

Socio-political and environmental dimensions of vulnerability and recovery in coastal Odisha

Critical lessons since the 1999 super-cyclone



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Acronyms

AA	Action Aid (an NGO)
AAO	Assistant Agricultural Officer
AAY	Antyodaya Anna Yojana
AKSS	Anchalika Kunjeswari Sanskritika Sansad (an NGO)
ATMA	Agricultural Technology Management Agency
BDO	Block Development Officer
BGVS	Bharat Gyan Vigyan Samiti (an NGO)
BJD	Biju Janata Dal (a major political party in Odisha)
BJP	Bharatiya Janata Party (a major pan-Indian political party)
BPL	Below poverty line
BSS	Bharat Seva Sangha (an NGO)
CARE	Christian Action Research and Education (a Christian charity)
CASA	Church’s Auxiliary for Social Action (an NGO)
CBCI	Catholic Bishop Conference of India
CBDP	Community Based Disaster Preparedness (a programme)
CCAP	Climate Change Action Plan
CMRF	Chief Minister’s Relief Fund
CRS	Catholic Relief Services (an NGO)
CRRRI	Central Rice Research Institute, Cuttack
CRF	Calamity Relief Fund

CRZ	Coastal Regulation Zone
CSMMC	Cyclone shelter management and maintenance committee
DAO	District Agricultural Officer
DEO	District Emergency Officer
DfID	Department for International Development (UK government)
DMP	Disaster management plan
DRDA	District Rural Development Agency
DRM	Disaster Risk Management (a programme)
EFICOR	Evangelical Fellowship of India Commission on Relief
FCI	Food Corporation of India
FDR	Flood Damage Repair work
FEO	Fishery extension officer
FFW	Food-for-work
FGD	Focus group discussion
FHH	Female headed household
GDP	Gross Domestic Product
GoO	Government of Odisha
GP	Gram panchayat
HYV	High yielding variety (of seed, e.g. rice)
IAG	Inter-Agency Group
IAY	Indira Awas Yojana (housing scheme of central government)
IRCS	Indian Red Cross Society (an NGO)
J&K	Jammu and Kashmir
JE	Junior Engineer
KCC	Kisan (farmer) credit card
LWS	Lutheran World Service (an NGO)
MCIIP	Mahanadi Chitrotpala Island Irrigation Project
MD	Managing Director
MLA	Member of Legislative Assembly
MP	Member of Parliament
MPCS	Multipurpose cyclone shelter
NAIC	National Agricultural Insurance Corporation
NDMA	National Disaster Management Authority
NGO	Non government organisation
NREGA	Mahatma Gandhi National Rural Employment Guarantee Act
NREGS	Mahatma Gandhi National Rural Employment Guarantee Scheme
NSDP	Net State Domestic Product
OBB	Operation Blackboard
ODMM	Odisha Disaster Mitigation Mission
ODM	Odisha Disaster Mitigation Programme
OSDMA	Odisha State Disaster Management Authority
OUAT	Orissa University of Agriculture and Technology
PAC	Public Accounts Committee
PDS	Public Distribution System

PMNRF	Prime Minister's National Relief Fund
PRA	Participatory Rural Appraisal
PRI	Panchayat Raj Institution
PUCL	Peoples' Union for Civil Liberties
PWD	Public Works Department
RI	Revenue inspector
RKBY	Rashtriya Krishi Bima Yojana (National Agricultural Insurance Scheme)
SC	Scheduled caste
SDO	Sub-divisional office (of the Irrigation Department)
SGSY	Swarnjayanti Gram Swarozgar Yojana (central government funded SHG programme)
SHG	Self help group
SRI	System of rice intensification
ST	Scheduled tribe
TATA	Sir Ratan Tata Trust (an NGO)
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
VAW	Village Agriculture Worker
VHAI	Voluntary Health Association of India
WB	World Bank
ZP	Zilla Parishad

Glossary

Bari	Black gram
Bauri	An Oriya caste
Bedi	A raised land area
Biali	Kharif paddy grown on highlands
Chaka	Crossroads/junction in roads
Crore	Ten million (one hundred Indian lakh)
Daal	lentils
Dahi	Yogurt
Dalua	Winter season (paddy crop)
Gram	Small pea; legume
Gram panchayat	Local self-government at the village level, headed by the sarpanch
Gram sabha	Village assembly
Grama sanjojak	7 member committee formed at village level
Grama sathi	Village level worker
Kharif	Summer season (paddy crop)
Kuda	A small, slightly elevated land
Kutchha	Earthen
Lakh	One hundred thousand
Mahajan	Money lender
Mahajan sahi	Upper caste locality
Mamata gruha	'House of affection'

Palla	Tent made from tarpaulin stretched over bamboo; temporary shelter
Palli sabha	Meeting held at village or intra-village level
Panchayat samiti	Block level panchayat; local self-government at the block/tehsil level
Pani panchayat	Water users associations
Papad	Pappadum, a thin crisp cake or cracker
Patta	Land record
Pucca	Concrete
Rabi	Winter season (paddy crop)
Saradh	Kharif paddy grown on lowlands
Sarpanch	Elected head at gram panchayat level
Zilla parishad	District panchayat; local self-government at the district level

Currency rates as per 1 July 2010:

1 GB Pound = 72.4 Indian rupees

1 Euro = 65.3 Indian rupees

1 US Dollar = 45.1 Indian rupees

Source: <http://www.oanda.com/currency/converter/> (accessed February 2013)

Preface

The state of Odisha along the eastern coast of India has over time earned the rather unfortunate epithet of ‘disaster-prone’. It regularly experiences cyclones, floods, droughts and heat waves, and parts of it are also susceptible to earthquakes. The super-cyclone of 1999 brought the state into national and international attention for its extreme vulnerability to natural hazards. An unprepared state machinery struggled to deal with a cyclone at this scale. The poverty of its people presented a harsh context within which the disaster unfolded. A preliminary research visit in November 2008 revealed that the stark effects of the super-cyclone were still being experienced by poor people. These were deepened both by fresh triggers, such as recurring floods, as well as by more enduring factors to do with the quality of state provisions of welfare and infrastructure.

This led to the conviction that an intensive study was needed that would systematically attempt to understand vulnerability and recovery as mutually linked processes over time. We would consider not only the super-cyclone of 1999, but also investigate other episodes of flooding that have regularly struck parts of the coastal zone over subsequent years through a considered selection of sites. Late in 2009, we were able to initiate this research project, with fieldwork from February through until August in 2010. At the time of fieldwork, the *most recent* episode of flooding was in 2008, and it is referred to as such throughout the report. More floods have hit coastal Odisha since, notably in September 2011, and the study does not regard these.

We would like to thank the United Nations Development Programme (UNDP), India, for generously supporting this initiative, and the School of International Development (DEV), University of East Anglia (UEA), Norwich for facilitating this collaboration. We are grateful to the Government of Odisha, national and regional NGOs, local representatives and officials for supporting the research and for providing information and advice. We could not have carried out this investigation without the support of local facilitators in and around the study sites, and we thank them wholeheartedly. We also acknowledge the study team that worked tirelessly through the year.

Rajib Biswal and Sudhansu Behera worked with the project for its entirety, working for long hours to complete numerous tasks. Manosi Bhoi enumerated household surveys in the Erasama and Garadpur sites, Mamina Das and Asish Sahu in Erasama, and Deepika Sahoo and Jyotiranjana Sahoo in Garadpur; and Rabi Ranjan analysed our quantitative data set from New Delhi. Jenny Kebschull created the maps with Joe Hill. We are indebted to the villagers of Odisha, and in particular of our eight sample wards. Not only did they answer our questions patiently, they also gave the researchers a home and shared their way of life with us in course of the year.

We also supported the making of a short documentary film presenting the highlights of this research. Chris Symes, a student from the School of International Development, and Joel Sommazzi shot the film, and it was later produced in Norwich with Joe Hill, Rajib Biswal, and Sudhansu Behera’s assistance. The film, *The Wind and the Water*, can be viewed at <http://vimeo.com/58521599>.

Executive Summary

Background

Odisha, on the eastern coast of India suffers cyclones, floods, droughts and heat waves, and parts of it are also susceptible to earthquakes. A devastating super-cyclone hit the coast of Odisha in October 1999. More than 10,000 people were officially reported dead, and many thousand others suffered devastation to their land, crops, livestock, houses and other assets. The super-cyclone was a disaster at an unprecedented scale and took the relief and rehabilitation machinery of the state government by surprise. Since then, Odisha has experienced severe drought and frequent floods, even in its dry western parts. The flooding episode in September 2008, in particular, devastated the coastal districts.

In the years since the super-cyclone, the government has taken various important measures to transform its level of disaster preparedness at an institutional level. Foremost amongst these is the creation of the Odisha State Disaster Management Authority (OSDMA) in 2000 to act as an independent apex governmental body to innovate, coordinate and oversee preparations. Its creation has been credited for similar innovative measures at the national level: the establishment of the National Disaster Management Authority (NDMA) and the passing of the Disaster Management Act in 2005. The National Policy on Disaster Management has also emphasised the ‘adoption of a holistic and pro-active approach towards prevention, mitigation and preparedness’ (MHA, 2004: 12). In several important respects therefore, the wider policy and institutional environment both in India and in Odisha are conducive for the pursuit of a truly multifaceted consideration of the issue of disaster vulnerability and recovery.

Research focus, key aims and design

In recent academic and policy debates, there have been important re-theorisations of ideas to do with risk, hazard and vulnerability. The principal change has been a more explicit concern with the social dimensions of risk, hazard and vulnerability, beyond their physical properties alone. These debates have cardinally changed the approach taken by agencies and researchers to disasters. These are no longer viewed as exogenous events that affect societies, but a reflection of a broad failure of social entitlements and state action. This also means disasters are not to be viewed as one-off or isolated events, but as phenomena with antecedents and consequences that span many years.

This formulation has shaped the focus of the study, which seeks to understand the nature of vulnerability and recovery for selected coastal communities in Odisha ten (plus) years since 1999. As much as vulnerability is a phenomenon that is marked by social differentiation, so is recovery. In order to recover from a disaster, people need to access a variety of environmental, social and political resources, and this process is not uniform for everybody. This also means the question of recovery from a disaster cannot be justifiably addressed in the immediate aftermath. If we are serious about understanding how a community that has suffered a disaster actually copes, not just with its immediate impacts, but with the challenges of reconstruction (through rebuilding of lives, livelihoods, housing and so on), then we need to consider these issues after the passage of a reasonable length of time. This focus allows for a consideration of how disasters, with their immediate effects, interact with everyday factors of marginalisation, access to entitlements and social difference, over a longer period of time. Accordingly therefore, the focus of the study is not to carry out an impact assessment

of the super-cyclone or of any one flood, but to analyse how communities that have experienced these disasters(s) have accessed various resources over a ten year period in their trajectory to recovery.

It is this focus that has shaped the design of this study, which is designed to answer the basic question: “Have households been able to recover their livelihoods and housing to a state that is better than in 1999? Are they in a better position to face disasters now than in 1999? Why or why not?”

