in providing employment to labour force (Chaddha and Sahu, 2002).

The farm sector is generally portrayed as the safe and secured arena for absorbing a large proportion of the rural working population but it does have its

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<sup>2</sup> These include kinship networks (Berry, 1993), gender relations within the household (Hart, 1995), and property access customs and rules (Berry, 1997; Platteau, 1992).

<sup>3</sup> See Ellis (2000) for a detailed analysis of these determinants.

absorptive limitations as is evinced in the emergence of disguised unemployment and low productivity. Further agricultural operations involve high degree of seasonality along with dependence on rainfall and natural munificence which is more so in the context of ecologically fragile regions. Accordingly a need is felt for livelihood diversification which also helps in risk spreading, consumption and labour smoothing and ensuring resilience (Datta and Singh, 2011). Farm economies in ecologically fragile regions like the Sundarbans are typically characterized by increasing population pressures, an ever declining land-man ratio, small and fragmented holdings, highly skewed land distribution structures, lack of access to forest resources, distance from both urban and large scale rural markets etc. as a result of which the traditional form of agriculture cannot obviously cater to the employment needs of the people of these regions and hence diversification in rural employment has become a critical issue over time. This is so because numerous rural households are faced with the increasing need of looking for alternative jobs to supplement their land based livelihood (Chaddha, 1993). Unequal socio-economic attainments, differential access to assets and available diversification opportunities as a form of insurance to guard against uncertain income shocks influence differences in the level of diversification across households which in turn influence individual earnings (Datta and Singh, 2011).

The nature, extent and speed of rural employment diversification in India have been studied by several researchers over the past two decades and most of them have concluded that the share of non-farm sector was increasing over time and the capacity of the farm sector to absorb additional labour had almost reached its limit (Anjani Kumar, 2008). However, some studies (Basant and Kumar, 1989; Visaria, 1995) have shown that there are strong possibilities of enhancing labour absorption in the agricultural sector itself through introduction of appropriate technological, institutional and organizational innovations promoting agricultural diversification. However such a scenario in the Sundarbans doesn't seem at all feasible in the near future. The rural non-farm sector is being increasingly viewed as an important alternative for reducing rural poverty levels as well as providing employment by absorbing surplus labour

from the agricultural sector (Nayyar and Sharma, 2004). But again in the context of Sundarbans the presence of an ecologically fragile ecosystem impedes not only the farm economy but the non farm economy as well. Thus given such a context it becomes increasingly important to look at the trends and patterns of employment in the Sundarbans in general and employment diversification in particular.

The analysis starts with a review of the block level information available on employment and employment diversification in Sundarbans. Then a case is made for the need for a primary survey and the survey results are analysed both at the inter village level and the intra village level.

#### **4.4 Block Level Information**

Till date there have been no studies whatsoever regarding employment diversification in the Sundarbans. Recently the Government of West Bengal came out with the District Human Development Reports, 2010 for both North and South 24 Parganas. We can get some aggregate block level information on employment diversification in the Sundarbans from these reports as the Sundarbans is spread across these two districts. These reports have relied mainly on the 2001 census data. The Sundarbans comprises of 13 blocks in the 24 South Parganas and 6 blocks in the 24 North Parganas. At the overall level minimal participation of female population in economic activity is observed in the sense that percentage of total male workers is nearly three times that of total female workers. However it is not surprising in the context of West Bengal because this state has one of the lowest recorded rates of female work participation in the country (District Human Development (DHD) Report: South 24 Parganas, 2010). If the two districts are disaggregated into blocks and analysed the picture as shown in table 4.1 emerges. From table 4.1 it can be clearly seen that the proportion of total male workers is much higher across all blocks. The DHD Reports further point out that in the case of the blocks lying in South 24 Parganas there is a higher proportion of main workers for males and that of marginal workers for females. This in a way further provides evidence that there is “invisibility” of women’s work to a large degree which in turn also contributes to



the skewed distribution of total workers in the population across the categories of males and females.

<b>Block</b>	<b>% of total male workers</b>	<b>% of total female Workers</b>
Canning I	51.14	12.64
Canning II	48.48	11.16
Basanti	50.73	12.35
Gosaba	56.04	20.4
Joynagar I	49.33	10.85
Joynagar II	49.25	14.4
Mathurapur I	48.44	5.6
Mathurapur II	52.84	10.92
Kultali	51.36	9.75
Patharpratima	54.99	29.6
Kakdwip	52.61	16.24
Namkhana	55.96	29.03
Sagar	52.72	27.66
<b>24 South Parganas</b>	51.84	16.20
Haroa	52.07	10.18
Minakhan	50.59	9.49
Sandeshkhali I	51.6	14.46
Sandeshkhali II	53.41	18.07
Hasnabad	54.31	18.84
Hingalganj	57.22	21.25
<b>24 North Parganas</b>	53.20	15.38
<b>Sundarbans</b>	52.27	15.94

Source: District Human Development Report: North and South 24 Parganas, 2010 and author's own calculations

Next we look at the district-wise distribution of total workers by occupation for the Sundarbans in table 4.2. Here it is the category of "other workers" which comprises forty percent of total workers for Sundarbans followed by cultivators and agricultural workers. These "other workers" chiefly comprise of daily wage workers in the unorganized and organized sectors and point to the casualisation of the workers in Sundarbans. Moreover it is important to identify whether such structural transformation is due to progressive labour saving technique of productive agriculture releasing labour which is absorbed in the modern industrial sector, or it is the distress in agriculture that is pushing workers out of it into a semi-saturated non-agricultural sector characterized by low return. The latter seems to be the case here. From table 4.2 it can be seen that some blocks like Canning-I, Joynagar-I, Mathurapur-I and Hasnabad have greater dependence on non-agricultural sector which is in sharp contrast to the

blocks like Canning-II, Basanti, Kultali, Gosaba etc. where more than 70 per cent of the main workforce is engaged in agriculture even in 2001.

Block	Cultivator	Agricultural workers	Total workers in Agriculture	HH Industrial workers	Other workers
Canning I	14.61	17.83	32.44	4.43	63.13
Canning II	26.55	45.74	72.29	1.43	26.28
Basanti	32.22	38.47	70.69	1.82	27.5
Gosaba	33.07	34.5	67.57	1.35	31.08
Joynagar I	12.51	17.95	30.46	5.61	63.93
Joynagar II	18.91	32.28	51.19	8.83	39.99
Mathurapur I	14.09	23.72	37.81	6.19	56
Mathurapur II	24.73	35.81	60.54	4.35	35.12
Kultali	34.53	36.06	70.59	1.57	27.84
Patharpratima	33.05	28.1	61.15	1.86	36.99
Kakdwip	20.92	28.17	49.09	2.87	50.04
Namkhana	31.39	20.26	51.65	1.74	46.6
Sagar	36.33	30.72	67.05	1.72	31.24
<b>24 South Parganas Sundarbans</b>	25.61	29.97	55.58	3.37	41.21
Haroa	22.58	30.11	52.69	3.78	43.52
Minakhan	21.21	34.76	55.97	1.92	42.11
Sandeshkhali I	18.64	34.74	53.38	2.22	44.41
Sandeshkhali II	25.41	41.66	67.07	1.91	31.02
Hasnabad	16.35	20.76	37.11	15.34	47.6
Hingalganj	30.82	27.28	58.1	8.69	33.21
<b>24 North Parganas Sundarbans</b>	22.50	31.55	54.05	5.64	40.31
<b>Sundarbans</b>	24.63	30.47	55.10	4.09	40.93

Source: District Human Development Report: North and South 24 Parganas, 2010 and author's own calculations.

So although most of the Sundarbans is predominantly rural and backward in nature there is indeed heterogeneity in terms of employment across occupations which in turn points to heterogeneous development. Those blocks which are nearer to Kolkata and away from the forests seem to have a lesser dependence on agriculture for their employment needs vis-à-vis those blocks adjacent to the forest. The blocks like Patharpratima and Namkhana which are in way in between the two types of blocks just mentioned are also between them in terms of dependence on the agricultural sector for employment generation. Table 4.3 examines the livelihood patterns of rural households at block level in Sundarbans.

Table 4.3: Livelihood Patterns of Rural Households at Block Level in Sundarbans					
Category \ Block	D/W Worker	Cultivator	Self Employed	Regular labor oriented worker in the unorganized sector	Others in the Organized Sector
Canning I	49.93	19.76	10.53	7.93	11.85
Canning II	61.56	24.81	5.1	3.63	4.89
Basanti	49.44	32.69	5.98	4.69	7.2
Gosaba	41.54	36.19	5.05	6.26	10.95
Joynagar I	53.51	14.57	10.24	9.24	12.46
Joynagar II	44.45	23.31	13.39	11.01	7.83
Mathurapur I	55.97	16.77	9.58	6.12	11.56
Mathurapur II	58.42	21.47	6.46	4	9.66
Kultali	47.75	36.67	5.76	4.92	5.19
Patharpratima	48.84	30.56	4.05	5.43	11.1
Kakdwip	54.93	20.39	4.72	8.8	11.16
Namkhana	58.54	23.64	5.42	3.87	8.52
<b>24 South Parganas Sundarbans</b>	52.30	25.41	6.93	6.16	9.23
Sagar	54.97	29.45	3.86	4.15	7.58
Haroa	47.71	24.78	9.01	7.85	10.63
Hasnabad	56.45	18.66	6.03	6.89	11.97
Hingalganj	49.8	34.46	3.17	4.3	8.27
Minakhan	47.69	27.58	5.5	7.09	12.15
Sandeshkhali I	43.81	27.1	6.34	11.06	11.69
Sandeshkhali II	56.04	28.97	3.42	4.74	6.83
<b>24 South Parganas Sundarbans</b>	50.25	26.93	5.58	6.99	10.26
<b>Sundarbans</b>	51.65	25.89	6.51	6.42	9.55

Source: District Human Development Report: North and South 24 Parganas, 2010 and author's own calculations

The aggregate numbers for Sundarbans suggests greater casualisation of the workers. Moreover although Sundarban blocks in both districts have more than 50 percent of their workers employed in the agricultural sector only half of them derive their main source of income from cultivation which in a way points the low level of returns from agriculture and also the overall depressed socioeconomic condition of the blocks mainly dependent on agriculture. Again a variation can be seen among blocks far way from forests and nearer to Kolkata and those which are nearer or adjacent to forests in the Sundarbans. Areas like Canning I, Haroa, Joynagar I and II, Mathurapur I have higher proportions of people deriving their major source of income from being self employed as compared to blocks like Gosaba, Kultali, Basanti Namkhana etc. There is also a similar difference with regards to proportion of people deriving their major share of income from the organized sector. People in the Blocks adjacent to the forest

have an overwhelming dependence on cultivation and daily wage work whereas blocks nearer to Kolkata are more diversified in terms of income and employment generation.

Thus we see that in terms of employment diversification the blocks can be divided into three categories: blocks adjacent to forests, blocks near to Kolkata and blocks lying between the two. This is in resonance with the discussions in chapter 2 where it was noted that blocks adjacent to forest had lower levels of overall socioeconomic development as compared to blocks farther away from the forest. In a nutshell it seems that the geographical location of the blocks does play an important role in determining the socioeconomic condition of the people residing in that block in general and employment diversification in particular. Interestingly a similar notion has been discussed by Jalais (2010) in her ethnographic analysis of a village in Gosaba pointed out that there are “up” and “down” islands in the Sundarbans wherein the islands closer to Kolkata are “up” and those near to the forest are “down” and there is stark difference in their socioeconomic conditions. The spatial characteristics of these “up” and “down” lands are very dissimilar in the sense that the “up” areas have agglomerate, compact settlements whereas the “down” areas have semi nucleated dispersed settlements (Banerjee, 1998 quoted in Jalais, 2010). There are stark differences in terms of infrastructure and communication facilities as well not to mention the overall socioeconomic condition. She further pointed out that in the village of Garjontala; the site of her ethnographic exercise, the better off people lived in the center of the island whereas those worse off were settled around the embankments and the periphery. Hence it can be argued that the notion “up” and “down” land exists at both the inter island and intra island level in the Sundarbans. This ethnographic idea of “up” and “down” lands can be applied in economic analysis as well but with some necessary modifications.

While the notion of “up” and “down” lands at the intra island level remains the same, the notion at the inter island level changes a bit from what is envisaged by Jalais (2010). This slight change is in the sense that for her two adjacent islands near the forest might not be “down” islands because according to the people’s perception one island which is a bit farther from the forest can

very well be an “up” island. This kind of complexity however cannot be accommodated within economic analysis where some amount of generality is the order of the day. Hence for economic analysis the islands can be divided into “up” and “down” categories depending upon their proximity to forests and their distance from Kolkata. However if this is done at the block level problems arise in the case of some blocks like Patharpratima whose one part is nearer to Kolkata and the other is adjacent to the forest. Thus it makes eminent sense to undertake this exercise at the village level. One more modification which is introduced is that forests are divided into those with tigers and those without tigers simply because these two types of forests offer different levels of access and hence different levels of economic returns to the people. The access to forests which are part of the tiger reserves for fishing is very limited while it is not so for forests which are not part of the tiger reserves. Hence it is economically advantageous for a village to be situated adjacent to a forest which belongs to the latter category. Moreover the risk involved is also quite less in case of jungles which are not inhabited by the man eating royal Bengal tigers. However employment data at the village level is not available in the Sundarbans and hence the need arises for a primary survey.