The definition of **recovery** adopted for the study is:

‘We would suggest that in order to have “recovered”, a household should have *not only re-established* its livelihood, physical assets and patterns of access, but *should be more resilient* to the next extreme event’ (Wisner, Blaikie et al 2004: 359, italics added for emphasis.)

Finally, in keeping with a holistic treatment of vulnerability and recovery, this research is concerned with the environmental and physical as well as the social and political dimensions of such processes. By **environmental**, the research is concerned with the nature of hazards and risk, micro-environments and geographies of selected areas and the use of physical resources. By **socio-political**, the study is concerned with an array of societal relationships (based on caste, class, gender, kin) and relationships with political actors (gram panchayat leaders, MLAs and MPs), government functionaries at different levels (Revenue Inspectors, Tehsildars, Extension Officers, Collector) and NGOs. It is more broadly concerned with the wider politics of how socio-economic and political resources are used by households to access key benefits from within the community, and from the state and other NGOs. Together, these provide the multifaceted set of issues that the investigation has been concerned with.

This is an in-depth and intensive research study based in two blocks within two districts within coastal Odisha: Erasama Block in Jagatsinghpur District and Garadpur Block in Kendrapara District. There are four selected wards in each block. The study wards in Erasama are close to the sea, and suffered a devastating blow in 1999. The study wards in Garadpur are inland; intertwined between the Luna, Chitrotpala and Paika Rivers. They face the added problem of recurrent flooding (2001, 2003, 2006), and the episode in 2008 affected them seriously. All eight wards represent the prevailing social compositions of the area, in terms of caste, and ethnicity (Bengali-Odiya in Erasama). Further details of the development of the research design are contained in the Introduction.

Importantly, as this research is *not* an evaluation of any one programme or project intervention, and not a documentation of success stories in the field, the selection of field sites was chosen without any specific direction from any organisation, governmental or non-governmental. However, extensive consultations were carried out prior to fieldwork with key stakeholders in Odisha at the state level in an induction workshop in Bhubaneswar, November, 2009. The study rationale and design were both extensively discussed and appreciated, and suggestions regarding possible field sites were solicited, and later explored.

The study is based on multiple research methods, both quantitative (household surveys) and qualitative (in-depth interviews, key informant interviews, focus group discussions). The sample size for the surveys is 240 households (30 in each ward). Fieldwork lasted six months, three in each ‘site’,

and follow-up trips were made. The methodology is discussed at length in Chapter 2. Each site has been characterised at length in Chapter 3, with details of its physical, environmental, social and economic features. Note that throughout the report ‘Erasama’ and ‘Garadpur’ refer only to the study wards in these blocks, and not to the entire block, i.e. we do not intend to generalise to the block level.

Key questions and organisation of report

Stemming from the core question around recovery, four further sub-questions have framed the investigation. These correspond to the four main elements encompassed within the definition of recovery that is central to this study: ‘We would suggest that in order to have “recovered”, a household should have not only re-established its **livelihood**, **physical assets** and **patterns of access**, but should be more **resilient** to the next extreme event’ (Wisner, Blaikie et al 2004: 359).

- How have *livelihoods* changed in the past ten years? How have livelihoods been affected by disasters? How are pressures affecting livelihoods being addressed?
- In what ways has the state of *housing* changed in Erasama and Garadpur since 1999? And will the state of housing in the present day make households any less vulnerable to cyclones (and floods) than in 1999?
- What are the factors that have impacted upon household *access to assistance* from the community, NGOs and from the state at different points since the 1999 super-cyclone till the present day?
- What is the state of *disaster preparedness* of people, both at the household and at the community level, in the present day?

Each question has been addressed through detailed but succinct analysis in five sections of the report. Section 1 introduces the project, discusses the methodology and characterises the sites; Section 2 considers livelihoods trajectories; Section 3 presents the analysis on housing and cyclone shelters; Section 4 details access to assistance; and finally, Section 5 concludes with a consideration of disaster preparedness and ongoing vulnerability, and their implications for recovery. Each section has several constituent chapters, with independent chapter-wise summaries and policy recommendations. The reader is advised to use these summary/recommendations sections at the end of each chapter to navigate through this detailed study.

Livelihoods

This section considers trajectories of agriculture (including prawn¹ cultivation), other farm livelihoods (livestock keeping, fruit trees), fishing, wage work including the National Rural Employment Guarantee Scheme (NREGS), and migration. The study shows that in Erasama the super-cyclone affected paddy cultivation both directly, through crop loss, damage to land and loss of means such as bullocks, and indirectly through increased salinity levels, leading many households to convert their farmlands in the following years to prawn gheris (farms).

On converting their land to prawn gheris, a majority of households have made substantial losses in prawn cultivation, after borrowing and investing heavily and losing their harvest to disease. Prawn

¹ The term prawn, rather than shrimp, has been used in this study. There is a debate about the usage of the terms. Some argue the two can be used interchangeably, whereas others argue the two can be differentiated.

cultivation by locals peaked in 2004, after which it has reduced. Farmers became indebted and many have been forced to change their cultivation pattern due to gheri creation. The food security situation in Erasama today remains precarious, for over ten years it has barely recovered to pre-1999 levels, but has not improved. Reduced landholdings, increased salinity, and poor management of fresh and saline water, i.e. drainage, irrigation, have been the main challenges, although improved paddy varieties may have helped improve yields. Land mortgaging is on the rise, which is a worrying sign of indebtedness.

The pattern of agricultural landholdings is changing in both sites, partly due to generational subdivision, with increased areas of land having become idle due to the super-cyclone or repeated flood events. In several of Garadpur's wards land has been rendered idle or cultivation schedules have changed due to the effects of recurrent flooding. Sharecropping is on the rise in Garadpur, as it is in Erasama. Under this agreement, the landowner invests little, whereas the tenant invests his time and resources, and faces a greater risk should disaster strike. Calamity Relief Fund (CRF) norms for crop loss compensation fail to recognise sharecroppers, and it is more difficult for sharecroppers to take loans from co-operative societies with in-built non-negotiable insurance payments. In this regard, steps have been taken to cover sharecroppers through the formation of 'joint liability groups', an area for further research.

This situation is worsened by the absence of appropriate assistance from various state departments: irrigation, agriculture, fisheries- in the research sites. Irrigation facilities are non-existent or decrepit, and agricultural extension officers rarely visit villages. Banks rarely serve as credit sources for households although co-operatives and Self Help Groups (SHGs) are performing a role in providing farmers with credit, though with limitations. The wider politics of fresh and saline water management has also compounded matters for marginal and small paddy farmers along the Erasama coastline.

Other livelihoods relating to livestock ownership, fruit cultivation and fishing (river and sea) are on the decline. Lack of pasture for animals, especially in Erasama, has been a key contributory factor responsible for the difficulty in restocking animals lost in 1999. Fruit trees have also declined in number in both sites, though to a greater extent in Erasama, and there is no evidence of any state assistance for replanting in the years after the super-cyclone. Sea fisherfolk are witnessing a decline in their catch and continue to receive no support from the government, directly with equipment or indirectly through infrastructure. Pisciculture – mostly on homestead land – is on the rise as the increasingly marginalised population strategise to improve their diets.

The National Rural Employment Guarantee Scheme (NREGS) is a near total failure if judged by its objectives, and is not serving as a necessary complement to local employment provision. The use of machinery is widespread, and contractors are using peoples' job cards to draw wages on their behalf, while passing on a portion of the wage to the job cardholder. Even as agriculture and related farm livelihoods are facing increasing constraints, migration is on the rise in both sites. The study considers the arduous and risky nature of migration, and the variable (though generally pitiful) amounts of remittances. It also documents the observable trend of the return of some migrants, following various difficulties in sustaining life while away.

Housing

The super-cyclone thoroughly destroyed strong *kutchha* (earthen) houses in both sites in 1999. Garadpur, being a little further away from the coast than Erasama, suffered comparatively lower levels of devastation. Even the stronger *kutchha* houses in Erasama were decimated thoroughly as a result of the seven metre high tidal surge. People struggled a lot in ensuing months to reconstruct their *kutchha* houses, living in a variety of makeshift shelters, most up to six months, but some especially in Erasama for more than 24 months. In 2010, there are more *pucca* (concrete) houses in both sites than there were in 1999. But there is a critical difference. There are more households in Garadpur with houses that are in a better state than there are in Erasama, and housing recovery is clearly more evident in the former site.

The evidence of improvement in Garadpur came in the latest 2008 floods, when nearly half of our sample (50 households out of 120 surveyed in this site) reported no damage to their *pucca* house, although, an almost equal number reported significant damage to their *kutchha* house. However, nearly all of them were able to seek shelter in a *pucca* house, including those of neighbours or kin in the village. There were a few exceptions nevertheless, and their circumstances embody a call for further action. For Erasama, the housing situation remains particularly grave, and in some senses worse than in 1999. People are generally dissatisfied with poor quality NGO-provided *pucca* houses that in their perception will not withstand even an ordinary cyclone, let alone a super-cyclone. They have also not reinvested in building strong *kutchha* houses, which before 1999 had shielded them effectively during regular intensity cyclones. Materials have become expensive, the soil needed for construction has become saline, and there is an abiding fear that should another super-cyclone occur, it would destroy their *kutchha* house.

The main factors for the situation in Erasama are to do with the challenges confronting effective NGO assistance for housing. Lack of involvement and ownership by beneficiaries has led to the gradual deterioration in quality of NGO-provided housing to some households in Erasama, though people do not admit to their part in this process and freely express their dissatisfaction with the 'poor' quality of these houses. Besides, severe problems in the implementation of the government's Indira Awas Yojana (IAY) have constrained households in both sites. But more households in Garadpur have been able to complete construction than in Erasama, and invest larger amounts in doing so, which further testifies to stronger economic opportunities around Garadpur.

Access to assistance

People relied on each other *during* the super-cyclone, and *during* flood events in Garadpur. Usual social barriers such as those based on caste generally broke down, giving way to numerous acts of generosity, but with some exceptions. However, people could not get any sustained assistance from within their communities, even on the basis of reciprocity, for reconstruction in ensuing months. This is because people generally found themselves in a similar situation of resource constraint.

NGOs helped with relief materials, psycho-social counselling, housing, food-for-work programmes and other support including livelihoods (following the super-cyclone). Assistance with relief and psycho-social counselling, wherever it was made available, was widely appreciated. But the study also raises key issues concerning NGO accountability towards their beneficiaries, and their ability to

coordinate with the government more effectively to move from reactive to proactive work in disaster prone areas.

State interventions, both specifically disaster related, but also more generally are the only sustained source of assistance available to households through the years. Relief is absolutely critical for survival right after the disaster, whereas ex-gratia assistance is a vital source of much needed cash assistance for households at a time (generally a few months after a disaster) when cash stocks are low to cope with the multiple demands of reconstruction. The provision and effective delivery of disaster relief after 1999 posed an unprecedented challenge. There were widespread problems with communications, transportation, looting and orderly distribution. Yet, this is an area that has seen considerable improvement since, with focused measures such as better communications between districts, blocks and gram panchayats; and better stocked gram panchayats and more secure delivery. The positive effects of these were perceptible during the 2008 relief effort in Garadpur, though some challenges remain.