#### 4.5 Survey Methodology

The sampling procedure used in this survey can be termed as multi stage stratified random sampling. In the first stage all the villages of the 19 blocks of Sundarbans were divided into three broad groups on the basis of a combination of three factors namely distance from the urban metropolis of Kolkata<sup>4</sup>, distance from a forest with tigers and the same from a forest without tigers. Thus all villages were grouped into one of the following three groups:

- 1) The first group of villages was near to Kolkata (around 3 to 5 hours by road) and was far away from forests with or without tiger inhabitation.
- 2) The second group of villages was far away from Kolkata (8 to 12 hours by a variety of transports including both surface and water) and was adjacent to forests which were not inhabited by tigers.

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<sup>4</sup> Lesser the distance and better the connectivity lesser is the time required to access the urban and semi urban markets of Kolkata.

- 3) The third group of villages was far away from Kolkata (8 to 12 hours by a variety of transports including both surface and water) and was adjacent to forests which were by tigers.

Then one village was selected from each of three groups via random sampling. The three villages thus obtained from the three groups were Ramganga, Herambogopalpur and Kumirmari respectively. Both Ramganga and Herambogopalpur belong to Patharpratima Block whereas Kumirmari belongs to Gosaba Block. This sampling was primarily for the inter village analysis. Put otherwise Ramganga is the “up” village whereas Herambogopalpur and Kumirmari are the “down” villages.

For the intra village analysis, again a multistage stratified random sampling procedure was followed. A list of all the households in these three villages was generated from the household list obtained from the Block Development Offices (BDO) of Patharpratima and Gosaba. Then for each village all the households were first divided into four categories on the basis of cultivable land ownership<sup>5</sup>. The four groups were landless, owners of upto 2 bighas of land, 2-5 bighas of land and more than 5 bighas of land. Next for each of these four groups a two subgroups was created in the sense that each group was divided into two groups on the basis of the distance of the cultivable land from the river embankments. In the case of landless households the distance of the homestead from the river embankments was considered instead. Then a random sampling was done for each of these subgroups so as to generate 70 households from each village in such a way that the population proportions for each subgroup were maintained in the sample subgroups. The sample represents around twenty five percent of the actual population in all the villages.

A pilot survey was conducted in Ramganga and Herambogopalpur for a week from 22/11/2010 to 29/11/2010 and a total of 30 houses were surveyed. Thereafter necessary changes were incorporated into the questionnaire and a survey pretesting was done from 05/12/2010 to 12/12/2010 in 15 households in

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<sup>5</sup> In the constricted economy of Sundarbans land whether productive or not is the only asset households have. Further if the salinity increases to such an extent that cultivation is not feasible then sometimes these agricultural plots are converted into brackish water fisheries.

Kumirmari. The final questionnaire was further fine-tuned and finally the survey was conducted in three villages from 20/12/2010 to 28/01/2011 wherein 165 houses were enumerated of which 150 households have been used for analysis. The case studies discussed in chapter 3 were done during this same period after extensive focused discussions with the village elders, schoolteachers and social workers so as to choose the correct subjects.

#### **4.6 Village Level Analysis**

The analysis of the three villages is divided into two sections: inter village analysis and intra village analysis. For the inter village analysis we compare the trends and patterns in employment and employment diversification of the three villages and try to analyse and situate the differences, if any, within the context of the overall geographical location of the three villages. As far as the short section on intra village analysis is concerned we will look at the differences in employment and employment diversification at the household level for each village and try to contextualize it with the help of the geographical location of their cultivable plots of land.

#### **4.7 Inter Village Analysis**

This section is divided into three broad parts: first the socioeconomic summary of the data collected in the three villages is analysed and second the socioeconomic condition of the villages is reflected upon with reference to the colonial land reclamation process discussed in chapter 3. Finally the third section looks at the labor market participation of three villages and the resultant employment diversification.

##### **4.7.1 Socioeconomic Summary of the Three Villages**

All the three villages namely Ramganga, Herambogopalpur and Kumirmari fall under the jurisdiction of 24 South Parganas. The first two belong to Patharpratima block while Kumirmari belongs to Gosaba Block. In terms of proximity to Kolkata, Ramganga is best off whereas Kumirmari and Herambogopalpur are worst off. It takes around three hours to reach Kolkata from Ramganga while it takes around eight to twelve hours to reach the same

place from the other two villages<sup>6</sup>. Moreover the economy of Ramganga is much bigger and vibrant than that of the other two villages. The primary reason for this, being the fact, that it is the last village in Patharpratima which is connected directly by road to Kolkata. After Ramganga the network of rivers and estuaries start and hence communication and transport to the villages beyond Ramganga is both time consuming and strenuous. Hence all the goods (essential and otherwise) which are to be sent to these villages are brought by road from Kolkata and other semi urban areas nearby to Ramganga by road. Thereafter they are loaded on mechanized boats and shipped off to the remote villages. Thus in a way Ramganga is a transport hub of sorts in this area. Moreover it also acts as a bus depot for all buses plying to and from Kolkata and other places on that route. The constant flow of traffic from and to Kolkata has resulted in the demand of various goods and services mostly by people coming over and staying overnight for work which in turn has resulted in the sprouting of two private guest houses and a few eateries alongwith numerous ubiquitous tea and pan stalls<sup>7</sup>. Moreover the area around the jetty has developed into a successful commercial centre with shops selling everything from grocery to fruits to apparels. In a nutshell although double cropping agriculture is the basis of the Ramganga economy there is a presence of retail and transport/storage sectors as well. The locational advantage which Ramganga has is also leveraged by quite a few NGOs which have their offices in and around the area adjacent to the jetty. The economic importance of the area can be gauged not only from the fact that the villages is nearly completely electrified but also most of the roads of this village are paved with bricks which is quite a rare phenomenon in any Sundarban village. Moreover the relative affluence of the people residing in this village can be gauged from the boisterous community celebration of numerous fairs and religious festivals.<sup>8</sup> Finally the locational advantage also plays a role in minimizing the impact of cyclones as was seen during Aila when only half the village got submerged

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<sup>6</sup> One can go to Kolkata from Ramganga directly by bus while in the case of Herambogopalpur and Kumirmari one has to take a variety of transports including motorized boats, motorized vans/cycle vans and local trains to reach the same destination.

<sup>7</sup> In rural Bengal tea and betel leaves are complements.

<sup>8</sup> During the period of field survey the author was witness to two fairs and three religious festivals while there were none whatsoever for the other two villages.



under saline water for two days and this being a commercial centre the district and block administration saw to it that the river embankments were repaired very quickly.

In contrast both Herambogopalpur and Kumirmari are anything but rural commercial centers. The prohibitive distance from any urban/semi urban markets coupled with virtually no protection from cyclones have resulted in a precarious economic situation for these two villages. There is hardly any area in these two villages which can be called a commercial centre. There is the ubiquitous village market but the scale of economic activity is very low compared to Ramganga. All the people go to the weekly village markets in the other islands “nearby” which sometimes means that one entire day of the week has to be devoted to buying of essential food items and other goods. The economy of these two villages is based on single cropping agriculture and there are simply no other industries here which can provide employment to the labor force. Another difference is the condition of roads in the sense that very few roads are paved with bricks and even those are in a terrible condition post Aila. The geographical location of the villages is such that it offers no natural barriers to impediments like cyclonic storms and this was acutely felt during Aila in 2009 when both the villages got submerged under saline water for more than a week. Further the socioeconomic backwardness of the two villages ensured that the river embankments were repaired quite late which in turn resulted in very high salinity of the agricultural plots resulting in virtually zero agricultural production in 2009. There is however one essential difference between Herambogopalpur and Kumirmari. The former is adjacent to forests which are not part of the tiger reserves while the latter is adjacent to a tiger reserve. This locational specification translates into very limited access to the mangrove forests and its estuaries and creeks for Kumirmari and hence the fishermen of this village are at a distinct disadvantage as compared to their compatriots in Herambogopalpur. Moreover there is much less threat to human life in Herambogopalpur as there are no tigers in the adjacent forests. This in a nutshell is a broad outline of the idea of “up” and “down” villages discussed by Jalais (2010). Thus given the socioeconomic context

Ramganga can be very well termed as an “up” village while Herambogopalpur and Kumirmari are “down” villages. Table 4.4 helps us to understand this better.

Village	Ramganga	Herambogopalpur	Kumirmari
Category			
Tomato Farming	8	4	0
Betel Leaf Farming	6	0	0
Cropping Nature	Double	Single	Single
Landless	28	46	32
Land Mortgaged Out	12	14	18
Electrification	Yes	No	No

Source: Primary Survey, 2010

That Ramganga has diversified into commercial vegetable farming while the other villages have not can be attributed to the fact that Ramganga has a vegetable wholesale market just one kilometer away by road on the way to Kolkata and hence even small cultivators can diversify into farming of vegetables. On the other hand both Herambogopalpur and Kumirmari are so remote that it would take a minimum of six to eight hours for the farmers here to reach the wholesale markets. Hence as far as commercial farming of vegetables and betel leaf is concerned it can be seen that Ramganga scores over the other two villages. Given the distance and time required it obviously translates into a significantly high transport costs which again can be overcome only by large scale farming of vegetables which in turn is constrained by the fragile ecology of the region in general and the salinity of the soil in particular. The percentage of households which have mortgaged out land is higher for the two “down” villages. However the proportion of landless households is much higher in Herambogopalpur compared to the other two villages. This has to be seen in the light of the disturbing fact that nearly seventy percent of the Muslim households are landless.<sup>9</sup>

#### 4.7.2 Demography and Educational Status of the Three Villages

Table 4.5 compares some socioeconomic parameters of the three villages. The sex economically active population (EAP) as percentage of total population does not show much variation across the three villages. The sex ratio is skewed towards males in Kumirmari (0.77) as compared to Herambogopalpur (1.06) and

<sup>9</sup> Author’s own calculations from the survey data.

Ramganga (0.98) However when it comes to illiteracy rates of both EAP and principal labor force (PLF)

	Village	Ramganga	Herambogopalpur	Kumirmari
<b>Parameters</b>				
Male Female Ratio		0.98	1.06	0.77
EAP as % of total population		63.40	61.35	62.71
Illiteracy Rate (EAP)		5.88	19.15	17.12
Illiteracy Rate (PLF)		4.94	15.91	8.64
HDI (Block) <sup>10</sup>		0.56	0.54	0.54

Source: Primary Survey, 2010

there are big variations. Ramganga (5.88 percent) has the lowest illiteracy rate followed by Kumirmari (17.12 percent) and Herambogopalpur (17.12 percent) for the EAP. As far as PLF is concerned the ranking is maintained but with lower illiteracy rates for all the three villages. The rates are much lower because the majority of the females in EAP are not part of the PLF.<sup>11</sup> The Human Development Index (HDI) for the blocks to which the three villages belong doesn't show much difference which once again highlights the need for a village level study.

Village	Ramganga			Herambogopalpur			Kumirmari		
	M	F	T	M	F	T	M	F	T
0-14	12.08	15.85	27.92	12.77	19.15	31.91	16.53	7.63	24.15
15-29	13.96	14.34	28.30	15.25	15.96	31.21	14.41	13.98	28.39
30-44	12.08	10.94	23.02	9.22	8.87	18.09	11.44	10.59	22.03
45-59	7.17	4.91	12.08	7.09	5.32	12.41	8.05	4.24	12.29
60 and above	5.28	3.40	8.68	4.26	2.13	6.38	5.93	7.20	13.14
Total	50.57	49.43	100.00	48.58	51.42	100.00	56.36	43.64	100.00

Source: Primary Survey, 2010

As far as demographic profile is concerned the majority of the population in the three villages (males, females and combined) is concentrated in the first three age groups as can be seen from table 4.6: around 80 percent for both Ramganga and Herambogopalpur and around 75 percent for Kumirmari. While the first two villages have 8.68 percent and 6.38 percent of people aged sixty years and above Kumirmari has a much higher share at 13.14 percent. It is interesting to note that the proportion of females for both Ramganga (15.85

<sup>10</sup> Source: District Human Development Report: South 24 Parganas, 2010.