The disbursement of ex-gratia assistance from the state's Calamity Relief Fund continues to pose serious challenges. While not compensation in a strict sense, assistance in this form plays a critical role for households suffering wide ranging losses in disasters (from kin, to housing, to crop, and means of livelihoods). The paying of bribes by people to officials (Revenue Inspectors, *sarpanches*) has been an abiding problem, typically aimed at getting the 'fully damaged' as opposed to 'partially damaged' rate for housing damage. The state government took very stringent steps to minimise corruption in 2008, and while this has made a difference, people and some officials continue to connive to subvert such measures. There are some serious issues with respect to the process of distribution of crop loss compensation, and sharecroppers are seriously disadvantaged.

The study also extends consideration to the key question of whether general state interventions for welfare, unrelated to disasters in particular, are functioning effectively in these disaster-prone areas. Access to Public Distribution System (PDS) rice and pensions by Below Poverty Line (BPL) households is patchy in both sites. A considerable number of households report problems to do with accessing these schemes (despite eligibility), similar to those witnessed elsewhere in the country. However in a disaster prone area, this can have severe consequences for the most vulnerable households. The analysis establishes that failures in accessing these critical schemes in fact make poor households more vulnerable to suffering the effects of the next major disaster. When poor households are deprived of basic minimum food security (through the PDS), or cash for survival (pensions), or wages through state-provided employment (as NREGS), or a good quality *pucca* house (through the IAY), then these collectively amount to a failure of entitlements that undermines their chances of long-term recovery since 1999, and of their preparedness for future hazard events.

There is growing awareness of entitlements on all fronts, especially with respect to the contractor driven malpractices concerning NREGS. But households are constrained by social relations, lack of information and apathy or worse, hostility, by richer/more influential actors in their communities. The government has on paper created ombudsmen etc., but people cannot and are not accessing these.

Disaster preparedness

The state government of Odisha, supported by agencies like UNDP, Red Cross and the World Bank has undertaken important measures for improvement in disaster preparedness. 23 Red Cross cyclone shelters along Odisha's coastline, although few in number, played a key part in saving thousands of lives when the super-cyclone struck in 1999. Since then, the state government (supplemented with resources from the centre and other agencies) has made the construction of well equipped and accessible cyclone shelters a key priority. 203 'Multi-purpose' cyclone shelters have been built till the date of this research, including 65 by the Indian Red Cross Society. There are also school-cum-shelters and shelters built by other state governments and agencies in the worst affected areas right after the cyclone, though the Odisha State Disaster Management Authority (OSDMA) does not involve itself in these shelters' operation and maintenance.

While increase in number of shelters is important, this report presents a micro-level assessment of the factors that are likely to impact upon actual usage should another cyclone occur. These are spatial, physical and demographic in nature, and also social to an extent. In the Erasama wards, wherever shelters are not in their own ward, people are afraid to travel to them only to find them over-filled by people from wards closer to the shelter. Other social prejudices (Bengali/Odiya, or high/low caste) can compound these basic apprehensions regarding space. The gravity of this situation is intensified by Erasama's acute vulnerability to cyclones/super-cyclone, and the rarity of strong *pucca* houses.

Garadpur being an inland block has thinner coverage of cyclone shelters, and people prefer to stay in *pucca* houses in their own village during flood events. However, capacity and access to cyclone shelters is an important issue here as well, especially for the most vulnerable households. A thorough study that examines the ratio of cyclone shelters to target populations is required in coastal Odisha. Simply emphasising numbers of cyclone shelters without correlating these to capacity is not useful. The state of school-cum-shelters, which are more numerous and more accessible to local communities needs to be drastically improved, starting with OSDMA taking them under its fold.

In the ten years since the super-cyclone, the state government, supported by other agencies, has undertaken an array of measures to promote community based mobilisation around disaster awareness and preparedness. Despite this however, there is a real deficit of preparedness and consciousness about preparedness at the grassroots. *Sarpanches* in vulnerable gram panchayats have not had even annual training, there have been few (if any) mock drills involving communities, and there is practically no equipment (radios, boats, other vehicles) held at the gram panchayat level. Funding constraints, according to OSDMA officials, severely curtail what can be done in this regard.

Community awareness about the risks of cyclones is understandably transformed since the fateful events of 1999, and people do and will take warnings seriously. Their strategies may be seriously curtailed by the lack of access to cyclone shelters. There are also constraints to the institutionalisation of community-level preparedness in the study wards. Community level committees are dormant (formed but never having had received training), and there are no community-level assets to systematically deal with a disaster warning, although many individual households do have small measures in place. On the whole however, people exhibit resignation to their luck and fate, rather than systematic or determined preparedness.

Conclusion

The larger message of this study can be contained in three main points, though each chapter includes specific conclusions and recommendations.

- The study reveals areas of concern as well as of improvement. Livelihoods present the most pressing area of concern, showing the least signs of recovery, especially in Erasama. Housing is a more mixed area, with at least Garadpur's households showing perceptible signs of recovery, though households in Erasama continue to suffer from poor quality *kutch*a and *pucca* housing. There are also important improvements in state level disaster preparedness, though much more needs to be done for institutionalising and substantiating such measures at the grassroots. Coverage of cyclone shelters has vastly improved, though micro-level access remains an issue for the population continues to greatly exceed the number of shelters.
- The study shows that the pursuit of two sites for research, sea-side Erasama and relatively inland, riverine Garadpur has been instructive for the understanding of recovery. The two sites are not strictly comparable as they have very different economies (with Garadpur's populace having better access to economic opportunities than remote Erasama's). However, for this precise difference, it has been possible to appreciate that in the longer-term, recovery is a function not just of the scale of the disaster, but also of the resources that people are able to access. Only studying Erasama, which suffered the brute impact of the super-cyclone, would have produced a more one-dimensional understanding of the challenges and opportunities for recovery. Besides, studying the significance of recurrent floods in Garadpur has provided a valuable extra dimension to this study, not least because it has allowed for a more recent assessment of how state responses to disaster have transformed since 1999.
- Finally, the study confirms that recovery is not a definitive state, rather a transient one that many poorer households struggle to achieve over time. In this process, their chances are most hampered by their inability to access state assistance effectively. The study confirms there is no substitute for effective state action, both disaster-related and general. Though there have been key improvements with regard to relief delivery and ex-gratia assistance, there are systemic failures in the performance of key state schemes: PDS, IAY, NREGS to name the principal few. Disaster preparedness in the broadest sense, and especially for the poorest and most vulnerable, can only be achieved when such state schemes function effectively.

Further areas for research

This wide-ranging study has thrown up a number of linked and further areas for research. A few major areas are listed below.

- More systematic research is needed on agriculture in flood prone areas, crop loss compensation and insurance-waiver schemes, and on how different categories of farmers are able to access two sets of subsidy/insurance. There is a particular need for emphasis to be placed on sharecroppers' access to new insurance schemes.
- A better understanding of the credit environment for farmers, and how this can be improved, is required. Farmers have huge debts, banks seem able to ignore state instructions to waiver debts, and households increasingly mortgage their land for tiny loans.

- The relationship between prawn cultivation and mangroves regeneration along coastlines, and implications for key tradeoffs impacting the poor and the ecosystem need to be studied. Identification of and purchase/confiscation of non-locals' gheris (farms), to replace them with mangroves would be an obvious, albeit politically difficult starting point.
- Gender sensitive research on the increased exposure of women to outside wage work and livelihoods strategies after disasters is thin.
- There is an urgent need for the government to consider the systematic dovetailing of IAY with NGO assisted housing in disaster prone areas.
- Poorer households are left to their own devices to rely on social networks to seek shelter during a disaster, which can sometimes fail to secure their safety. There is an urgent need to conduct community-led mapping of houses to identify those located in particularly risky spots. Action research to sensitise local communities to especially vulnerable persons/households living in these areas at the first signs of a hazard could save many lives.
- A cyclone shelter capacity/population feasibility study needs to be urgently commissioned. This could easily be done with the imminent (2011) census results assessed together with Google Earth satellite footage, and consultations with local people.
- Relationship between democratic processes (party politics, participation in decision making) and disaster management needs further research. This study highlights the damaging effects of business as usual political games and lack of local democratic participation upon disaster preparedness and recovery, and further understanding of this is essential.

Introduction

With its proximity to the Bay of Bengal and a complex river system, the state of Odisha in eastern India has long been subject to a variety of hazards and extreme weather conditions including cyclones, droughts, heat waves and floods. The destruction of natural resources, physical assets and infrastructure that typically follow the onset of such hazards presents grave challenges for the people in Odisha, one among the poorest of India's states. In October 1999, a 'super-cyclone' measuring seven on the eight-point scale caused extensive damage to lives, livelihoods and state infrastructure in the state's coastal districts. Since then, Odisha has experienced severe drought and frequent floods, even in its dry western parts, and the most recent flooding episode in September 2008² devastated the coastal districts once again. The unprecedented nature of many of these episodes has led to concern in some quarters regarding Odisha's exposure to climate change, 'climatic chaos' and the heightened possibility of extreme weather events (Global Environmental Negotiations, 2008).

State response to the large-scale human disasters yielded by such hazards has historically followed a short-term ad hoc pattern, but this orientation is now changing. Relief under the Odisha Relief Code 1996 has been critiqued for retaining a basic view of disasters as isolated events with distinctions made between 'localised' or 'widespread' impacts (See Ray-Bennett, 2009 for more details). The super-cyclone starkly exposed the inadequacies of state disaster response mechanisms. It was an unprecedented event with wind speeds exceeding 260 kph and unrelenting rain for over three days. It is estimated that up to 15 million people (more than 1 million households) were seriously affected in one way or another, and though the number of official deaths stands at 10,000, unofficially the figure could be staggeringly higher³. Government officials recalled that there had been one other comparable event in 1971 but it had been rather localised (in Mahakalpada Block, in Kendrapara District). The super-cyclone however indiscriminately affected all six coastal districts⁴.

After the initial chaos, a serious attempt was made by the Chief Minister's office to coordinate relief and rescue operations and deliver help to people in remote places. In the ensuing months, the state government tried to devise a more proactive and cogent approach to ensure that devastation and loss of life on such a scale would not happen again. In 2000, the Odisha State Disaster Mitigation Authority (OSDMA, later renamed the Odisha State Disaster Management Authority) was created as an autonomous organisation to act as the first dedicated 'nodal agency' for disaster reconstruction, promote disaster preparedness at all levels in the state and implement the national Disaster Management Act of 2005. Since its formation, OSDMA has tried to tackle reconstruction mainly through structural measures, like the construction of more flood embankments, roads and cyclone shelters, and improvements in communication. In ensuing years, OSDMA has been credited for a variety of innovative measures that have influenced national-level developments (Hedger, Singha, Reddy, 2010). These include the formulation of the Disaster Management Act, enacted nationally in 2005 (and came into force in Orissa in 2006). This Act envisaged the creation of the National Disaster Management Authority as the apex body for disaster management in India.

²'Most recent' refers upto the time of fieldwork in 2010. Floods continue to affect the coastal zone, as in September 2011.

³<http://www.foodrelief.org/articles/4/1/Super-cyclone-in-Odisha-India/Page1.html> (Accessed July 16 2009).

⁴Odisha has thirty districts. The coastal districts are Balasore, Bhadrak, Kendrapara, Jagatsinghpur, Puri and Ganjam. But given the significance of the river system to Odisha's topography, the interior districts of Jajpur, Cuttack and Khurda are also regarded as a part of state's coastal zone.

With these developments, especially since the Odisha super-cyclone of 1999 and the Gujarat earthquake of 2001, the Government of India describes a ‘paradigm shift’ in its approach to disaster management: ‘the new approach proceeds from the conviction that development cannot be sustainable unless disaster mitigation is built into the development process’ (MHA, 2004: 4). This change in focus has led to a streamlining and focusing of institutional mechanisms. The central government plays an important role in providing financial and logistical support to the concerned state departments. The Calamity Relief Fund and National Calamity Contingency Funds have been established to channel funding to states at times of disaster. It has also led to the adoption of a National Policy on Disaster Management, the principal focus of which is the ‘adoption of a holistic and pro-active approach towards prevention, mitigation and preparedness’ (MHA, 2004: 12). States were advised to enact Disaster Management Acts and also to convert their relief codes into Disaster Management codes drawing up plans for disaster management and mitigation, in addition to response and relief. There are a variety of initiatives underway to mainstream mitigation into rural development programmes. A prominent example is the Indira Awas Yojana (IAY). The Ministry of Home Affairs is working with the Ministry of Rural Development to ensure that houses constructed under IAY are earthquake/cyclone/flood resistant.

These are positive developments. The larger institutional and policy environments both in Odisha and India are readier than ever before, to push forward a multifaceted treatment of disasters. It is in this context that this research project poses its central question. A number of works have studied the super-cyclone itself (Samal et al, 2005; Ray-Bennett, 2009), or have focused on aspects concerning vulnerability (Roy et al, 2002), community preparedness (Udyama with ProVention and others, 2010) and climate resilience (Hedger, Singha and Reddy, 2010). Yet, there has been no study that has understood the trajectories of recovery experienced by local communities affected by the super-cyclone over a longer period of time, say ten years. It is this specific focus that distinguishes this particular research study. The conceptual approach guiding this focus is explained below.

Conceptual approach to vulnerability and recovery: Key terms defined

For several decades now, concepts related to hazard, disaster, risk and vulnerability have been subject to critical debate and reinvention. Risk is no longer thought of purely in physical terms, but in more complex ways that highlight its social as well as physical dimensions. The idea that social processes themselves constitute risk (Few, 2003) has now been embraced within a broader multidisciplinary literature on hazards and disasters. This is the case especially within political ecology approaches to vulnerability, as well as in related anthropologies of disaster (Cutter, 2006; Hilhorst and Bankoff et al 2007, Oliver-Smith and Hoffman, 1999; Wisner, Blaikie et al 2004).

The United Nations International Strategy for Disaster Reduction has defined **disaster** as:

‘a serious disruption of the functioning of a community or society involving widespread human, material, economic or environmental losses or impacts, which *exceeds the ability* of the community or society to cope using its own resources’⁵.

⁵ <http://www.unisdr.org/eng/library/lib-terminology-eng%20home.htm>

This firmly reiterates that the processes that make a disaster are inherently social. In accordance with this orientation, vulnerability too is regarded as fundamentally social (Cutter, 1996). It is not only generated by social conditions, but also structured by social difference. For the purposes of this study therefore:

Vulnerability encompasses not only the likelihood of physical exposure to the hazard, but also people's underlying susceptibility to its effects, and their ability to cope, respond and adapt (Adger, 1999 and 2006; Eriksen et al, 2005).

That ability is shaped by aspects of social structure and human agency, by processes, norms, policies, interventions, resources and the distribution of livelihood assets (Anderson and Woodrow, 1998, Pelling, 2003). Equally, the interplay of the physical environment with various social, political and economic factors is important too, as it creates a web of risks and hazards for people that inhabit such spaces (Cutter et al, 2000).

This means that a hazard event triggers a disaster, but the disaster itself is the result of a range of social, economic and political conditions. For Wisner, Blaikie et al (2004), a disaster is necessarily related to a broader failure of entitlements. It is indisputable that such failures of entitlements regularly enhance the vulnerability and limited ability of the poor to cope with the effects of a disaster. It follows that hazard impacts as well as disaster situations should not be viewed as external to society. Further, if vulnerability itself is inherently social, then understanding it cannot be separated from the everyday life and daily constraints that compound peoples' existence (Few, 2006).

It is precisely this approach that underlines the need to consider disasters not as one-off or isolated events, but as phenomena with antecedents and consequences that span many years. This also means the question of recovery from a disaster cannot be justifiably addressed in the immediate aftermath. If we are serious about understanding how a community that has suffered a disaster actually copes, not just with its immediate impacts, but with the challenges of reconstruction (through rebuilding of lives, livelihoods, housing and so on), then we need to consider these issues after the passage of a reasonable length of time.

We also need to seriously regard how disasters interact with everyday factors of marginalisation. These include persistent poverty expressed through debilitating livelihoods challenges and curtailed access to state welfare, or indeed social difference that impacts upon access to entitlements, based on factors like low class and caste status, disability, or gender. 10 years is a suitable time period because it is neither too short, nor too long for communities in the present day to recall their experiences. It is this reasoning that led to the selection of a ten year timeframe for this investigation into trajectories of recovery.

Recovery necessarily refers to a process of improvement to a state that is better than it's (a community's or household's) pre-existing state, should it have been unprepared for disaster at the outset.

‘We would suggest that in order to have “recovered”, a household should have not only re-established its livelihood, physical assets and patterns of access, but should be more resilient to the next extreme event’ (Wisner, Blaikie et al 2004: 359)

The advantage of this conceptualisation of recovery is that it combines elements of reconstruction after the previous disaster with preparedness for the next imminent one. In doing so, it actually takes on board three types of inequalities: a) initial inequalities before the cyclone that led to different sorts of initial impacts after the last disaster; b) ongoing inequalities in the abilities of households within a community to actually access the necessary resources needed for reconstruction and improvement; and c) present inequalities that shape unequal levels of preparedness in facing the next extreme event.

Finally, in keeping with a holistic treatment of vulnerability and recovery, this research is concerned with the environmental and physical as well as the social and political dimensions of such processes. By **environmental**, the research is concerned with the nature of hazards and risk, micro-environments and geographies of selected areas and the use of physical resources. By **socio-political**, the study is concerned with an array of societal relationships (based on caste, class, gender, kin) and relationships with political actors (gram panchayat leaders, MLAs and MPs), government functionaries at different levels (Revenue Inspectors, Tehsildars, Extension Officers, Collector) and NGOs. It is more broadly concerned with the wider politics of how socio-economic and political resources are used by households to access key benefits from within the community, and from the state and other NGOs, both at times of disaster and in the period thereafter (Kruks-Wisner, 2011). Together, these provide the multifaceted set of issues that the investigation has concerned itself with.

Research design

This conceptual approach has shaped the research design of this study. It follows logically that this study is *not* an impact assessment of the super-cyclone itself. A ten year perspective necessarily means that the study is not trying to isolate the effects of the super-cyclone alone. Instead, it aims to see how immediately discernible impacts in a variety of respects (like reduced crop production or decimated houses) pan out in subsequent years, and what sorts of factors play a part in reconstruction and recovery. The research recognises that attributing causality to complex phenomena over a period of time is not only difficult to do but also questionable. It is interested in the interplay of factors since the super-cyclone, and not in isolating the impact of a single event.

Instead, the research design has developed inductively, and through a process of gradual learning. It started with the Principal Investigator (Chhotray) undertaking a small-scale six-week long exploratory research funded by the British Academy within coastal Odisha in November-December 2008. This research aimed to understand the experiences of two locations in coastal Odisha since the super-cyclone and sought to identify the major issues impacting upon such trajectories. The first was directly along the coast (in Erasama Block, Jagatsinghpur District), whereas the second was further inland, within the broader coastal zone (in Kantapada Block, Cuttack District). This exploratory study proved to be extremely insightful. It revealed that the site along the coast had suffered a brute blow (both in terms of mortality and other devastation), whereas the inland site had suffered comparatively lower deaths, but also wide-ranging destruction of houses and livelihoods. It also revealed the additional dimension of recurrent flooding, in 2001, 2003, 2006, and in 2008. The exploratory study

also noted key differences in the kinds of assistance provided by the state and other non-governmental actors to these sites.

This led to the intent to pursue the two-site approach more systematically. This study resolved to research, a) a population in the coastal strip that is relatively resilient to low-magnitude storms, but remains severely vulnerable to low-probability high-magnitude events, and b) a population in the inland river floodplains, within the coastal zone, that faces recurrent hazards (through flooding). It was hypothesised that this two-site strategy would afford the vital opportunity of studying two different 'hazard environments'. It would also allow for a consideration of two different political and economic contexts within which to appraise the trajectories of recovery of the studied communities. It would further reveal any differences in factors that drove state and NGO assistance to these two hazard environments. More details regarding site selection are contained within Chapter 2.

Such design has necessarily accorded to the research a critical bottom-up focus, where the investigation starts from the level of selected local communities. As a result, this research is *not* an evaluation of any one programme or project intervention. It is also *not* a documentation of success stories in the field. Intensive local household level research has been supplemented with numerous interviews with local officials, gram panchayat leaders, NGOs and several key persons from the state government. The study aims are further explained in Chapter 1.

In effect, this is a small-scale research study with an in-depth focus. It is conceived, designed and led by the Principal Investigator (Chhotray), who worked closely with the Lead Researcher (Hill), who coordinated and executed all the fieldwork, data collection and processing. Two research assistants (Biswal and Behera) and a team of four enumerators assisted Hill during field research in each site. A data analyst and a transcribing assistant were also employed in later stages.

Section 1: Aims, Methods, Sites

Chapter 1: Study aims

The study aims to investigate the socio-political and environmental dimensions of vulnerability and recovery concerning selected households in two study sites. It takes the super-cyclone as a starting point for research, and considers the complex processes of recovery in the years since. As explained in the introduction, vulnerability is regarded as an ongoing social condition that continuously impacts upon prospects of recovery and future preparedness. Wisner, Blaikie et al (2004) have influentially suggested, ‘that in order to have “recovered”, a household should have not only re-established its **livelihood, physical assets and patterns of access**, but should be **more resilient to the next extreme event**’ (2004, p. 359). Slightly reinterpreting this definition to facilitate enquiry, but without altering its essence, this study focuses on four key areas: livelihoods, physical assets (principally housing or shelter), patterns of access to *assistance* (where access specifically means to be able to gain a substantive resource) and disaster preparedness. This four-part focus is reflected in the organisation of the household survey, and the design of the in-depth interview schedule. Chapter 2 contains details regarding the methodology used.