<sup>11</sup> See Appendix II

percent) and Herambogopalpur (19.15 percent) in the age group 0-14 years is much higher than that of males (12.08 percent and 12.77 percent). This will go a long way in ensuring that the sex ratio is not skewed towards males in these two villages atleast in the near future. Moreover for the age group 60 years and above Kumirmari has a higher proportion of females (7.20percent) than males (5.93 percent). Further Ramganga (63.40 percent) has the highest share of EAP followed by Kumirmari (62.71 percent) and Herambogopalpur (61.71 percent). The male share of EAP is highest for Kumirmari (33.9 percent) followed by Ramganga (33.21 percent) and Herambogopalpur (31.56 percent). For females Ramganga (30.19 percent) has the highest share of EAP followed by Herambogopalpur (30.15 percent) and Kumirmari (28.81 percent). Ramganga and Kumirmari have the highest share of its population (28.30 percent and 28.39 percent respectively) in the 15 -29 years age group while the 0-14 years age group accounts the highest share (19.15 percent) for Herambogopalpur which in way point towards the fact the general profile of the population in all the three villages is quite young which makes the issue of employment diversification quite critical. But before venturing into the issue of employment diversification one needs to have a look at another critical social characteristic i.e. education.

**Table 4.7: Educational Qualification of Economically Active Population (EAP) in percent**

Status	Ramganga			Herambogopalpur			Kumirmari		
	M	F	T	M	F	T	M	F	T
Illiterate	1.79	4.76	6.55	6.36	14.45	20.81	3.38	11.49	14.86
Literate	1.79	1.19	2.98	0.58	1.73	2.31	5.41	2.70	8.11
KG-Class IV	9.52	9.52	19.05	10.40	12.72	23.12	12.16	7.43	19.59
Class V- Class X	32.74	27.98	60.71	27.75	16.18	43.93	23.65	16.89	40.54
Matriculation	2.38	3.57	5.95	4.05	1.73	5.78	4.05	4.73	8.78
HS	1.19	0.00	1.19	0.00	0.58	0.58	0.68	2.03	2.70
Graduation	1.79	0.60	2.38	1.73	1.16	2.89	2.70	0.68	3.38
Post Graduation	1.19	0.00	1.19	0.58	0.00	0.58	2.03	0.00	2.03
Total	52.39	47.62	100	51.45	48.55	100	54.06	45.94	100

Source: Primary Survey, 2010

It can be seen from table 4.7 that the two remote villages of Herambogopalpur and Kumirmari have much higher rates of male and female illiteracy as compared to Ramganga. The disaggregated information shows that most of the literate economically active population has educational qualification in two categories: KG-Class IV and Class V-Class X. It can be argued that these two groups also represent two successive generations of people in these villages.

It was observed from the field survey that even the most destitute families now attach a premium to the education of their kids and are willing to go to any lengths to educate their children atleast upto the matriculate level. This realization of the importance of education stems from their own experiences of being educated mostly till class IV which was a distinct disadvantage as they couldn't fulfill the minimum educational qualifications for most of the Government jobs. Thus these households have realized the importance of having a minimum education level (read class X) as it heavily influences the quality of employment diversification options. Further with the mushrooming of NGO activities all over Sundarbans local educated youths can aspire for the jobs generated by these agencies and they too require a minimum level of higher education. The extremely high rate of illiteracy in Herambogopalpur has to be seen in the light of the fact that 30.95 percent of its Muslim economically active population is illiterate.<sup>12</sup>

Another interesting aspect is the fact that in term of higher education<sup>13</sup> Kumirmari has the highest proportion of its economically active population (16.89percent) followed by Ramganga (10.71 percent) and Herambogopalpur (9.83percent). This again has to be interpreted in the light of existence of employment opportunities in the three villages. Ramganga being the closest of the three villages to Kolkata and being a commercial centre has much more employment opportunities for youths who have studied upto class X as compared to the other two villages. Kumirmari, on the other hand, suffers from lack of any such employment opportunities whatsoever and hence those families who can afford to educate their children tend to get them as much educated as possible so that they can compete in the urban formal job markets of Kolkata. Going by this logic Herambogopalpur should also have had a higher rate of higher education than Ramganga. Hence this logic doesn't hold much water and this pattern may be attributed to another factor: in all the three villages the economically active females have higher rates of higher education and it is

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<sup>12</sup> Author's own calculations from the survey data.

<sup>13</sup> In the context of these villages higher education can range from being matriculate to post graduate.

plausible that most of them are not in the principal work force. This aspect will be dealt with in detail later.

#### 4.7.3 Social Composition of the Three Villages

From the table 4.8 it can be clearly seen that both Ramganga and Kumirmari have a complete majority of Hindu families (96percent and 100percent respectively) while Herambogopalpur has a sizeable proportion (26 percent) of Muslim families as well. If one were to disaggregate the Hindu families further it can be seen that that Ramganga is

Village \ Religion	Ramganga	Herambogopalpur	Kumirmari
Muslims	4	26	0
Hindus	96	74	100
Village \ Social Group	Ramganga	Herambogopalpur	Kumirmari
General Caste	80	60	0
Scheduled Castes	14	12	98
Scheduled Tribes	0	0	2
OBC	2	2	0

Source: Primary Survey, 2010

dominated by general caste Hindus (80percent) while scheduled caste Hindus (98 percent) hold sway in Kumirmari. As far as Herambogopalpur is concerned it is also dominated by general caste Hindus but its proportion (74percent) is much less and it is the most heterogeneous village in terms of social composition. If one were to disaggregate the various castes a very interesting pattern emerges.

Village \ Category	Ramganga	Herambogopalpur	Kumirmari
Mahishya	80	60	0
Bagdhi	4	1	0
Kumbhokar	4	0	0
Namasudra	0	12	0
Paundra Kshatriya	8	0	98

Source: Primary Survey, 2010

Table 4.9 gives the caste of all the Hindu households of the three villages at the disaggregated level. Ramganga is dominated by the Mahishya caste (80 percent) which is the cultivating caste and is generally considered to be among the lower general castes. Herambogopalpur also is dominated by the Mahishya caste (60 percent) but it also has a significant proportion of Namasudras

(12percent) while Kumirmari is totally dominated by the Paundra Kshatriyas (98percent). Both the Namasudras and the Paundra Kshatriyas belong to the Scheduled Castes category and are considered to be at the absolute bottom of the Hindu caste hierarchy (Risley, 1891). This pattern of social composition of the three villages finds resonance with the colonial land reclamation and conservation history of Sundarbans discussed in detail in chapter 3. It must be noted that the Namasudras and the Paundra Kshatriyas are considered to be the original settlers of Sundarbans. As they cleared one lot of "waste" forest they were forced or lured to clear the subsequent lot and this process continued till forest conservation came into being and suddenly these people couldn't clear the "valuable" forests. They had no option but to settle on the cleared islands on the fringes of the protected and reserved forests. As far as the lots which had been cleared initially were concerned they started getting filled up by the people of the general caste especially by the cultivating caste namely the Mahishyas (Chattopadhyaya, 1998). And interestingly the higher proportion of presence these two "lower castes" seems to correspond to the lower socioeconomic well being of the villages.

Thus the colonial land reclamation policies for nearly a century and the colonial forest conservation policies thereafter resulted in the creation of a pattern of human settlement in the Sundarbans wherein most of the original settlers ended up at the fringes of the forest while the second and third generation of settlers occupied the initially cleared lands which were much closer to Kolkata and other urban and semi urban centers. So in a way the worst off socioeconomically in the Sundarbans ended up settling in the locationally worst off regions in the Sundarbans. This in turn has affected the socioeconomic conditions of future generations as well. A concrete example of this can be seen in the inter village analysis done so far. Add to this the fact the skewed land ownership patterns persisting due to a less successful implementation of land reforms it becomes quite clear that the history of the landscape changes of Sundarbans has had a major role to play in influencing the socioeconomic conditions of the people settled here. Hence the issue of employment

diversification in the three villages needs to be analysed within this specific historical and resultant geographical context.

#### 4.7.4 Labor Market Participation in the Three Villages

Table 4.10 gives the labor Force Participation Rates (LFPRs) of various age groups in the three villages. The age group 45-59 has the highest share of the labor force participation in all the three villages: 62.07 percent for Kumirmari followed by 56.25 percent for Ramganga and 51.43 percent for Herambogopalpur. Next is the age group 30-44 which accounts for 52.46 percent of labor force participation in Ramganga followed by Herambogopalpur (50.98 percent) and Kumirmari (46.15 percent). For the age group 15-29 Ramganga (33.33 percent) has the lowest share

Village	Ramganga			Herambogopalpur			Kumirmari		
	M	F	T	M	F	T	M	F	T
15-29	67.57	0.00	33.33	72.09	11.11	40.91	73.53	15.15	38.96
30-44	100.00	0.00	52.46	96.15	4.00	50.98	88.89	0.00	46.15
45-59	94.74	0.00	56.25	90.00	0.00	51.43	94.74	0.00	62.07
60 and above	42.86	0.00	26.09	58.33	16.67	44.44	57.14	0.00	25.81

Source: Primary Survey, 2010

of labor force participation as compared to Herambogopalpur (40.91 percent) and Kumirmari (38.96 percent). From these patterns it can be gauged that there might not be too many barriers as far as entry into the labor market is concerned. However while disaggregating in terms of gender it is noticed that there is hardly any female labor force participation except in Herambogopalpur for the age groups 15-29 (11.11 percent of the total females in this age group) and 60 and above (16.67 percent). Similarly Kumirmari has some presence in the age group 15-29 (15.15 percent of the total females in this age group). As noticed in table 4.10 either there is a definite gender barrier in the labor market of these three villages or there is large scale invisibility of women's work.

It is interesting to note that quite a few people outside EAP seem to be actively participating in the labor market especially in Herambogopalpur where the age group 60 and above has higher participation (44.44 percent) than the age group 15-29 (40.91 percent). There is also labor market participation of this age group in the other two villages as well: Ramganga (26.09 percent) and Kumirmari



(25.81 percent). This pattern in a way brings out the economic condition of the three villages. Ramganga being an “up” village has lower rates of LFPR for this age as most of the persons belonging to this group probably don’t need to work while the most of the people in the same group has to work in Herambogopalpur which is socioeconomically a “down” village. Going by this logic Kumirmari should also have had a higher rate of participation for this group. This is answered if one looks into gender wise breakup of the LFPR for this age group. For both Ramganga and Kumirmari the labor force in this age group comprises entirely of males while Herambogopalpur has a few females as well. Comparing at the male LFPR for this specific age group it can be seen that in Herambogopalpur 58.33 percent of the males are in the labor force while Kumirmari has a rate of 57.14 percent. This is much higher than Ramganga’s rate of 42.86 percent. That overall all the three villages have male LFPRs of more than forty percent reflects the overall poverty of Sundarbans. While it is seen that there is a definite gender bias to participation in the labor markets it is equally important to look whether those participating in the labor market are getting employed or not. This can be satisfactorily answered after looking at table 4.11 which looks at Worker Population Ratios (WPRs) and unemployment rates for these different age groups across the three villages.

WPR in %	Village	Ramganga			Herambogopalpur			Kumirmari		
	Age Group	M	F	T	M	F	T	M	F	T
	15-29	51.35	0.00	25.33	48.84	8.89	28.41	55.88	15.15	31.17
	30-44	96.88	0.00	50.82	53.85	4.00	29.41	37.04	0.00	19.23
	45-59	84.21	0.00	50.00	35.00	0.00	20.00	68.42	0.00	44.83
	60 and above	42.86	0.00	26.09	58.33	16.67	44.44	14.29	0.00	6.45
Unemployment (UPS) rate in %		Ramganga			Herambogopalpur			Kumirmari		
		M	F	T	M	F	T	M	F	T
	15-29	16.22	0.00	8.00	23.26	2.22	12.50	17.65	0.00	7.79
	30-44	3.13	0.00	1.64	42.31	0.00	21.57	51.85	0.00	26.92
	45-59	10.53	0.00	6.25	55.00	0.00	31.43	26.32	0.00	17.24
	60 and above	0.00	0.00	0.00	0.00	0.00	0.00	42.86	0.00	19.35

Source: Primary Survey, 2010

From table 4.11 it can be seen that the WPRs of Ramganga is the highest for the age groups 30-44 (50.82 percent) and 45-59 (50 percent). For the 30-44 age group Herambogopalpur (29.41 percent) comes second followed by Kumirmari (19.23 percent). In the case of 45-59 age group the order is reversed with

Kumirmari (44.83 percent) coming second and Herambogopalpur (20 percent) third. For the age group of 15-29 Kumirmari has the highest WPR of 31.17 percent followed by Herambogopalpur (28.41 percent) and Ramganga (25.33 percent). Thus for the age group 15-29 WPR is better in the two “down” villages as compared to that of the “up” village and in a way it can be argued that there are more employment opportunities for this age group in Herambogopalpur and Kumirmari than in Ramganga. Overall the 30-44 group has the highest sectoral share of Ramganga’s workforce while it is the 60 and above group for Herambogopalpur and 15-29 group for Kumirmari. Given the extremely low female WPRs it makes no sense to concentrate on male WPRs for better interpretation of results as the trends and patterns remain more or less the same. There is one striking result though. The WPRs for the two age groups 30-44 and 45-59 are much higher for Ramganga (96.88 percent and 84.21 percent) as compared to Herambogopalpur (53.85 percent and 35 percent) and Kumirmari (37.04 percent and 68.42 percent) which again reflects the economic backwardness of the two “down” villages.

Next we look at unemployment rates (UPS) of the three villages. The unemployment rates of Ramganga for all age groups is much lower compared to the other two villages which once again reinforces the argument that Ramganga is socioeconomically much better off than Herambogopalpur and Kumirmari. For the age groups 15 -29 and 45-59 Herambogopalpur has the highest male unemployment rate (23.26 percent and 55 percent) while Kumirmari has the same for the age groups 30-44 (51.85 percent) and 60 and above (42.86 percent).

Village	Ramganga			Herambogopalpur			Kumirmari		
	M	F	T	M	F	T	M	F	T
LFPR	30.57	0.00	30.57	28.72	2.48	31.21	31.78	4.85	33.90
WPR	27.17	0.00	27.17	17.38	2.13	19.50	18.64	4.85	20.76
Emp (UPS)	88.89	0	88.89	60.49	85.71	62.50	58.67	100	61.25
Unemp (UPS)	11.11	0	11.11	39.51	14.29	37.50	41.33	0	38.75
Prop Unemp	6.72	0	3.40	23.36	0.69	11.70	23.31	0	13.13

Source: Primary Survey, 2010

Note: Emp is employment; Unemp is unemployment and Prop means proportion

The fact that none is unemployed in the last age group for both Ramganga and Herambogopalpur cannot be seen in the same light. In Ramganga the

workforce belonging to this age group mainly run small retail shops and sometimes indulge in agriculture while in the case of Herambogopalpur the workforce of this age group are mainly into fishing and agriculture. Since the location of Kumirmari ensures that people over there have limited access to the estuaries and creeks hence the high unemployment rate for this age group.

As the participation of females in the principal labor force is minimal at best it is better to concentrate on the overall and male figures to understand the picture better. Overall the LFPR is highest for Kumirmari (33.90 percent) followed by Herambogopalpur (31.21 percent) and Ramganga (30.57 percent). However, the WPRs show that Ramganga leads (27.17 percent) followed by Kumirmari (20.76 percent) and Herambogopalpur (19.50 percent). Moreover in terms of unemployment Ramganga (11.11 percent) has the lowest followed by Herambogopalpur (37.50 percent) and Kumirmari (38.75 percent). As far as proportion unemployed is concerned Ramganga has the lowest (3.40 percent) followed by Kumirmari (13.13 percent) and Herambogopalpur (11.70 percent). In the case of male population the pattern remains the same in each case. In a nutshell, looking at the aggregate figures in table 4.12, it can be easily inferred that the “up” village of Ramganga is the best off village in terms of employment and unemployment than the two “down” villages of Herambogopalpur and Kumirmari.

#### **4.7.5 Employment Diversification in the Three Villages**

Table 4.13 looks at employment by industry for both Usual Principal Status (UPS) and Usual Subsidiary Status (UPSS). Agriculture employs the highest proportion of the principal labor force in Ramganga (43.44 percent) as compared to Manufacturing in Herambogopalpur (23.64 percent) and Construction (42.86 percent) in Kumirmari. This can be easily explained by the fact there are two cropping seasons in Ramganga as compared to one in the two “down” villages. Further the salinity of the soil is much higher in the two “down” villages as compared to the “up” village of Ramganga courtesy Aila. Fishing employs quite a significant proportion of the employed labor force in Herambogopalpur (12.73 percent) but not for Ramganga (4.17 percent) and Kumirmari (0 percent). This can be easily explained in terms of the geographical location of the three villages.

Ramganga is located far from the forests and only has access to fish in the river beside the village. Both the “down” villages are adjacent to forests but there is an essential difference: Herambogopalpur is adjacent to the forest which are not inhabited by tigers i.e. it is not adjacent to the tiger reserves and hence have access to rivulets and creeks of the forest which are conducive for catching fish and crab while Kumirmari is adjacent to the tiger reserve and hence has very limited access to these locations. Tea shops also employ nearly one tenth of the employed labor force in Ramganga while it is much less in the other two villages.

**Table 4.13: Employment by Industry in 2010 (percent)**

Industry	Ramganga		Herambogopalpur		Kumirmari	
	UPS	USS	UPS	USS	UPS	USS
Agriculture	43.44	73.00	14.55	79.84	6.12	81.55
Fishing	4.17	14.00	12.73	14.52	0.00	9.71
Manufacturing	8.33	2.00	23.64	1.61	4.08	0.00
Retail	6.94	2.00	5.45	0.00	14.29	0.00
Tea Shops	9.72	0.00	7.27	0.00	4.08	0.00
Transport/Storage	9.72	1.00	7.27	0.81	12.24	0.97
Education	4.17	2.00	7.27	0.00	8.16	1.94
Health & Social Work	2.39	1.00	3.64	0.00	4.08	0.00
Construction	11.11	5.00	14.55	1.61	42.86	5.83
HH Employers	0.00	0.00	3.64	1.61	4.08	0.00
Total	100	100	100	100	100	100

Source: Field Survey, 2010

This is again explained by the fact that commercially tea shops are more viable and profitable in Ramganga than in the other two villages. Going by the same logic retail should have had a higher proportion in Ramganga than in the other two villages. That it is not so (6.94 percent for Ramganga, 5.45 percent for Herambogopalpur and 14.29 percent for Kumirmari) suggests that there is a large scale migration of the principal labor force from the two “down” villages. This argument can be further supported by looking at the sectoral shares of employment of construction, transport/storage, manufacturing and private household employers from table 4.11. This is because none of the mentioned sectors have any significant presence in the two “down” villages. There is hardly any presence of construction, transport/storage and manufacturing in Ramganga as well which suggests migration of labor from this village as well. Education is another sector which employs quite a few people in both the “down” villages but significantly less in the “up” village. One reason for this might be the fact that

there are more educated unemployed youths in the two “down” villages who do tuitions to make a living. Surprisingly health and social sector employs more people in the two “down” villages rather than in the “up” village.

As far as the subsidiary labor force is concerned most of it is employed in agriculture (over 70 percent of subsidiary labor force in all villages) and fishing (around 14 percent for Ramganga and Herambogopalpur and around 10 percent for Kumirmari). Interestingly for Kumirmari 5.83 percent of the subsidiary labor force is employed by the construction sector which points to two things. First it again provides evidence of large scale labor migration in Kumirmari and second that this section of labor force participates in migration for a period of 30-40 days because otherwise it would have been captured in the principal status. In a nutshell the employment diversification trends by industry seem to suggest that there is large scale migration of labor force. In order to examine whether this hunch is correct or not we look at employment by occupation.

**Table 4.14: Employment by Occupation in 2010 (%)**

Occupation type	Ramganga		Herambogopalpur		Kumirmari	
	UPS	USS	UPS	USS	UPS	USS
Cultivator	43.06	19.00	12.73	20.16	6.12	31.07
Farm Labor	5.17	3.00	1.82	3.23	6.75	4.85
Tailor	2.65	0.00	5.78	0.00	0.00	0.00
Maid Servant	0.00	0.00	2.75	0.00	2.90	0.00
D/W Worker	2.78	5.00	3.64	2.42	0.00	0.00
Tuition Master	1.39	2.00	7.27	0.00	4.08	1.94
Small Businessman	16.67	1.00	20.00	0.00	22.45	0.00
Fishery Owner	0.00	1.00	1.82	0.00	0.00	0.00
Meen Catcher	1.39	4.00	0.00	0.81	0.00	5.83
Forest & River Worker	1.39	8.00	9.09	13.71	0.00	2.91
Government Service	4.17	0.00	3.64	0.00	4.08	0.00
NGO Services	2.36	0.00	0.00	0.00	4.08	0.00
D/W MWB	12.02	2.00	29.75	1.61	35.25	4.85
D/W MOB	5.56	0.00	1.82	2.42	14.29	3.88
Bidi Worker	1.39	2.00	0.00	0.00	0.00	0.00
Unpaid Family Labor	0.00	53.00	0.00	55.65	0.00	44.66
Total	100	100	100	100	100	100

Source: Primary Survey, 2010

Indeed table 4.14 shows quite clearly that there is large scale migration of labor force in both the “down” villages and lesser amount of it in the “up” village. Around 50 and 30 percent of the principal labor force of Kumirmari and Herambogopalpur comprises of daily wage migrant workers: migrant workers

within West Bengal (MWB) and migrant workers outside West Bengal (MWOB). The rate is much lower at around 18 percent for Ramganga. Also it must be noted that most of the tailors and all maid servants are migrant workers. Moreover the reason as to why health and social sector employs more people in the two “down” villages rather than in the “up” village can be explained with the help of this table. It can be seen the NGOs employ 2.36 percent of the PLF in Ramganga and 4.08 percent of the PLF in Kumirmari. It is actually the government health service which gives employment to the labor force in the health and social work sector: 4.17 percent for Ramganga, 3.64 percent for Herambogopalpur and 4.08 percent for Kumirmari. Moreover sectoral share of education sector for Kumirmari is divided between tuition masters and NGOs. Also there is a higher sectoral share of tuition masters for the two “down” villages (7.27 percent and 4.08 percent) as compared to the “up” village (1.39 percent) which in a way indicates that there are probably more educated unemployed youths in the two “down” villages. One interesting fact observed from table 4.13 is that the proportion of people employed by tea stalls was higher in Ramganga than in the “two” down villages. This can be explained by the fact in the two “down” villages quite a few people are employed in the mechanized/ non mechanized vans business wherein they own one or more vans which they rent out.<sup>14</sup> Looking at the employed subsidiary labor force one can see that most are employed as unpaid family labor (over 50 percent for Ramganga and Herambogopalpur and around 45 percent for Kumirmari) which indicates that probably the employed female subsidiary labor force comprises the most in these sectors. The rest are chiefly employed as cultivators or forest and river workers. The fact there are hardly any local daily wage workers in either UPS or UPSS attest to the failure of the village economies to create jobs and hence create the “push” factors for employment.

Thus in a nutshell it can be surmised that employment diversification in these three villages has seen a sectoral shift from the agricultural and fishing sector to the construction, manufacturing and transport/ storage sectors. This diversification of employment has occurred chiefly via the avenue of migration

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<sup>14</sup> In some cases the owners might drive them as well but they don't so for the majority of the year.

with intra state migration holding centre stage. There is a trend of greater casualisation of labor force in all the three villages as well. However the rates of both migration and casualisation of the labor force are much higher for Herambogopalpur and Kumirmari as compared to Ramganga. This has to be interpreted in the context of the geographical location of the three villages. Ramganga being located near to the urban metropolis of Kolkata has lower rates of unemployment, migration and casualisation of labor as compared to Herambogopalpur and Kumirmari which are far away from Kolkata and adjacent to the Sundarban jungles. Hence it does seem that the geographical location of these villages does seem to have some impact on their employment diversification via migration. We examine this in detail next.

#### 4.7.5.1 Employment Diversification via Migration

From the inter village analysis it is quite clear that employment diversification in all the three villages has occurred via a shift from agriculture to other industries. This can be seen from the patterns emerging from the sectoral shares of employment in terms of both occupation and industry. In a nutshell employment diversification had resulted in a high degree of casualisation of the labor force especially in Herambogopalpur and Kumirmari and this has happened through the avenue of migration of the labor force. In this section we try to examine the trends and patterns of migration of labor force in the three Sundarban villages.

#### *Trends of Migration in Sundarbans*

One interesting aspect we must understand is the fact that migration of labor force in the Sundarbans is not a very new phenomenon and in fact has been going on for more nearly a decade now. This can be easily understood by looking at table 4.15 below.

Year	Ramganga	Herambogopalpur	Kumirmari
1991-2000	6	8	9
2001-2010	26	37	55
2006-2010	22	32	53

Source: Primary Survey, 2010

Table 4.15 shows that there has been a spurt in migration of workers in the last decade. The number of workers migrating for the first time either within or outside Bengal has increased from 6 to 22 for Ramganga, 8 to 32 for Herambogopalpur and 9 to 53 for Kumirmari during the last twenty years. This in a way reinforces the earlier argument regarding the socioeconomic backwardness of Herambogopalpur and Kumirmari vis-à-vis Ramganga. More specifically it has been the last five years where migration of workers from these villages has become quite large.