For the purposes of field research, a simple question was formulated:

“Have households been able to recover their livelihoods and housing to a state that was better than in 1999? Are they in a better position to face disasters now than in 1999? Why or why not?”

This was then substantiated through four key research questions with various sub-questions.

- How have livelihoods changed in the past ten years?
 - o How have these been affected by the cyclone and floods?
 - o What pressures are affecting these livelihoods and how are these being addressed (both by households and by the state) in the present day?
- In what ways has the state of housing changed over the past ten years?
 - o Would these changes make people less vulnerable to cyclones and floods?
- What are the factors that have impacted upon household access to assistance from the community, NGOs and from the state at different points since the 1999 super-cyclone till the present day?
 - o What is the nature of support that households attempting reconstruction can expect from within their community?
 - o What is the specific role of state action after a disaster?
 - o Are key state interventions in disaster prone areas serving their purpose effectively in the present day?
 - o To what extent has awareness of entitlements to government assistance grown in the last ten years, and what impact is this having on actual access?
- What is the state of disaster preparedness of people, both at the household and at the community level?
 - o What are the factors that determine access to cyclone shelters?
 - o What is the state of gram panchayat level preparedness in the study wards?
 - o What is the condition of household and community level preparedness?

Nature of the study

The above study aims reveal the multifaceted concerns that are at the heart of this research. However, a study of this kind has its strengths as well as potential limitations. The obvious advantage is that contained in this one report is an encompassing analysis of a wide range of issues to do with recovery. There is a rich dataset (quantitative and qualitative) that substantiates the analysis contained here. But equally, even as the coverage of issues is broad (it is not within the remit of this study to carry out an independent, detailed investigation of each of the auxiliary issues (such as the larger market or credit environment for farmers, or migration) that arises from the investigation.

However, there is enough contained within the report to interpret the relevance of these issues for the question of recovery for the studied communities, and for reasoned wider inferences to be drawn on their basis. This is not as much a limitation, as the necessary imposition of a boundary to what a small team of researchers working over a one year period can achieve. Each chapter contains a succinct summary, as well as a list of policy recommendations and pointers for further action. These should also be referred to as an inventory of areas that may be researched further.

It is worth emphasising that a study of this sort was extremely challenging to conduct, partly because of the near absence of any reliable baseline household level information in 1999. Government and NGO persons invited to the induction workshop of this project acknowledged this frankly. The study team had to deal with this by starting with an inventory of households in the present day (more details in Chapter 2), and also trace household formation back to 1999. This was a difficult task, painstakingly carried out. Household calendars were devised with the situation before the cyclone as the starting point for recollection by respondents (again, see Chapter 2 for a fuller account). While the super-cyclone has left an indelible mark on peoples' memories, and respondents generally remembered their situation vividly, some amount of blurring of recall is always possible. Here, the strength of the research lies in its mixed methods approach. A third of the household survey respondents were re-interviewed with more qualitative conversations, and a number of focus group discussions were held in all study sites. This is known as multi-method triangulation, whereby different methods (survey, in-depth interview, group discussions) prove to be invaluable for revealing and correcting inconsistencies in information. The data thus obtained is of an extremely high quality.

Finally, the unit of study in this research is the household (see Chapter 2 for the adopted definition of a household). The research assesses the livelihoods situation, housing, access to assistance and disaster preparedness of 240 households in the two study sites. Through this sample, it arrives at wider conclusions for the studied communities. Given the focus of the research, and the disciplinary expertise of the main researchers (Development Studies, Political Science, Rural Sociology, Physical and Human Geography, Environmental Science), the analysis is focused upon identifying and interpreting trends obtained through the household surveys combined with a qualitative analysis of the social and political facets of vulnerability and recovery.

Chapter 2: Methodology

This chapter details the selection of the two sites, and within these sites, the reasons for selection of eight sample wards. It then proceeds to explain the methods employed during field research, including the sampling strategy and analysis of data.

2.1 Site selection

The preliminary insights of Chhotray's earlier exploratory research were illuminating, so the same site selection strategy – to work in two different hazard environments, one vulnerable to flooding the other to cyclones – was retained to pursue more systematic investigation through this one-year project. The first site chosen – villages close to the seashore in Erasama Block of Jagatsinghpur District, suffered a direct blow from the tidal surge that accompanied the 1999 super-cyclone, resulting in high mortality. The second site – villages lying close to the Chitrotpala River and within the Mahanadi riverine system, in Garadpur Block of Kendrapara District, experienced similar levels of livelihood and housing destruction during the cyclone, though human mortality was negligible. The first site remains vulnerable to low-probability, high magnitude events but has not suffered any significant hazard since 1999. However, the Garadpur site has in the intermittent period experienced a series of riverine floods including the major flood disaster of 2008. Garadpur also suffered the effects of the super-cyclone albeit without great loss of human life. The two sites will hereafter be referred to as Erasama and Garadpur. In doing so, we do not claim that our findings are representative of these entire blocks rather we use this nomenclature for ease of writing.

This selection of sites allows the research to compare the patterns of response to the super-cyclone by both governmental and non-governmental actors. It further allows for a consideration in the Garadpur site of how the state's response to disaster has changed over time, from the 1999 super-cyclone to the 2008 flood. During this period, there have been significant improvements in the state's attitude towards and preparedness to deal with hazards and minimise the impact of disasters through proactive planning, as referred to in the introduction. We had initially thought to select a third 'control' site in the coastal zone that had suffered no natural hazard, however the non-availability of such a site meant this was not possible – Odisha's coastal districts were all affected by the super-cyclone to varying degrees. We found consensus among Odisha based actors that such a 'control' site does not exist⁶. On reflection we decided that our two sites were sufficient for the purposes of this research, which seeks to carry out an in-depth analysis of the trajectories of recovery in two different hazard contexts within coastal Odisha.

Finally the two sites, and within them the selected villages/wards were selected independently by the research team within the dictates of clear criteria about researchability. There was no explicit direction by locally situated state or non-state actors, although various suggestions regarding illustrative case studies were sought at the project's induction workshop in November 2009, and also explored. This research sought to be critically analytical rather than to document best practices, though positive developments whenever encountered are acknowledged.

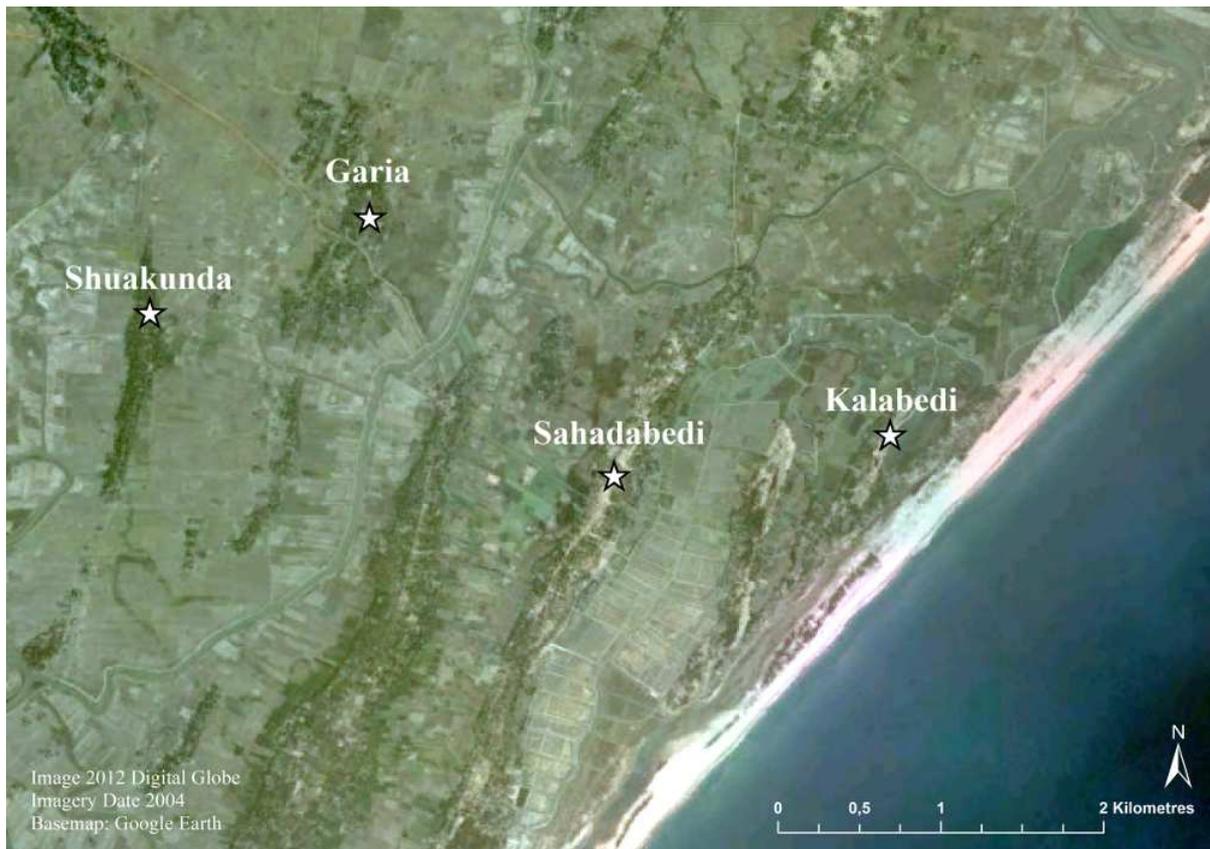
⁶ The Managing Director of OSDMA, Mr Sunderray, in the project's November 2010 dissemination workshop, along with other key actors based in Odisha, agreed that it would be difficult to find a site to serve as a control.

2.2 Selection of wards

The research intended to work in a total of four revenue villages, two in each of the sites. However revenue villages in coastal Odisha vary in size considerably, having seemingly arbitrary boundaries in the present day. Therefore we decided to select wards instead. The ward is the political unit below the gram panchayat, and is spatially coherent, making it a useful unit of study. We selected four gram panchayats, two in each site, and which each contain between 15 and 22 wards. For example, Tikanpur Gram Panchayat in Garadpur comprises 15 wards (and seven revenue villages).

Wards also vary in size, containing from 60 households to over 150 households. We therefore decided to select four wards in each of the two sites, so a total of eight wards. Our selection of wards was guided by several factors. Firstly, we tried to select wards that had received differing levels of governmental or non-governmental attention and support following disasters. We were guided by local and state level key informants rather than any systematic database regarding 'levels of assistance' for no such data exists. Secondly, we chose wards according to their socio-geographical attributes, such as caste composition, road connectivity, and proximity to the sea in the first site, and to rivers in the second site (see below). Our strategy was to find areas to work that did not stand out and could therefore be broadly representative of other villages in the region. We sought to select villages 'of no particular significance', the justification for which lies 'precisely in its banality', that such circumstances are the normal context for the majority of people (Scott, 1985: 27).

Fieldwork was conducted in the Erasama site during February to April 2010 and in Garadpur during June to August 2010. Return visits were made in November and December 2010. Our selection of wards was made within the first week or two of fieldwork, after several focus group discussions had been held in several villages, and there had been time to get an understanding of the local issues at play. Map 2.1 shows the location of the four wards selected in the Erasama site: Shuakunda (ward number 9) and Garia (ward number 5) come under Gadharishpur Gram Panchayat (and Garia Revenue Village), and Sahadabedi (ward number 20) and Kalabedi (ward number 21) come under Padmapur Gram Panchayat (and are in Sahadabedi Revenue Village). The wards' distances from the sea, as the crow flies, are roughly: Shuakunda 4 km, Garia 3.5 km, Sahadabedi 1.5-2 km, and Kalabedi 0.5-1 km.



Map 2.1: The Erasama research site: the four selected wards

The satellite image clearly shows the relative proximity of wards to the sea, and it is no coincidence that of the four selected wards Kalabedi suffered the highest human mortality in the 1999 super-cyclone. One can also see (top left) the main road that connects the local population to Jagatsinghpur town (a district headquarter) via Balikuda and Borikina, and to Cuttack and Bhubaneswar (see also Map 3.1). This road passes through Garia, over the River Sankha to Sahadabedi. The minor roads to Shuakunda and Kalabedi are in a poor state. Road connectivity had an impact during relief provision and reconstruction efforts following the super-cyclone, and affects everyday development efforts. Socially, wards Shuakunda and Kalabedi mainly comprise Bengalis and wards Garia and Sahadabedi mainly comprise Oriyas (Chapter 3).

Map 2.2 shows the wards selected in the Garadpur site. The satellite imagery shows that the wards fall in the floodplains of the Mahanadi river system, on land which some locals refer to as ‘islands’; at the time of the 1999 super-cyclone there were no bridges over these rivers, but in recent years several bridges have been built thus greatly improving connectivity.



Map 2.2: The Garadpur research site: the four selected wards

Marilo (ward number 2) and Behula (ward numbers 9 and 10) come under Tikanpur Gram Panchayat (the residents of Behula insisted we not divide them), whereas Jamunabad (ward number 17) and Samsara (ward number 6) come under Patkura Gram Panchayat. All four wards fall in revenue villages of the same name – in the second site (Garadpur) there are more, smaller-sized revenue villages than in the first site (Erasama).

The satellite image shows that Marilo and Behula are located between the Luna River and the Chitrotpala River, whereas Samsara and Jamunabad lie between the Chitrotpala River and the Paika River. All four wards bear the risk of flooding from their surrounding rivers but there are differences, notably with Samsara which lies immediately beside an embankment classified as ‘weak and vulnerable’ by the irrigation department. In the past decade, Samsara has borne the brunt of two floods, the 2001 and the 2008 flood. In the 2001 flood the Chitrotpala’s right bank’s embankment breached in one place (at Samsara), and in 2008, a breach occurred in the same place, plus two further breaches occurred just upstream (at Samsara and neighbouring Jagannathpur). The 2001 and 2008 floods affected all four selected wards, whereas the 2003 and 2006 floods affected Marilo, Behula and Jamunabad’s residents more than they did Samsara’s, because there was no breach at Samsara in those years. Socially, all four wards are Oriya; Marilo is general caste (GC), Behula is scheduled caste (SC), Jamunabad is mainly general but has some scheduled castes (GC and SC), and Samsara is a large mixed village containing general, ‘other backward’, and scheduled castes (GC, OBC and SC).

2.3 Methods

Field research used mixed methods, relying on a combination of quantitative and qualitative methods to conduct a retrospective enquiry of the past ten years, taking the pre-1999 super cyclone scenario as its starting point. Below the methods are discussed, namely household survey, in-depth interview, key informant interview and focus group discussion.

The household survey

The quantitative methods constituted a detailed six-part 18-page household survey (see Appendix 2). The survey was developed in the field, and was extensively piloted in the first site; the eighth version was finally settled upon. The survey's six main sections cover household members, land ownership and use, livestock and fruit trees, other livelihoods, housing, and finally government schemes, benefits and compensation. The selection of topics was driven by the key research question relating to livelihoods, housing and access to assistance. Basic data on education at the household level was collected to enlighten issues around livelihood choices like migration, but this was not pursued as an independent subject of investigation as this was outside the scope of the project, as was a systematic investigation on health. As the study is retrospective, and fundamentally interested in transition, a household livelihoods approach was taken and not an income/consumption approach. Such an approach fits with the research team's field of expertise and the study's aims. Within several sections of the household survey we developed household calendars as an innovative way to prompt recall during investigation so to understand change over the decade⁷.

An example of a calendar is presented below; data is recorded for livestock ownership over the ten-year period. The calendar begins with 1999 and 2000, to cover the scenario before the super-cyclone struck, and the scenario afterwards. After 1999 and 2000, we paired years, because otherwise the collection of data would have been very tedious for both respondent and enumerator. Furthermore this choice is reasonable because we are examining trends. The respondent in this example had two cows in 1999, before the cyclone, but they both died in the cyclone, so in 2000 the respondent had no cows. Around 2007-2008 the respondent 'borrowed' a cow from another household, a common practice utilised by households without livestock to over time gain animals (through birth) without the cost of purchase. The respondent also had five goats which all died in the cyclone, and later around 2003-2004 was given four goats by an NGO. Through birth their number increased to six goats in 2005-2006, but then disease struck and by 2007-2008 the respondent had no goats.

⁷ The household calendars approach was based on a 'household event history calendar' used by Janet Seeley in an MRC and ESRC funded Project, 2005-08: 'Livelihood Trajectories and HIV and AIDS in South West Uganda – a longitudinal study of rural households' December 2005 – May 2008 (grant RES-062-23-0051).

Table 2.1: Example of calendar from household survey:

Household calendar for livestock owned (or looked after) by the household

ID	Number of livestock	1999 (before cyclone)	2000 (after cyclone)	2001 and 2002	2003 and 2004	2005 and 2006	2007 and 2008	2009 and 2010
1	Cow	2	0	0	0	0	1	1
2	Reason for change	-	9	0	0	0	4	1
3	Bullock/ox	0	0	0	0	0	0	0
4	Reason for change	-	0	0	0	0	0	0
5	Goat	5	0	0	4	6	0	0
6	Reason for change	-	9	0	11	2	8	0

Codes for reason for change: 0 = No animal and no change, 1 = Animal but no change, 2 = Birth, 3 = Purchase, 4 = Looking after another's animal, 5 = Returned other's animal, 6 = Gave to another to look after, 7 = Took back from another, 8 = Death by disease/natural, 9 = Death by cyclone, 10 = Sold off, 11 = NGO gave, 12 = Household ate, 13 = Killed (poison/ animal), 14 = Household separated, 15 = Animal gifted from family, 16 = Death by flood

The household survey was enumerated very seriously. In each site we had a team that included four enumerators. One household survey was completed daily by each enumerator, most often in the morning and taking around three hours to complete. In the afternoons the four enumerators sat together to check through each other's survey forms, with the lead researcher (Hill) often joining them. On site, the lead researcher checked over two-thirds of survey forms. A few surveys were discarded where the respondent lied⁸, and some respondents were revisited for clarifications. Sample size and selection is discussed below.

In-depth interviews

We returned to some one-third of the household survey respondents, to carry out in-depth interviews. The purpose of the interviews was to capture more in-depth and nuanced information that a household survey cannot capture. The interviews were semi-structured and a checklist of some 13 themes was devised, covering the time of the super-cyclone (and floods for the second site), help and relief received in the aftermath, the rebuilding of houses, livelihoods issues throughout, household financial issues, government benefits and schemes, socio-political relations, and preparedness for a future disaster, be it a cyclone or flood (see Appendix 3). The majority of interviews were conducted with either or both spouses, however for three households from each of the wards we interviewed both the husband and wife, termed 'paired interviews', so to gain some gendered insight into the ways men and women experience disasters and their aftermath. All interviews were recorded on Dictaphone and later transcribed.

⁸ To the minority of respondents who blatantly understated their assets, we explained time and again the purpose of the research. In several cases we rejected the household because they could not comprehend our intentions.

Key informant interviews

Semi-structured interviews with what we term ‘key informants’ were geared to issues relevant to the interviewee, and were both pre-planned and spontaneous where specific concerns arose during the course of fieldwork. Key informants included both elected representatives and bureaucrats: current and previous *sarpanches*, block chairpersons, block development officers (BDOs), other block-level officers such as assistant agricultural officers (AAOs) and livestock officers, tehsildars, district-level officers such as the district emergency officer (DEO) and district agricultural officer (DAO), irrigation officers, forest officers, district-level panchayat committee representatives, and officials at the Odisha State Disaster Management Authority (OSDMA). We also interviewed bank managers of local cooperative banks and societies, members or representatives of self-help groups, and NGO representatives who were or are active in livelihood and disaster-related work in our selected sites. While meeting key informants we also sought and collected secondary data on a whole host of topics.

Focus group discussions and triangulation of information

Focus group discussions (FGDs) were held in the sample wards throughout the field research period. We began our work by holding an introductory FGD in each ward, to explain to residents our study remit, and to answer any queries they had (most often ‘what will we gain?’ type questions). We then conducted a few FGDs to discuss certain topics, for example the super-cyclone, or the state of agriculture. In the later stages of field research we held women-only FGDs to allow women to state their views on a whole host of issues, and FGDs covering topics such as local physical and environmental features, related to physical vulnerability (in the first site) and compensation received after the 2008 flood (in the second site). The focus group discussions provided an ideal forum to triangulate divergent information obtained from different sources, and to put forward to the people observations and theories that were emerging from the ongoing work. In many ways the FGDs helped us to counter the recall bias inherent in any retrospective study such as this. For example, where in the household survey or in-depth interview a respondent had made an assertion that was at odds with the general narrative, we were able to (anonymously) put forward this perspective to a group to check its authenticity. Likewise where an outside bureaucrat or elected representative made a comment that seemed implausible, we could check with the local population their views on the matter.

2.4 Sampling

We chose to adopt a grounded definition of a household as ‘a family unit that is economically independent from, and usually eats and sleeps separately from, other close family members’. On the whole households are easily distinguished from one and another, but there are ambiguities, for example, two brothers and their families, living side by side, might share the responsibility of looking after one or both their parents. Also, in terms of government entitlements, cases exist whereby, for example, one household may have two kerosene ration cards, in the name of the father and a son – in such a case, we considered this one household.

We conducted household surveys with a fixed number of 30 households in each of the eight selected wards. We chose the number ‘30’ after consultation with colleague development economists at the University of East Anglia, who explained that it is common to keep a fixed number of households for sampling, size need not be proportional to the wider population, as a rule of thumb 30 is the minimum number for statistical significance, and with such a number, we could be confident that results would

show patterns that are likely to exist in reality rather than to occur by chance. Given team size and time availability in the field, we selected 30 as the sample size per ward, so a total of 240 household surveys.