Year	Ramganga			Herambogopalpur			Kumirmari		
	WB	OB	Total	WB	OB	Total	WB	OB	Total
2007	33.33	0.00	25	16.67	200.00	25	21.74	100.00	25
2008	6.25	50.00	15	7.14	50.00	10	28.57	300.00	46.66
2009	17.65	-16.67	8	23.33	0.00	21.21	36.11	-25.00	25
2010	5.00	-40.00	-4	-2.70	66.67	2.5	10.20	83.33	18.18

Source: Primary Survey, 2010

Table 4.16 shows the trend of both intrastate and interstate migrant workers of the three villages for the period 2007-2010. From the combined growth rates it can be easily seen that overall migration has come down over this period. In the case of Ramganga (-4 percent) the growth rate is actually negative in 2010. It is quite low for Herambogopalpur (2.5 percent) but quite high for Kumirmari (18.18 percent) which again reflects its socioeconomic backwardness which transmits push factors in its village economy. This socioeconomic inequality becomes starker given the fact that there was not much difference in the growth rates of all the three villages 2007. Further the sharp increase in the rates for both Herambogopalpur and the sharp decline in Ramganga have to be interpreted within the context of the socioeconomic impact of Aila in these villages. The remote village of Herambogopalpur was completely submerged by saline water for at least a week and since all the embankments broke salt water would keep entering the cultivable fields with every high tide. This basically rendered agriculture totally unviable at least for the year 2009. Hence the acute rise in growth rates of migration. That Ramganga's rate declined from 15 percent in 2008 to 8 percent in 2009 attests to the fact that it was not as badly affected by Aila. However there is indeed a catch here in the sense that the growth rate was much higher for Kumirmari in 2008 (46.66 percent) compared to 2009 (25 percent)



and 2010 (18.18 percent). One has to look at disaggregate level in order to make sense of this anomaly.

If one were to disaggregate and look at intrastate and interstate migrant workers some interesting patterns emerge. For Ramganga interstate migrant workers have decreased progressively throughout the period 2007-2010. As far as intra state workers are concerned it has also fallen steadily except in the year 2009 when it rose nearly three times which in turn reflects that Ramganga too was affected to a certain extent by Aila. Nearly half of the village was submerged under saline water for two to three days although the extent of damage done was much less as compared to the two remote villages. Interestingly the rate of interstate migrant workers fell drastically for all three villages in 2009 and this again can be explained in the context of Aila. Post Aila the situation of most of the affected households was quite similar in all the three villages: the house was severely damaged and in some cases swept away by the rivers and the lands were not viable for cultivation. So the people had to migrate for income as there was no other option left especially in the two remote villages. However the fact that their families didn't have proper shelter probably led them migrate within the state so that they could come back within short periods and start building their houses or a new shelter atleast. Further there was this widespread fear that a similar event might occur and hence they wanted to stay as close to home as possible. For Hrambogopalpur and Kumirmari both the interstate and intrastate growth rates have actually declined over time. Nonetheless the decline is much sharper for Ramganga and Hrambogopalpur as compared to Kumirmari which once again reinforces the socioeconomic inequality of the three villages. If we consider the total number of workers who have been both interstate and intrastate migrant workers in the same year the trends remain the same except in 2006 when Hrambogopalpur had the highest. Moreover there is an increasing trend in Kumirmari while it is declining in the other two villages.<sup>15</sup>

From the above analysis on migration for the period 2006-2010 what comes out is the fact that the overall geographical location indeed has an effect on both inter and intra state migration to a considerable extent. It can be clearly seen

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<sup>15</sup> Author's own calculation from survey data.

that the adverse geographical location plays a significant part in exerting push factors via its socioeconomy which in turn affects the trends of migration in the villages. The “down” geographical location of Herambogopalpur and Kumirmari results in the exertion of push factors in these economies at a far greater strength as compared to Ramganga whose geographical location can be termed as “up”. Thus we have greater number of migrant workers in the two “down” villages as compared to the “up” village. Next we examine migration in these villages in 2010 in detail and try to understand the movement of the migrant workforce in terms of location, industry and occupation.

#### 4.7.5.2 Location and Duration of Migration in Sundarbans

Table 4.17 gives us an idea about the amount of days the migrant workers work outside the Sundarbans but within Bengal (WB) in 2010. In the case Ramganga it can be clearly seen that more than half of the migrant workers worked for a month or less outside i.e. Ramganga experienced seasonal migration of its labor force. In the case of Herambogopalpur only 27.78 percent of the migrant workers worked for a month or less outside and for Kumirmari the percentage is even lower. Surprisingly the percentage of the migrant workers working nearly for the entire year also follows the same pattern.

Period (Days)	Ramganga	Herambogopalpur	Kumirmari
0-30	57.14	27.78	22.22
31-60	0.00	5.56	24.07
61-90	9.52	5.56	14.81
91-120	0.00	0.00	5.56
121-150	4.76	0.00	3.70
151-180	4.76	5.56	7.41
181-210	0.00	11.11	7.41
211-240	0.00	2.78	3.70
241-270	0.00	5.56	0.00
271-300	4.76	25.00	5.56
301-330	19.05	11.11	5.56

Source: Primary Survey, 2010

For Kumirmari nearly half of its migrant workers stayed outside between two to three months whereas for Herambogopalpur one fourth of its migrant workforce worked outside for nine to ten months. Interestingly if one were to consider migrant workers staying outside for more than nine months Herambogopalpur (36.11 percent) comes ahead of Ramganga (23.81 percent) with

Kumirmari (11.12 percent) coming last. One way of explaining these patterns is by arguing that Ramganga being a much better off village socioeconomically has the highest number of migrant workers who work for one month or less and Herambogopalpur and Kumirmari being socioeconomically worse off have lower numbers of such migrant workers. This also explains the fact that Herambogopalpur has more migrant workers staying outside for more than nine months than Ramganga but doesn't explain why Ramganga comes ahead of Kumirmari in this respect. Similarly if one were to consider the number of workers migrating between one to three months it accounts for more than sixty percent of the migrant workers for both Ramganga and Kumirmari whereas for Herambogopalpur the number of workers migrating for five to nine months account for nearly sixty percent of its migrant workers. If one were to consider the conventional wisdom that long term migration has high costs associated with it which not everyone can bear then the situation is explained partially in terms of Ramganga and Kumirmari which are the best and worst off village but the trends in Herambogopalpur cannot be explained. In a nutshell the distribution of number of workdays of migrant workers is skewed at the top and the bottom for Ramganga and Kumirmari and in the middle for Herambogopalpur and we need to look into the distribution of the migrant workers according to location, industry and occupation in order to derive more precise conclusions.

<b>Location</b>	<b>Ramganga</b>	<b>Herambogopalpur</b>	<b>Kumirmari</b>
Kolkata + Howrah	33.33	55.56	57.41
Varddhaman	47.62	27.78	11.11
Budge Budge	0.00	0.00	11.11
Medinipur	4.76	2.78	11.11
Haldia	4.76	0.00	0.00
Hooghly	4.76	0.00	5.56
Metiaburz	4.76	8.33	0.00
Murshidabad	0.00	2.78	0.00
Arambagh	0.00	2.78	0.00
Nadia-Murshidabad-Bankura <sup>16</sup>	0.00	0.00	3.70

Source: Primary Survey, 2010

Table 4.18 gives us a very good idea about the locations of the migrant workers of the three villages in 2010. For Ramganga nearly half the migrant

<sup>16</sup> This grouping has been done because the honey bee collectors move to all these places throughout the year.

workers went to Varddhaman followed by Kolkata and Howrah which also drew nearly one third of the migrant workers. Thus most of the migrant workers who worked for a month or less, it can be argued, went to Varddhaman which has a large cold storage industry. Most of these seasonal migrants go to work as daily wage worker in these cold storages in Varddhaman and Medinipur in West Bengal for a month from mid February to mid March every year. This is the loading season of cold storages which primarily store potatoes. Next comes the nearly twenty percent of the migrant labor force which worked outside for nearly the entire year. This category of workers, in the case of Ramganga, worked primarily as daily wage workers in the construction and manufacturing sector in and around Kolkata and Howrah in West Bengal. Other than that there are also a few tailors who worked in places like Metiaburz. Migrant workers in the agricultural sector and also working in Hotels went to Haldia and Hooghly.

For Herambogopalpur it is the construction and the manufacturing industries in and around Kolkata and Howrah (55.56 percent) which absorbed most of the migrant workers. Then come the cold storages in Varddhaman (27.88 percent) followed by Metiaburz (8.33 percent) which absorbs quite a few tailors from the Muslim families in this village. Migrant workers in the agricultural sector primarily went to Murshidabad while Arambagh and Medinipur drew workers into their construction sectors. As far as Kumirmari is concerned a much lower proportion of migrant workers went to Varddhaman (11.11 percent) while a much higher proportion went to Medinipur (11.11 percent), Budge Budge (11.11 percent) and Hooghly (5.56 percent). Of the three villages this village has the highest proportion of migrant workers going to Kolkata and Howrah (57.41 percent). All these trends just cannot be explained in terms of wage differentials. If it were so then most of the migrant should have gone to the cold storages which pay the most<sup>17</sup>. It must be understood that these workers migrate in groups which are created via social and kinship networks.

Thus most of the times it's the decision of the group as a whole to migrate to a particular place for work and there seems to be a certain amount of path

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<sup>17</sup> In cold storages the payment is done in terms of the number of sacks carried per day. Hence if more sacks are carried by a laborer he earns more.

dependent and risk averse behaviour involved here. Over the last few years there has been a large scale proliferation of “dalals” or middlemen in these villages who recruit young men and take them to work in the construction and manufacturing sectors especially outside the state and more often than not dupe the workers of a significant proportion of their earnings. This has led to this emergence of “migrating clusters” of workers not only outside West Bengal but within the state as well. Further there is tendency by these clusters to stick to a particular sector in a particular location especially if they get their wages on time. Another important factor is that working in the cold storages in Varddhaman involves a huge amount of physical strength and it is indeed very difficult for even the fittest of these workers to carry on working there for more than one month. Thus the workers who migrate for a month or less tend to go the cold storages where they get the highest wages but if the migration period is three months or more then they tend to prefer sectors like construction, manufacturing and lastly even agriculture.

<b>Period (Days)</b>	<b>Ramganga</b>	<b>Herambogopalpur</b>	<b>Kumirmari</b>
0-90	0.00	40.00	27.27
150-180	33.33	20.00	36.36
300-330	66.67	40.00	36.36

Source: Primary Survey, 2010

For migrant workers outside the state the trend is obviously to stay and work for longer periods of time. Generally the workers come home after six months or one year. It must be understood that these workers generally come from large households and hence can afford to leave their wives, children and aged parents behind. Those who cannot afford that and still have no option but to migrate do so for around three months. Table 4.19 shows that in Ramganga more than two thirds of the migrant workers worked outside for nearly the entire year and one third worked for five to six months. Herambogopalpur again shows different picture with higher proportions of workers working upto three and eleven months respectively (40 percent each). Higher proportions of Kumirmari workers stayed outside for five to six months and ten to eleven months (36.36 percent each). The general trend is that highest proportion of workers stay outside for nearly the entire year which is but logical as the objective of the

workers is to earn and save as much as possible and then come back. Frequent travelling to home would eat into their savings and also the fact that they travel in clusters means that most of them go and return at around the same time unless there are medical emergencies.

Table 4.20 gives us a clear idea about the locations outside West Bengal where migrant workers went to earn a living in 2010. Most of the interstate migration for Ramganga (100 percent and 0 percent) and Kumirmari (36 percent each) occurred in the two southern states of Kerala and Tamil Nadu which have a booming construction sector especially in Ernakulam and Chennai. Andaman and Nicobar islands is only preferred by workers in Kumirmari (9.09 percent).

<b>Location</b>	<b>Ramganga</b>	<b>Herambogopalpur</b>	<b>Kumirmari</b>
Andaman	0	0	9.09
Tamil Nadu	100	40	36.36
Kerala	0	0	36.36
Maharashtra	0	0	9.09
Punjab	0	20	0.00
New Delhi	0	40	0.00
Karnataka	0	0	9.09

Source: Primary Survey, 2010

One reason for this being the fact it is the most remote of all migrating locations which means that travelling from West Bengal to Andamans and vice versa involves a lot of time and money which entails in the workers staying away from home for a minimum of one year and sometimes upto two years. Thus, in way workers migrate to Andamans when all other options have failed. So the fact that nearly one tenth of the inter-state migrating workforce goes to the Andamans reflects the socioeconomic backwardness of Kumirmari via-a-vis that of Ramganga and Herambogopalpur. A certain section of the interstate migrating workforce of Kumirmari also went to Karnataka and Maharashtra (9.09 percent each) where the workers work in the fishery and manufacturing sectors respectively. The inter-state migrating workforce of Herambogopalpur went to three locations: the construction sector in Tamil Nadu (40 percent), the manufacturing sector in Punjab (hosiery industries in Ludhiana) and private household employers in New Delhi (40 percent).