To select the 30 households we first held a public meeting in each ward to make a ‘social map’ (a participatory rural appraisal (PRA) technique) showing each and every household in the ward, and assigning each household a number. This step was taken because such up-to-date information was unavailable or inaccessible from the gram panchayat, and it was necessary to ensure households were not excluded. The map is also useful for the research team to understand the village lay-out. At this time we resolved ambiguities to define households clearly. We listed the name of the household head for each household. A few days later we staged a second public meeting in each ward to hold what we called a ‘lottery’ to select our sample households. We wrote each household’s unique household number down on paper, cut and folded these pieces of paper, and then allowed a villager, often a child, to literally pull the numbers out of a hat. In this way a random sample of 30 households from each ward was taken.

From the 30 households sampled in each ward, we randomly selected 10 households (i.e. one-third) to revisit for an in-depth interview. This we did privately, for there was no need to involve the villagers. If in our 10 selected households there was no female-headed household (FHH), then we selected a FHH from the additional 20 households to take for an additional in-depth interview. From the 10 households selected in each ward furthermore, we chose three households for ‘paired interview’, based on the presence in the household of a husband and a wife, and using our discretion to select households having different economic and social statuses – we made a chart and listed attributes of the households, such as amount of land, number of livestock, caste, etc. and then selected the three households in order to cover different status groups. Thus in sum we carried out in-depth interviews with 13 to 14 individuals in each ward, and a total of 109 interviews across the eight wards.

2.5 Data analysis and return field research trips

An Excel spreadsheet was developed and the data from the household survey was entered into it. This involved a great deal of work – although the household survey format had been designed such that it already included coding (see survey format in Appendices), the real world is too complex to enable the predefinition of all categories, and so a lot of reorganisation of data took place while entering it into the Excel spreadsheet. We then engaged a data analyst who proceeded to transfer the data from Excel into SPSS and to check the data and perform analyses. At this point too, a lot of difficulties arose, and decisions were made on how best to analyse and present the data. For example, in the Erasama site some 203 farm plots (of differing ownership and use statuses) were recorded to be owned or operated by our 120 household sample, and of these, 37 farm plots were co-operated, i.e. two or more households jointly operated each of these plots. So not to distort the data, we assumed that co-operators share their inputs and harvest equally, and divided the area of such plots by the number of cultivators, thus leaving our selected household with their share of the plot size. The quantitative outputs include tables and charts presenting data at the household, ward and site levels, for all the topics covered in the household survey. This material is of great use when presented alongside qualitative material that adds nuance to observed trends.

The qualitative interviews – in-depth, key informant, and focus group discussion – were recorded either by Dictaphone (the in-depth interviews) or by pen, and later transcribed and typed up into word documents. These interviews are stored alongside grey material collected from certain interviewees. Mapping has made possible using Google Earth, and throughout this report annotated satellite images are presented where necessary.

Our research team was involved in several meetings throughout 2010, during which ideas were discussed and advice received. Before this, in November 2009 an induction workshop was held in Bhubaneswar attended by key government stakeholders, NGOs and donors working on disasters and livelihoods. Attendees were appraised about the project, its rationale, and advice was solicited regarding possible research sites. Following fieldwork, a dissemination workshop was held in Bhubaneswar in early November 2010. Shortly afterwards the local research team revisited both field sites to collect additional information and clarify some points that had emerged on analysis of data. After the second dissemination workshop held at the UNDP Delhi office, the local research team revisited the block offices at both research sites, to question the administrators on the running of certain government schemes. Chapter 3 will now introduce the research sites.

Chapter 3: Characterising the sites

In this chapter the two research sites are introduced, to provide context to the remainder of the report that will present the main findings. Four sections outline the physical location of the research sites and their history of hazards, micro-environmental features of the eight wards, the social composition of the communities and of households, and the occupational backgrounds of households. We have included an Appendix detailing some of the key features of agrarian relations in the region (Appendix 4).

3.1 Physical location of the sites and history of hazards

Map 3.1 shows the location of the two research sites and their respective district headquarters, Jagatsinghpur town and Kendrapara town. The map also shows Odisha's principal cities, known as the 'twin cities' Cuttack and Bhubaneswar, 20 km apart from one another. Cuttack marks the beginning of the deltaic region. The Mahanadi River's distributaries, namely the Devi River (or Kathjori River as it is called at Cuttack) that forms the western boundary of Jagatsinghpur District, and the Mahanadi, Paika, Chitrotpala and Luna Rivers that sit in the southern portion of Kendrapara District (and the northern portion of Jagatsinghpur District), determine the road networks between the research sites and the twin cities. Cuttack is by road the city closest to both our research sites – it is some 90 km from the Erasama site, and some 75 km from our Garadpur site. Although the total distance does not greatly differ, the Erasama site is considerably more marginalised than the Garadpur site because it is literally at the end of the road (see map 3.1), and has no significant feature, such as a port. Agriculture is more productive inland, because the areas immediately adjacent to the coastline are saline.



Map 3.1: The two research sites, Erasama and Garadpur, located in coastal Odisha

Odisha has experienced hazards like flood, drought and cyclone in almost all years since 1965, though cyclone is the least frequent. Samal et al provide a list of these calamities, and document the cyclones that have affected Odisha through the 19th and 20th centuries (2005: 6, 24-35). During 1999, two cyclones hit coastal Odisha within a period of two weeks – the first surfaced in mid October and mostly affected Ganjam and Gajapati Districts, and the second occurred at the end of October affecting 12 districts, the most affected being Jagatsinghpur (particularly Erasama Block positioned along the coastline) where over 10,000 persons died. The extent of the damage caused by this second cyclone, termed a super-cyclone cannot be downplayed. Its winds were at a speed of about 260 km per hour, and were accompanied by a tidal wave that surged 20 km inland, submerging low-lying coastal villages. The Erasama research site suffered these high winds and tidal surge, whereas the Garadpur site suffered only from the super-cyclone's high winds and rain. Since the 1999 super-cyclone, the Erasama research site has suffered no flood or cyclone, though drought comes and goes and cyclonic storms occur annually.

The River Mahanadi (literally *Great River*) flows from Chhattisgarh, Jharkhand and Odisha, draining a catchment of 130,560 km² and having a total course of 853 km (see Map 3.2, sourced from www.sandrp.in). Its deltaic region, beginning at Cuttack and extending to the sea, has a length of some 107 km and an area of 7526 km², thus the delta area forms some 5.8% of its catchment (GoO, 1990 in D'Souza, 2002). Both research sites fall within the deltaic region. D'Souza describes how British colonial rule, which began in 1803, dramatically reconfigured the hydrology of the deltaic region, transforming it 'from being a *flood dependent* agrarian regime to a *flood vulnerable* landscape' (2002: 1262). Over the span of one and a half centuries a 'treadmill of flood control measures', from embankments to a canal system and finally the construction of the Hirakud Dam, undermined the landscape's hydrological integrity rather than accommodating the fluvial system as a geomorphological process (ibid: 1270).



Map 3.2: The Mahanadi River basin, inc. the Hirakud reservoir and the deltaic region

The Hirakud Dam (Map 3.2) was constructed in 1957 ostensibly to control floods. Common discourse in present-day Odisha expresses this accepted view, that ‘the Hirakud Dam controls floods’ and that ‘flooding would be worse if it were not for the Hirakud Dam’. Floods have occurred in Odisha for most years since 1965 but its most severe floods occurred in 1982 and 2001 (Samal et al, 2005), and in 2008. Who is to blame for these floods is a disputed question. Press releases from the South Asia Network on Dams, Rivers and People (SANDRP) at the time of the 2008 flood blame the severity of the floods upon the Hirakud Dam’s operators for their poor management of flood levels in the Hirakud reservoir during the 2008 monsoon (Thakkar, 2008a, 2008b). Others like Satapathy (1993, in Samal et al 2005) argue that the Hirakud Dam has drastically reduced large floods but has increased the frequency of medium and small flood events. Thus unlike indisputably ‘natural’ cyclones, the question of the naturalness of floods in the Mahanadi basin is a valid one – as are concerns regarding how affected populations should be compensated.

Our second research site in central Garadpur Block has time and again been affected by flooding. The Kendrapara District Disaster Management Plan of 2010 shows that Garadpur Block has experienced flooding in 1980, 1982, 1992, 2001, 2003, 2006 and 2008. The block and our research wards are sandwiched between the Luna and Paika Rivers and bifurcated from west to east by the Chitrotpala

River (see Map 2.2). The embankments along all three rivers are prone to breaching. Some respondents blame downstream villagers for purposively creating breaches in the embankment upstream of their villages, to prevent floodwaters from affecting their homes and crops (respondent no. 155). Others point to the recent construction of bridges, which funnel the rivers into a narrower path and create points where water can overflow exacerbating flooding (respondent no. 156). Erasama and in particular our research site close to the coast is rarely affected by flood, though the 1982 flood affected the population seriously, washing away houses. The 1982 flood occurred when the 'Daleighai' embankment on the Devi River (see Map 3.1) breached – villagers believe this breach to have been purposively made to save Cuttack city from submergence by floodwater.

3.2 Micro-environments of the research sites

The Erasama site is a coastal ecosystem strongly influenced by human settlement since the 19th century. Estuarine rivers, such as the Boitakulia River (see Map 3.3) bring saline water inland with high tides, and this was the basis of the traditional, now disappearing profession of rock salt production. Efforts have been made to control this saline-fresh water interface in recent times. Two sluice gates, at the mouths of the River Gaipadia and the River Sankha built in 1982 and 1992 respectively, are highlighted in Map 3.3. These were designed to prevent the influx of seawater to ensure fresh water in the rivers for farmers, and to allow drainage of fresh water from farmland in the rainy season to prevent water logging. However these sluice gates are dysfunctional. The undersized sluice gate and corresponding dam on the Sankha River allows seawater to overflow the dam two to three times a year, and the gate anyway remains open. The sluice gate on the Gaipadia has been damaged for years, and in 2010 during Cyclone Jaal a tidal surge washed away the earthen embankment besides which the gate sits. Farmers repaired it themselves, but not before a portion of the Gaipadia's embankment, located upstream, breached allowing saline water to enter farmers' fields.

The complexity of the coastal ecosystem is exacerbated by the presence of prawn farms along the coastline. In the Erasama site, human settlement and paddy farming – which led to the deforestation of mangroves, seems to have predated prawn cultivation, which began only some two decades ago in this particular region⁹. Prawn farming increased following the 1999 super-cyclone, and the effects of this upon, and interaction with paddy cultivation is discussed in Chapter 4. Map 3.3 shows a few patches of mangrove just south of the Boitakulia River, and Casuarina plantations afforested along the coastline following the destruction reaped by the 1999 super-cyclone. The sea has been eroding the coastline since time immemorial, leaving the villagers of Kalabedi precariously positioned in the present day – during a cyclonic depression in 2010 seawater entered their paddy and prawn farms, and came close to some of their homes. Forest management is returned to in Chapter 7.

⁹ Mangroves in the coastal strip closeby the Krishna River in Andhra Pradesh were destroyed by the 1940s, whereas aquaculture (prawn and fish farming) was introduced and encouraged by the government in the late 1980s (Winchester, 2000). A similar pattern of change seems to have occurred along the Odisha coastline.