One interesting aspect is the fact that hardly any women migrated for work either within or outside the state. There are quite a few reasons for this like the fact the women stay back to look after the kids and the aged in laws and other relatives. Economically speaking, the fact that most of these households have some amount cultivable land means that the lady assumes the role of the cultivator in the absence of her husband. This is equally important for the household as the cultivation ensures food grains for most of the households for atleast half a year and hence it is a complement to the income from migration. Further village customs seem to look down upon women migrating for work (atleast outside the state) and it is generally accepted that women migrating for work is the last employment diversification option of these households.

#### 4.7.5.3 Industrial and Occupational Structure of Migration in Sundarbans

From table 4.21 it can be seen that as far as interstate migration is concerned it is the construction sector which accounted for most of the workers in all the three villages in 2010: 100 percent for Ramganga, 60 percent for Herambogopalpur and 72.23 percent for Kumirmari. For both Kumirmari (20 percent) and Herambogopalpur (18.18 percent) manufacturing sector comes second. It primarily comprises of hosiery industries in Ludhiana and some industries in and around New Delhi as well as the idol making industry in Maharashtra.

Industry	Ramganga		Herambogopalpur		Kumirmari	
	WB	OB	WB	OB	WB	OB
Agriculture	4.76	0.00	2.78	0.00	16.67	0.00
Fishing	0.00	0.00	0.00	0.00	0.00	9.09
Manufacturing	9.52	0.00	33.33	20.00	0.00	18.18
Construction	28.57	100.00	25.00	60.00	51.85	72.73
Retail	0.00	0.00	0.00	0.00	3.70	0.00
HH Employer	0.00	0.00	5.56	20.00	5.56	0.00
Hotel	4.76	0.00	0.00	0.00	0.00	0.00
Transport/Storage	52.38	0.00	30.56	0.00	22.22	0.00
Health & Social Work	0.00	0.00	2.78	0.00	0.00	0.00
Total	100	100	100	100	100	100

Source: Primary Survey, 2010

Private household employers (20 percent) in Delhi and the fishery sector (20 percent) in Karnataka come third for Herambogopalpur and Kumirmari respectively. As far as intra state migration is concerned transport/storage

industry (potato cold storages in Varddhaman and Medinipur) absorbed the highest amount of workers for Ramganga (52.38 percent) and Herambogopalpur (30.56 percent). However for Kumirmari it is the construction sector (51.85 percent) in Kolkata and Howrah which tops the list and it is followed by the transport/storage sector (22.22 percent) and agricultural sector (16.67 percent) in places like Budge Budge, Hooghly etc. respectively. After the transport/storage sector workers from Ramganga were absorbed by construction (28.57 percent), manufacturing (9.52 percent) and agriculture (4.76 percent) respectively. For Herambogopalpur manufacturing (33.33 percent) comes second followed by construction (25 percent) and household employers (5.56 percent).

Thus diversification for the migrant workers within Bengal has occurred from agriculture in Sundarbans to the transport/ storage sector in Varddhaman and Medinipur, construction and manufacturing in Kolkata and Howrah followed by agriculture in a few places like Hooghly, Budge Budge etc. Ramganga workers have also diversified into hotel sector in Haldia whereas the other two villages have diversified into the private household employers sector in Kolkata. As far as interstate migrant workers are concerned there has been no diversification in Ramganga with all the workers concentrated in the construction sector. Herambogopalpur has diversified into construction, manufacturing and private household employers sectors while for Kumirmari private household employers gets replaced by the fishery industry. Thus within Bengal all the three villages are more or less equally diversified but outside Bengal the two worse off villages are much more diversified. Partly it can be explained by the fact that the number of interstate migrants is very small compared to the other two villages. Another reason is the emergence of migrant clusters as explained earlier.

If one were to look at the diversification trends in terms of “push factors” it can be argued that they operate with a far greater intensity in the two “down” villages as compared to the “up” village. This can be seen from the fact that the migrant workers from Ramganga migrate the least in terms of days. In order to maximize their returns from migration the majority of the migrant workers of Ramganga (52.38 percent) tend to go to the cold storages in Varddhaman where



they can earn the most.<sup>18</sup> However working in the cold storages for more than one or two months is physically extremely demanding. Hence the migrant workers from the other two villages who go for a long period time opt for manufacturing and construction sectors.

Finally looking at migrant workers in terms of occupation, from table 4.23, helps us to reinforce the trends of migration from the three villages in 2010 and their possible reasons. As far interstate migration from the three villages is concerned it has resulted in complete casualisation of the migrant workforce across industries and locations. For intrastate migration as well we have a very high degree of casualisation of the workforce.

Occupation	Ramganga		Herambogopalpur		Kumirmari	
	WB	OB	WB	OB	WB	OB
Daily Wage Worker	85.71	100.00	72.22	100.00	90.74	100.00
Maid Servant	0.00	0.00	5.56	0.00	5.56	0.00
Cook	4.76	0.00	0.00	0.00	0.00	0.00
Tailor	9.52	0.00	19.44	0.00	0.00	0.00
Honey Collector	0.00	0.00	0.00	0.00	3.70	0.00
Homeopathy Doctor	0.00	0.00	2.78	0.00	0.00	0.00
Total	100	100	100	100	100	100

Source: Primary Survey, 2010

From the table 4.23, it is evident that migration is highest for Kumirmari followed by Ramganga and Herambogopalpur respectively. As mentioned there are very female workers who migrate within the state. Those who do so go to Kolkata to work as maid servants. This has happened in the case of Herambogopalpur and Kumirmari. Kumirmari also has a few honey bee collectors who travel to a variety of locations throughout the year. Herambogopalpur seems to have a high proportion of tailors in the migrant workforce and these tailors come from the Muslim families in the village. These families have relatives in Metiaburz who run their own tailoring shops. When the young males of these Muslim households in Herambogopalpur finish schooling (upto 10 or 12) they are sent to Metiaburz where they work as apprentices in these shops and slowly learn the tricks of the trade. During this period they don't earn anything but do not have to pay for their food and accommodation. Once they acquire the requisite tailoring skills they become employees in that shop

<sup>18</sup> Wages in cold storages depend upon the number of sacks carried.

itself and earn a regular salary. This is a very good example of how social and kinship networks influence employment diversification in the Sundarban villages. There are also quite a few tailors from Ramganga as well. Other than that Ramganga provides cooks for hotels in Haldia while Herambogopalpur provides a few homeopathy doctors who work in and around Kolkata and Kumirmari has honey bee collectors.

To surmise the migration story it can be seen that it is the primary avenue via which employment diversification occurs in the three villages of Ramganga, Herambogopalpur and Kumirmari in the Sundarbans. The geographical location of these three villages plays a significant role not only in influencing employment diversification but also in influencing the rate of migration among the labor force with the two “down” villages having much higher rates of migration as compared to the “up” village. Put otherwise the geographical location of the villages plays an important role in creating the “push” factors for migration in these villages and ultimately have led to greater casualisation of the labor force in all the three villages.

#### 4.7.5.4 Female Labor Force and Migration in Sundarbans

Table 4.10 and 4.11 have already shown that there is hardly any presence of females in either the principal work force or the principal labor force. The pattern remains quite similar as can be observed from table 4.24. There are no female migrant workers outside West Bengal for all the three villages.

Category	Ramganga	Herambogopalpur	Kumirmari
MWB	0	9.76	6.15
MOB	0	0	0

Source: Primary Survey, 2010

As far as migrant work within West Bengal are concerned less than one tenth are females for Herambogopalpur (9.76 percent) and Kumirmari (6.15 percent). Ramganga has no females even in the within West Bengal category. Moreover as mentioned there seems to both gender barriers and invisibility of women’s work in the three villages. The barriers to labor market entry for females are generally sociocultural in nature rather than economic. It is widely perceived among the people in these villages that women should actively participate in the labor

market iff there are no other alternatives available. The general male consensus is that the women folk should concentrate on their domestic duties and leave earning activities to the “better” males. However with the advent of National Rural Employment Guarantee Act (NREGA) program some the genders had been removed in the sense that many womenfolk actively participated in this employment generation program. However with serious issues like nonpayment of wages cropping up there has been no NREGA work in 2010. As far as migration is concerned the sociocultural barriers become all the stronger as migration of women is generally not seen in “good light”. Only in exceptional cases of there being no other economic alternatives that women migrate for work. However it must be pointed that migrating to Kolkata and working as housemaids is strictly the premise of young unmarried women. Married women do not migrate and are normally expected to take care of her immediate and extended family in the absence of the male counterpart.

Category	Ramganga	Herambogopalpur	Kumirmari
In PLF	0	4.84	4.85
Studying	33.59	30.34	24.27
Household (hh) work/ hh work plus collection of goods	53.44	53.79	53.41
Others	12.97	11.03	17.47
Total	100	100	100

Source: Primary Survey, 2010

Table 4.25 looks at the occupational structure of the total female population across the three villages. It can be seen that more than half of the females are involved in household work alongwith collection of goods for all the three villages. Understanding the nature of activity of this part of the female population requires that their subsidiary status be looked at in detail.

Category	Unpaid family labour	Casual Labor	Cultivator	Salaried	Total	Total*
Ramganga	78.57	5.36	14.28	1.78	100	80
Herambogopalpur	85.48	0	14.52	0	100	79.49
Kumirmari	76.60	4.26	19.15	0	100	85.45

Source: Primary Survey, 2010

Note: \* indicates as proportion of females whose UPS is Household (hh) work/ hh work plus collection of goods

From table 4.26 it can be seen that nearly eighty percent of the women in all three villages engaged in domestic duties throughout the year also double up as subsidiary workers. Most of them (more than three fourths for all the three villages) are engaged as unpaid family labor which again is concentrated in the agricultural sector. Other than that quite a few women are cultivators as well. That Kumirmari has the highest proportion of cultivators in the female subsidiary labor force suggests that there is a correlation with migration among the male labor force. The fact that both Ramganga and Herambogopalpur have nearly equal proportions in this respect should be seen in the light of the fact that agriculture in Ramganga is double cropping in nature whereas it is single cropping in Herambogopalpur. Thus the same rate of female cultivators has different interpretations for the two villages. As seen from table 4.16 Herambogopalpur also has a high migration rate among its male labor force while in the case of Ramganga it is primarily due to double cropping that more females are engaged in cultivation. Thus a pattern emerges wherein the women in the migrant households also work as cultivators especially if the migration is for a period of six months or more.

In a nutshell most of the women in the three villages are employed as subsidiary workers in the agricultural sector and return their principal status as attended domestic duties as a result of which there is such invisibility of females in the principal labor force of all the three villages in Sundarbans.

#### **4.7.6 Variations in Wages and Income**

As far as wages within the villages is concerned the prevailing wage rate is one hundred rupees for male daily wage workers while it is eighty rupees for female workers in the agricultural and fishery sector. This wage differential results in the landed gentry preferring to employ female workers as agricultural laborers during the harvesting season. However given the increased salinity of the soil for the past two years there are hardly any employment opportunities in agriculture in either Herambogopalpur or Kumirmari. In Ramganga the situation

is a little better as double cropping is practiced there.<sup>19</sup> Tuition teachers charge from fifty to one hundred and fifty rupees depending upon the class in which the student is studying. Government schoolteachers are the best off in terms of salaries while NGO workers earn in the range of two thousand rupees and four thousand rupees.

Wages for migratn workers vary across industries and regions. The wages are around one hundred and fifty rupees per day for workers in the manufacturing and construction industry within West Bengal whereas it ranges from two hundred to three hundred rupees per day outside West Bengal. The situation is completely different in cold storages where the payment depends entirely upon the number of sacks a worker is able to carry per day. Wages in migratory jobs in the agricultural sector range from one hundred to one hundred fifty rupees. Sometimes the wages are paid entirely in terms of the harvested grains. Also the wages in the agricultural sector are generally lesser if the migrant workers are given three meals a day by the employer. Housemaids in Kolkata earn around five hundred rupees a month while those outside the state earn in the range of five hundred to one thousand rupees.

<b>Village</b>	<b>Ramganga</b>	<b>Herambogopalpur</b>	<b>Kumirmari</b>
Average HH Income	40670	34330	30430
Average Migrant HH Income	41150	36954	31385
Average Non Migrant HH Income	40350	29235	27900

Source: Primary Survey, 2010

From table 4.27 it can be seen the average annual household income is the highest for Ramganga (Rs. 40670) followed by Herambogopalpur (Rs. 34330) and Kumirmari (Rs. 30430). The difference of around ten thousand rupees in average annual income between Ramganga and Kumirmari and around four thousand rupees between Ramganga and Herambogopalpur has to be seen, once again, in the context of Ramganga being a rural commercial centre. Moreover double cropping is widely practiced in Ramganga as opposed to mono cropping in the other two villages. However the difference in the average annual household

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<sup>19</sup> As pointed out before the saline content of soil in Ramganga is much less than the other two villages which enables double cropping. Further only a portion of the village was submerged under saline water during Aila.

income of the two “down” villages cannot be easily explained. One reason might be that the migrant workers from Herambogopalpur worker for longer periods of time than those of Kumirmari. Interestingly there is hardly any difference between the average annual incomes of migrant (Rs. 41150) and non migrant households (Rs. 40350) in Ramganga. This can be attributed to the fact that Ramganga being a rural commercial center has quite a few employment diversification options other than via migration available. Also the advantage of nearby access to wholesale markets has resulted in some households diversifying into tomato and betel leaf farming. One the other hand the absence of such local employment diversification options for the other two villages translates into a substantial income difference between migrant and non migrant households.

<b>Income Slab</b>	<b>Ramganga</b>	<b>Herambogopalpur</b>	<b>Kumirmari</b>
Upto Rs. 10000	2	8	16
Rs. 10001- Rs. 20000	22	23	28
Rs. 20001- Rs. 30000	26	28	26
Rs. 30001- Rs. 40000	20	17	12
Rs. 40001- Rs. 50000	8	10	6
Above Rs. 50000	22	10	12
<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>

Source: Primary Survey, 2010

Table 4.28 shows the income distribution of the three villages across six different income slabs. Once again the socioeconomic hierarchy of the three villages is quite evident. For Ramganga more than half the households earn more than Rs. 30,000 on an average annually which by Sundarbans standards is a decent amount of money. In sharp contrast only thirty percent of Kumirmari households and thirty seven percent of Herambogopalpur households fall in the same category. Ramganga (2 percent) has the lowest share of households whose average annual income is less than ten thousand rupees followed by Herambogopalpur (8 percent) and Kumirmari (16 percent). The highest proportion of households in Ramganga (26 percent) and Herambogopalpur (28 percent) earn in the range of twenty thousand to thirty thousand rupees annually on an average. For Kumirmari twenty eight percent of the households earn in the range of ten thousand to twenty thousand rupees. The sharp inequality further comes out if we consider household with an average annual income of fifty thousand rupees or more with Ramganga (22 percent) accounting for the highest

share followed by Kumirmari (12percent) and Herambogopalpur (10 percent). These figures in a way reveal the level of destitution in the two “down” villages of Herambogopalpur and Kumirmari and the relative affluence of the “up” village of Ramganga

#### **4.8 Employment Diversification and the Hysteresis of Land**

As the agricultural and fishery sector in these villages cannot prove sufficient employment opportunities the need for employment diversification arises. The story of employment diversification in these three villages of Sundarbans ultimately boils down to the story of inter and intra state migration of labor from them. The fact that the “up” village of Ramganga is relatively better off than the other two villages gets reflected in its higher employment rates, lower migration rates and higher annual average income. One of the major reasons why the other two villages are lagging behind has to be interpreted in the context of the overall geographical location of these villages: Ramganga is situated much closer to the mainland and hence the urban and semi urban markets whereas Herambogopalpur and Kumirmari are prohibitively remote to say the least. This overall geographical location of the three villages in turn has to be understood in the context of the colonial land reclamation and conservation policies of Sundarbans which resulted in the specific human settlement pattern that can be seen today. This settlement pattern contributes to higher rates of unemployment and migration and lower annual average income for the two “down” villages of Herambogopalpur and Kumirmari. Hence it can be very well argued that there exists a hysteresis of the effects of colonial land tenure and forest conservation policies in the Sundarbans which manifests itself in the present via the overall geographical location of the people in the different regions of Sundarbans in terms of socioeconomic hierarchy especially caste and the skewed pattern of ownership of land. This in turn has an impact on the socioeconomic condition of Sundarbans in general and on employment diversification in the region in particular.

## Chapter 5

### Conclusion

The Sundarbans is considered to be a unique mangrove and complex ecosystem due its specific physiography, hydrology and biodiversity. This fragile ecosystem renders valuable ecological services to both the local populace and the global community. It is also home to many endangered species, the most famous being the Royal Bengal Tiger. However this uniqueness and complexity of this mangrove ecosystem also gives rise to its immense fragility which in turn affects the socioeconomy of the local region. Given the high saline content of the soil and, also the fact that, most of the region is monocropped translates into the people seeking other avenues of income. So the people of the region try to tap other income sources options via employment diversification. Given the abysmal condition of basic infrastructure in Sundarbans and lack of access to urban markets due to its remoteness and also extremely poor communication facilities it is hardly surprising that there is no industrial set up in the Sundarbans. This results in lack of employment diversification options within Sundarbans.

The villages of Ramganga and Herambogopalpur in Patharpratima block and Kumirmari in Gosaba block of Sundarbans are located in three different areas of Sundarbans. Ramganga which is a rural commercial center is located adjacent to mainland and is well connected to the urban markets of Kolkata and other semi urban markets. On the other hand the other two villages are located in the remotest areas of Sundarbans. Herambogopalpur is situated adjacent to forest which is not under the tiger reserve while Kumirmari is adjacent to forests under the tiger. They do not have access to any urban or semi urban markets nearby. A comparison of the socioeconomic profile of these villages reveals that Ramganga is much better off than the other two villages. Interestingly Ramganga also has the highest proportion of general caste Hindus. On the other hand Herambogopalpur has a significant share of scheduled castes and Muslims whereas Kumirmari is completely dominated by Scheduled castes.



This pattern of social composition of villages has to be interpreted in the context of the colonial land reclamation policies for nearly a century and the colonial forest conservation policies thereafter which resulted in the creation of a certain pattern of human settlement in the Sundarbans. Most of the original settlers which included a majority of Scheduled Castes and few Scheduled Tribes ended up at the fringes of the forest while the second and third generation of settlers occupied the initially cleared lands which were much closer to Kolkata and other urban and semi urban centers. Hence the worst off, socioeconomically, ended up settling in the locationally worst off regions in the Sundarbans. This in turn has affected the intergenerational socioeconomic conditions of the people of the region. This gets easily portrayed via the detailed analysis done of the trends and patterns of employment diversification in the three villages. Moreover the skewed land ownership patterns persisting due to a less successful implementation of land reforms makes it quite clear that the history of the landscape changes of Sundarbans has had a major influence on the socioeconomic conditions of the people settled here.

All the three have experienced a sectoral shift from the agricultural and fishing sector to the construction, manufacturing and transport/ storage sectors. This diversification of employment has occurred chiefly via the avenue of migration with intra state migration holding centre stage vis-à-vis inter-state migration. There is a trend of greater casualisation of labor force in all the three villages as well. However the rates of both migration and casualisation of the labor force are much higher for Herambogopalpur and Kumirmari as compared to Ramganga. Moreover Ramganga has higher employment rates and higher annual average household income as compared to Herambogopalpur and Kumirmari. Thus the geographical location of these three villages plays a significant role not only in influencing employment diversification but also in influencing the rate of migration among the labor force with the two “down” villages (Herambogopalpur and Kumirmari) having much higher rates of migration as compared to the “up” village (Ramganga). Put otherwise the geographical location of these villages plays an important role in creating the

“push” factors for migration in these villages and ultimately has led to greater casualisation of the labor force in all the three villages.

Thus it can be argued that there is a hysteresis of the effects of colonial land tenure and forest conservation policies in the Sundarbans which manifests itself in the present via the overall geographical location of the people in the different regions of Sundarbans in terms of socioeconomic hierarchy especially caste and the skewed pattern of ownership of land. This in turn has an impact on the socioeconomic condition of Sundarbans in general and employment diversification in the region in particular.

### 5.1 Abstracting the Research Findings

A human-impacted fragile ecosystem contributes significantly to the local economy (if not the global economy) and sustains livelihoods of the majority of the people living in and around them. These people are as Dasmann (1988) has appropriately termed “the ecosystem people” as opposed to “the biosphere people”.<sup>1</sup> The total dependence of ecosystem people on natural ecosystems makes them extremely vulnerable to the disruption of ecosystems. It must be realised that environmental change is both an ‘input’ and ‘output’ of livelihoods in such ecologically fragile regions.<sup>2</sup>

As ‘output’, a stagnancy in agricultural productivity per unit area and population growth in the twentieth century has been associated with the decline of land man ratio in the ecologically fragile regions like mangrove ecosystems alongwith continued and perhaps even accelerating erosion of river embankments and the gradual rise of the sea level which has engulfed quite a few islands. As ‘input’, embankment erosion and declining soil fertility result in the squeezing of the agricultural sector in such regions. In such regions livelihoods are pieced together, changeable, may not always work as well as planned, and have multiple components that are a product of learning and

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<sup>1</sup> Ecosystem people include forest dwellers, herders, fishers, and peasants, who rely on biological resources of local ecosystems to fulfill most of their needs whereas Biosphere people include urban dwellers of the industrialized societies and people engaged in high-input agriculture and animal husbandry who do not depend on local ecosystems for their basic needs; the catchment area for their resource needs is the whole biosphere.

<sup>2</sup> Batterbury (2001) discusses a similar idea in the context of an arid region of northwest Niger in Africa.

experience. While powerful actors and international development – or outdated technology – are generally blamed for rural poverty and degraded landscapes, neither argument is really sufficient in this specific context. Rather the depressed socioeconomic condition has to be reflected upon in the context of the changes in landscape over time (which in a way reflect changes in livelihood as well) and also the historical settlement pattern of the original people of these regions.

The landscapes created over time in these regions have resulted from human activity, from biophysical processes, and from their interrelations i.e. the ways in which the immigrant labor force constructed a livelihood system that was a response to local constraints and opportunities, and to broader patterns of income generating possibilities (Batterbury, 2001). These landscapes were created via specific land policies (say the colonial land reclamation and forest conservation policies) which also resulted in a particular settlement pattern of the immigrant and indigenous labor force throughout these regions. These changes in landscape and human settlements across space and time turn affect the present socioeconomy of such ecologically fragile regions. This effect generally manifests itself in the present via the constricted economic space of these regions which in turn has help fuel migration as well as partial withdrawal from agriculture.

## **5.2 Making a Case for Ecological Economics**

Although ecology and economics have developed as separate disciplines throughout their recent histories in the twentieth century yet both have striking similarities. Both analyse the ways in which living systems self-organize to enable individuals and communities to meet their goals and in order to do so each has borrowed theoretical concepts from the other and shared patterns of thinking with other sciences (Cleveland and Perrings, 2001). From an ecological economics perspective the socioeconomic development of Sundarbans would be analysed keeping in mind the instability, multi-dimensionality and increasing complexity of natural and social systems such as the environment, population, culture and technology.<sup>3</sup> All these elements are seen as linked by a dynamic equilibrium with a change in one of the systems requiring adaptation of the

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<sup>3</sup> This is known as the “co evolutionary” perspective (Norgaard, 1985).

others. Hence socioeconomic development in general and employment diversification in the Sundarbans in particular has to be analysed within the interplaying field of a set of equilibrating mechanisms between society and nature.

Norgaard (1985) notes that pluralism and multiple perspectives are the only tools available for understanding the complex interface between social and ecological systems. Thus studying the fragile socioeconomy of Sundarbans requires combining research across the traditional borders of natural and social science and the humanities in a truly interdisciplinary way (Funtowicz and Ravetz, 1994; Folke et al., 1994). Integrated, multiscale, transdisciplinary models are required in order to analyse more realistically human impacts on the complex ecosystem of Sundarbans, economic dependence on its natural ecosystem services and interdependence between the ecological and social components of the system. This in turn will help immensely in creating the necessary analytical background for further research into the issues of labor and migration in Sundarbans. Put otherwise the issue of employment diversification has to be situated within a larger political economy that reflects the needs of both ecosystem integrity and social justice and this can be achieved through the proper application of the analytical and technical tools of ecological economics.

### **5.3 Making a Case for Localized Research**

Another important issue in the context of Sundarbans is the dire need for more studies at the grass root level. This need is felt not only in the field of economics rather in the fields of history and anthropology as well. Jalais (2010) bemoans the lack of social science research on sundarbans. Barring a few ethnographic studies (Jalais, 2010 & Danda, 2007) , one historical and one demographic study (Bannerjee, 1998; Sarkar, 2010) there have been hardly any studies, in the last decade or so, on Sundarbans which focus on the people living there. It is interesting to note that although there is a deluge of literature on the ecological aspects of the Sundarbans they hardly make any mention of the substantial human population settled for more than a century in the Sundarbans. The same holds true for the discipline of economics as well: the few studies have focused on either the issue of NTFPs or the economic impact of tourism. Put

otherwise the social ecology of Sundarbans is very important as well. More ethnographies focusing on the complex relationships between the people themselves as well as people and the “wild” is required along with detailed studies of the constricted Sundarbans economy.