Map 3.3: The Erasama research site: micro-environmental features

The Garadpur research site is located in the floodplain of the Mahanadi River system, and all four sampled wards are nearest to the Chitrotpala River. The alluvial soils are fertile allowing for double cropping, unlike in the Erasama site where one crop of paddy is most often cultivated. Paddy is cultivated in the *khariif* season followed most commonly by green or black gram over the winter *dalua* season (see Map 3.4). There is abundant fresh water close by – the Chitrotpala flows throughout the year and the groundwater level remains high. Though the farming economy is healthy and productive, the condition of irrigation facilities poses a serious constraint to farmers. A canal runs along the left bank of the Chitrotpala however it is poorly managed, and farmers in tail-end Tikanpur Gram Panchayat (which includes Marilo and Behula) claim they rarely receive water other than when they do not need it, during the rainy season. Across the river, Patkura Gram Panchayat’s farmers were supposed to benefit from the Mahanadi Chitrotpala Island Irrigation Project (MCIIP) which has not provided a drop of water to cultivators, even though, as a recent report by the Comptroller and Auditor General says, 230 *crore* rupees has been spent in the past 20 years¹⁰. On this same island alongside embankments are the remnants of lift irrigation points which ceased to function in the 1990s. Following the super-cyclone the UK’s Department for International Development (DfID) provided funding for ‘rehabilitation of cyclone damaged lift irrigation points’. In the period 2000-02 voluntarily retirement was handed out to public sector lift irrigation point ‘drivers’, and control of irrigation pump-sets was placed in the hands of community-based, water users associations (named

¹⁰ ‘CAG detects wasteful expenditure: 230 *crore* rupees has been siphoned off in over 20 years’ New Indian Express, Bhubaneswar, 19/08/2010

pani panchayats)¹¹. According to peons in the Patkura Irrigation Sub-divisional office, these *pani panchayats* are by 2010 no longer functioning¹².



Map 3.4: The Garadpur research site: micro-environmental features

3.3 Social composition: community and household

The population resident in the Erasama site are of both Bengali and Oriya heritage so two wards with a predominance of each social group were selected for research. Gadaharishpur Gram Panchayat contains three revenue villages, Asia (two wards), Garia (nine wards) and Gadaharishpur (eleven wards). The two selected wards are of Garia Revenue Village, which is hereafter referred to as Garia (Oriya heritage) and Shuakunda (predominantly Bengali heritage). Padmapur Gram Panchayat contains just two revenue villages, Sahadabedi (four wards) and Padmapur (18 wards). The two selected wards are of Sahadabedi Revenue Village, named Kalabedi (Bengali) and Sahadabedi (mainly Oriya).

Census data does not disclose whether or not a person is Bengali or Oriya heritage nor does it distinguish caste groups aside from scheduled castes (SCs) or even scheduled tribes (STs). Therefore we rely on our household survey data and random sampling within the selected wards to gain an idea of caste make-up in the wards. The following proportions are thus derived from sampled households and not actual populations. The Garia sample is two-thirds Oriya scheduled caste (21 households) and

¹¹ 'Report on Recovery and Reconstruction following the Orissa Super Cyclone in October 1999', by Sinha, A.K., Asian Disaster Reduction Center, no date, <http://www.recoveryplatform.org/> (accessed, November 2010). See <http://www.orissapanipanchayat.gov.in/water1.php> (accessed January 2012) for details on *pani panchayats*.

¹² Interview conducted with two staff members of the Patkura Irrigation Sub Divisional Office, August 2010

one-third Oriya general caste (eight households are Khandayat), all being Hindu. Shuakunda too is Hindu, comprising over two-thirds Bengali general caste (22 households are Khandayat), less than one-third Bengali 'other backward caste' (seven households are Vaishyas), while one of our sampled households is Oriya. Kalabedi's Bengalis are around 50% Muslim and 50% Hindu – some 17 households are general caste Muslim, nine households are 'other backward caste' Hindus and four are general caste Hindus. Sahadabedi is largely Hindu and Oriya, comprising Oriya general caste (13 households are Khandayat) and Oriya 'other backward caste' (nine households), but also Oriya scheduled caste (six households are of washer person caste) and two Bengali households, one of which includes the elected ward member.

In coastal regions such as our Erasama site, there is a great deal of prejudice voiced by Oriya persons against the settled Bengali population, the root of which no doubt stems from overpopulation in the coastal region and a perceived and real lack of resources, particularly land. Anecdotal accounts from Shuakunda suggest that following independence from the British and the formation of East Pakistan from what was previously eastern Bengal, Muslims attacked Bengali Hindus leading to mass exodus of Hindus across to the newly formed India. The respondents' grandfathers came to Odisha during the early 1950s and were allocated land whilst Jawaharlal Nehru was Prime Minister. The Odisha coastline was, like their homeland, rich in crabs and fish and this attracted the Bengalis. Shuakunda's school was built in 1962 by the government. Kalabedi's Muslim and Hindu residents stated that their ancestors had come from West Bengal's Midnapore District, which borders Odisha, before Indian independence on invitation by a local ruler, to clear forests and land for cultivation. Many dangerous animals lived in the jungle, they were forewarned, and this risk they would have to bear.

The population in the Garadpur site are all Hindu and Oriya, though the wards have differing caste compositions. Tikanpur Gram Panchayat contains seven revenue villages and a total of 15 wards, while Patkura Gram Panchayat contains 10 revenue villages and a total of 17 wards. When compared with the Erasama site, one can speculate that the relative abundance of revenue villages in Garadpur is due to the region's agricultural productivity; the British rulers likely had a greater interest in Garadpur than Erasama, because revenue incomes would have been more lucrative. This also relates to a population's political guile and awareness, for having one's village registered as a revenue village brings with it recognition, literally putting it on the map, and development, for funds used to be allocated to revenue villages prior to the advent of gram panchayats. The slower or neglected recognition of Erasama's coastline settlements could indicate a lack of political importance given to the area due to its economic insignificance, and/or a lack of political will to speedily develop the area due to the settled Bengali population¹³.

Two wards in Tikanpur Gram Panchayat, named Marilo and Behula, were selected. One ward falls in Marilo Revenue Village, which contains two wards, comprising over 90% general castes (Khandayat). Behula Revenue Village comprises two wards, over 95% scheduled caste. The villagers insisted their thinly populated two wards be considered as one by the project. In Patkura Gram Panchayat we selected two wards, Jamunabad and Samsara. Jamunabad is a ward and a revenue village, containing Jamunabad and Gobandia hamlets, and is of predominantly general caste, though it has a few

¹³Shuakunda's population lament that their settlement is not classified as a revenue village, blaming their forefathers for not having pressed for this.

scheduled caste (washer person) and ‘other backward caste’ households. Samsara Revenue Village has two wards, each a hamlet, and we chose to work in the poorer of the two, a large mixed ward having over two-thirds ‘other backward caste’ and under one-third scheduled caste (mainly bamboo weavers). Generalising somewhat, Behula is scheduled caste, Samsara and Jamunabad mixed caste, and Marilo general caste, which gives us a reasonable caste mix for our sample.

Statistics for the six revenue villages containing the eight selected wards are presented in Table 3.1. It is evident that the Erasama coastline revenue villages are much larger in area and population than those of inland Garadpur. Only in Sahadabedi, on the coastline, is there forest, and in none of the villages is irrigated farmland registered. In terms of average hectares of unirrigated agricultural land per household, Garia and Marilo Revenue Villages have some 0.94 and 0.93 hectares per household, Sahadabedi and Jamunabad some 0.81 and 0.69 hectares per household, and Behula and Samsara some 0.40 and 0.32 hectares per household, respectively. Land distribution is in reality however, more skewed than this.

Revenue Village	Selected ward	Total area	Forest	Unirrigated agriculture	Remainder	Total population	Numberof households
Garia	Garia, Shuakunda	660	0	462.05	197.95	2181	493
Sahadabedi	Sahadabedi, Kalbedi	663	92	214.82	356.18	1316	264
Marilo	Marilo	133	0.32	90.7	41.98	457	98
Behula	Behula	75	0	48	27	497	119
Samsara	Samsara	134	1.12	79.16	53.72	1004	248
Jamunabad	Jamunabad	51	0.41	50.49	0.1	306	73

Table 3.1: 2001 census data of area (hectares) and population of the selected revenue villages

Besides caste, political party affiliation divides communities – in coastal Odisha most of the population are ‘branded’ members of certain parties, the most popular being the Biju Janata Dal (BJD, in power in Odisha), and the Congress and Bharatiya Janata Party (major parties at the national level but less well-represented and organised in Odisha). Party politics appears to be more pronounced in Garadpur than in Erasama, perhaps because the stakes are higher there. However in both sites we recorded numerous accounts of party political favouritism at the gram panchayat level, which people consider a significant obstacle to developmental work.

Household size has decreased significantly over the ten years period. Households most often divide at the time of, or sometime after the marriage of one or more sons. In our Erasama sample, household size has decreased from an average of 6.9 members in 1999 to an average of 5.3 members in 2010, whereas in Garadpur it has decreased from an average of 7.8 members to an average of 5.9 members. This reduction in household size could be attributable to a host of factors, such as a general move toward nuclear from joint families, women having children slightly later in life, or having less children, or even migration, with men taking their families away with them rather than staying alone in some far away workplace.

The phenomena of household separation presented one of several methodological challenges to the research. Over one third of our 240 sample households have since the 1999 super-cyclone split from their parent families to form their own household. In Garadpur some 41 households (34% of the sample), and in Erasama some 52 households (43% of the sample) have ‘formed’ in the ten years since the cyclone¹⁴. That fewer new households have formed in the past ten years in Garadpur than in Erasama may simply relate to our limited sample size. An analysis of the years in which these new households were formed does not show any evidence that more households formed immediately after the 1999 super-cyclone.

Jagatsinghpur District’s Erasama Block is likely the most poorly developed of its blocks, and especially in the villages closer to the coast the people’s condition in 2010 is fairly pitiful. All Erasama’s study wards are poorly serviced with respect to school, health facilities, drinking water and electricity, though some sections of communities are especially disadvantaged. For example, all of Shuakunda ward 9’s 64 households compete with 250-300 other households from four of Shuakunda’s other wards (10, 11, Ghasua and Patua), to get water from one functional handpump. There is no electricity reaching any of the Erasama study wards, although progress is underway. Kendrapara District’s Garadpur Block, by comparison to Erasama, seems well connected, its economy appears to be stronger, and it has a large and popular college at Korua chaka. This is verified by better infrastructural provision in the study wards. All its wards have handpumps, and some have further connections to water supply systems (Marilo and Behula). Behula, Samsara and Jamunabad have also been electrified. There are primary and secondary schools in and around the wards, and the college at Korua is accessible, though closer to Marilo and Behula than to the other two wards (see Appendix 1 for further infrastructural details for each of the eight selected wards).

3.4 Occupational background of respondents

Farming, wage labour work and migratory work are the principal occupations of our sampled households. Chart 3.1 presents site-level data, obtained via survey, for the total number of households pursuing different livelihoods. Note the data does not restrict each household to one livelihood only, because many households pursue two or three livelihoods, none of which can easily be considered the most important. The data attempts to highlight the livelihoods that respondents themselves considered important, such that if a household cultivates but has very