Specifically economic research should concentrate on the aspect of labor and land because of their unique roles in the history of Sundarbans. Instead of just focusing on the macro narratives of economic change in the region using standard economic tools, the studies should focus on the specificities of the fragile economy embedded within the complex and fragile ecosystem of the region. The analytical tools of history should be used to locate and unravel the “economic traces” of Sundarbans through observing actors, processes, relationships, ideas and commodities of the region and tracking their passage across time (Rammohan, 2006). This is required because socioeconomic and environmental change is a fluid, non-linear, and dynamic process in dry lands that are marginal to the globalized economic system (Batterbury, 2001). Once this historical background of Sundarbans is created it will be much easier to situate and analyze its current socioeconomic condition in general and labor issues like employment diversification in particular.

#### **5.4 The Way Forward**

The Sundarbans is not only a unique mangrove ecosystem which is also home to the endangered Royal Bengal tiger rather it is the home to around four million people whose ancestors have an equally unique socioeconomic history. Given this fact there should be adequate if not equal research focus on the social ecology of Sundarbans. In order to understand better the social ecology of Sundarbans it is imperative that a transdisciplinary approach of understanding socioeconomic changes within a fragile ecosystem is adopted. One way of doing this would be to generate a detailed “land use history” of Sundarbans from the colonial era till the present along with a detailed socioeconomic historiography of the Sundarbans which focuses on a “sub altern” approach. Next a livelihood analysis of the people of Sundarbans can be undertaken and the findings thus obtained should be critically evaluated in the light of the links between “land use history” and socioeconomic historiography of Sundarbans. The local realities of

resource access and livelihoods, the contexts in which these negotiations take place, and broader processes and institutions must be well understood.

The research findings thus obtained would be of immense interest not only to academicians but to policymakers as well. Putting this knowledge to use however would require a nuanced understanding of poverty in a region where poor policy-making and haphazard development assistance have gone hand in hand, and also the importance of employment diversification to the people residing in one of the world's harshest and most unforgiving environments.

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## Appendix I

### Socioeconomic Impact of Cyclone Aila

In the 20th century Sundarbans has been struck by forty four tropical cyclones striking the coast of West Bengal but Aila surpassed all previous records in terms of damage and economic loss. A summary of the socioeconomic impact of cyclone Aila on Sundarbans is given in table A.1. However it must be understood the damage inflicted upon sundarbans cannot be totally translated into numbers. The increase in salinity of agricultural land due to breaching of embankments will affect the agricultural productivity for atleast three years. Further given the abject poverty of the people it will take a long time for them to replenish the assets they have lost.

Number of deaths	Official- 70; Unofficial-300
Number of cattle lost	2,12,851
Number of villages affected	4249
Length of embankment breached	400 kilometers
Total area of agricultural land affected	1,25,872 ha
Number of houses partially damaged	1,94,701
Number of houses fully damaged	1,94,390
Proportion of affected population	68 %
Number of people missing	8000
Estimated financial loss in agriculture	Rs.337crore.
Total loss	Rs.1495.63 crore.

Source: Rudra, 2010

## Appendix II

### Education Status of Labor Force in the three Villages of Sundarbans

Table A2.1: Educational Qualification of Labor Force (UPS)									
Status	Ramganga			Herambogopalpur			Kumirmari		
	M	F	T	M	F	T	M	F	T
Illiterate	4.94	0.00	4.94	15.91	0.00	15.91	7.41	1.23	8.64
Literate	1.23	0.00	1.23	1.14	1.14	2.27	12.35	0.00	12.35
KG-Class IV	22.22	0.00	22.22	17.05	3.41	20.45	22.22	2.47	24.69
Class V- Class X	60.49	0.00	60.49	48.86	4.55	53.41	45.68	2.47	48.15
Matriculate	1.23	0.00	1.23	4.55	0.00	4.55	3.70	0.00	3.70
HS	2.47	0.00	2.47	0.00	0.00	0.00	0.00	0.00	0.00
Graduation	3.70	0.00	3.70	3.41	0.00	3.41	2.47	0.00	2.47
Post Graduate	3.70	0.00	3.70	0.00	0.00	0.00	0.00	0.00	0.00

Table 4.8.1 gives the education qualification of the principal labor force of the three villages. As envisaged there is a very small percentage of females in the principal labor force of Kumirmari and Herambogopalpur whereas there are no females in Ramganga's principal labor force. Moreover the educational qualification of the small proportion of female labor force is concentrated among the "Literate" to Class V- Class X. Thus it can be easily said that the principal labor force exhibits a distinctive gender bias towards males. It must be mentioned that most of the females in the three villages returned code 92 (attended domestic duties) as their principal status. Hence we have this acute gender bias. Further the earlier rankings of illiteracy of three villages are again maintained. Also the concentration of the labor force for all the three villages is again in the two categories of KG-Class IV and Class V-Class X. As far as higher education is concerned the patterns become clearer now. Ramganga (11.10%) has the highest proportion of the labor force in this category followed by Herambogopalpur (7.96 %) and Kumirmari (6.17%). One reason for this higher level of education of the labor force in Ramganga is due to the fact the offices of many NGOs operating in the Sundarbans are in this village or in other words there is a demand for educated labor force. Also from the supply side many households can afford higher education for their children so that they can participate in the formal job markets not only in the village but also in urban centers. This is in sharp contrast to the two "down" villages where neither the demand for highly educated labor



force nor its supply exists. Finally we look at the educational qualification of the subsidiary labor force in the table below.

Table A2.2: Educational Qualification of Labor Force (UPSS)									
Status	Ramganga			Herambogopalpur			Kumirmari		
	M	F	T	M	F	T	M	F	T
Illiterate	0.84	5.04	5.88	7.80	11.35	19.15	5.41	11.71	17.12
Literate	1.68	1.68	3.36	0.71	2.13	2.84	7.21	4.50	11.71
KG-Class IV	11.76	10.92	22.69	12.06	17.02	29.08	15.32	9.01	24.32
Class V- Class X	32.77	26.89	59.66	24.11	15.60	39.72	24.32	15.32	39.64
Matriculate	2.52	1.68	4.20	2.13	2.13	4.26	0.90	1.80	2.70
HS	1.68	0.00	1.68	0.71	0.71	1.42	0.00	0.00	0.00
Graduation	0.84	0.84	1.68	1.42	0.71	2.13	1.80	0.90	2.70
Post Graduate	0.84	0.00	0.84	0.71	0.71	1.42	1.80	0.00	1.80

Source: Primary Survey 2010

From the above table one thing comes out very clearly: a high proportion of females in the subsidiary labor force for all the three villages. Once again Ramganga has the lowest rates of total, male and female subsidiary labor force illiteracy rates followed by Herambogopalpur and Kumirmari.

Questionnaire Serial No:

Part A

**Name of the Head of the HH:****Father's/ Husband's Name:****Block:****Anchal:****Booth No:**

1) household characteristics					
1.	Household size			7.	Whether the HH has NREG job card or not
2.	Religion			8.	Whether got work in NREG works during last 365 days?
3.	Social group			9.	If Yes for Q8 then, No. of days worked
4.	Caste				
5.	Earnings on an Average	W		10.	Debts
		M			
6.	Physical Assets				



Questionnaire Serial No.

Part A

Name:		Date of first Migration:			Average Stay Away Period:					
Main Reason for Migration:										
Sl. No.	Year	Time Period		Location	Job Description	Contract Details			Cost of Training	Money for training arranged via
		From	To			Avg. earnings (M/Y)	Food Expenses	Accommodation Expenses		
1	2006									
2	2007									
3	2008									
4	2009									
5	2010									

- a) If returned from work and not going again then why so?
- b) Did you suffer from any serious disease while working outside? Y/N    Cost of Treatment:
- c) How much money are you able to send/ bring home monthly/yearly?
- d) How is that money spent by the HH?
- a) Construction of House/ Toilet    b) Medical Expenses    c) Cultivation expenses    d) Educational Expenses    e) Other expenses:

**1) Description of landholding of the household**

a) Total Land: \_\_\_\_\_ out of which Vested Land: \_\_\_\_\_  
and Barga Land: \_\_\_\_\_

b) Unregistered land: Y/N \_\_\_\_\_ Amount: \_\_\_\_\_

c) Homestead land: \_\_\_\_\_

d) Cultivated Land: \_\_\_\_\_

Own land		LC	Leased-in land		LC	Lease price paid		Leased-out land		Lease price received		LC
Bigha	Katha		Bigha	Katha		Rent (Annual) in Rs.	% share of crop	Bigha	Katha	Rent (Annual) in Rs.	% share of crop	

Note LC - Location code

**2) Plot wise description of production of 2 most important crops (including the leased-in land)**

Crops	Area		Ownership code*	Annual Lease Price (if Leased In) (Rs. or %)	Location Code	Production in last year	Marketable surplus
	Bigha	Katha					

**3) Time Period of Ownership of Land (including ponds/ waterbodies)**

Plot No.	Leased In (LI)/ Leased Out (LO)/ Own land (OL)	Period of ownership	Location Code

\* ownership codes: 1= own land ; 2= leased-in land; 3= land has not been legally divided between siblings

\*\* Location codes: 1= far from the embankment with roads in-between, safe from saline water even if embankment breaches

2= away from embankment, but possibility of saline water ingress if embankment breaches

3= adjacent to embankment, but embankment condition is good in the area

4= adjacent to embankment, and the embankment is in very poor shape; 5= near brick road

6= any other (specify)

Type of pisciculture: 1= for self-consumption, no selling, 2= Self-consumption and selling of surplus production

3= Only for selling in the market, 4= No fish is cultivated in this pond, 5= any other (specify)

**4) i) Pisciculture (put a 'X' in this section if the household does not have a pond)**

No. of Ponds	Area		Location (code)	Type Of Pisciculture (code)	Production
	Bigha	Katha			

ii) Did saltwater inundate your agricultural plots during Aila 2009 ?

Yes/No (Reason if NO:  
)

If YES then did you try to convert your agricultural plots into fisheries for brackish water shrimp farming? Yes/ No ; If yes then were you successful in your venture? Yes/No

If NO then will you do so in the future if the same incident occurs? Yes/ NO

**5) Did you buy/sell land (including ponds) in the last 5 years? Yes/ No; If Yes then**

Sl. No.	Year	Area		P/ WB/L	Sold (S) / Bought (B)	LC	If Bought then Land leased out		LC
		Bigha	Katha				Bigha	Katha	

Note: LC - Location Code

**6) Regarding Land including homestead land ( Intended to be open ended as far as possible)**

1. From how many years you (household head) are living here? \_\_\_\_\_years

2. Do you own any other land/house in the mainland? Yes/ No

3. Had you ever lost land to the river in the past? Yes/ No

4. If answer to Q3 is 'Yes', had there been any change in your livelihood due to that land loss? Please describe in brief:

(NA) 5. (a) When did you mortgage your land for the last time? \_\_\_\_\_ Years before

(b)

(Reason)\_\_\_\_\_

(NA) 6. If presently any of your land is kept as mortgage, can you please briefly tell the reason for such mortgaging out?

(Reason)\_\_\_\_\_

(NA) 7. Are you willing to sell any of your land? (Put ✓)

1. Homestead 2. Agricultural land 3. Pond/waterbodies 4. None

(NA) 8. If you have revealed your willingness to sell any of your agricultural land, please indicate the main cause for your willingness:

1. "Down" land (inter/intra) 2. Saline water intrusion 3. Lack of profit in agriculture 4. Lack of hands to carry out agriculture 5. Need for cash 6. Any other reason:

(NA) 9. (a) if you are willing to sell your agricultural land, will you use to proceeds to buy land elsewhere? 1. Yes 2. No

(b) If 'Yes', in which area?

1. Other safe place on the same island 2. Beside my relatives/ friends in another island 3. Outside the islands, in the mainland 4. Buying "up" agricultural land (inter/intra). 5. Near Brick road 6. Any other place (specify).

### 7) Perception of land (open ended)

1. If you have some part of your land adjacent to riverbank and you are offered a similar amount of land deep inside the island (away from river, you have to walk at least 30 minutes to reach the river/mangrove), would you be willing to exchange your land? (put ✓)

(i) Totally willing (ii) I think I will exchange (iii) Uncertain (iv) I don't think I will exchange (v) Totally unwilling (Reason: \_\_\_\_\_)

2. i) How do you view landownership in

- a) islands above yours?
- b) places located in the centre of the island?
- c) places near Brick road(s)?
- d) islands below yours?

Responses

- (i) Enhances social/ political/ economic status
- (ii) Maybe enhances social/ political/ economic status
- (iii) Not related to social/ political/ economic status
- (iv) Reduces social/ political/ economic status
- (v) Maybe Reduces social/ political/ economic status .

Describe:

b) How do you view landlessness?

- i) Enhances social/ political/ economic status
- (ii) Maybe enhances social/ political/ economic status
- (iii) Not related to social/ political/ economic status
- (iv) Reduces social/ political/ economic status
- (v) Maybe Reduces social/ political/ economic status .

Describe: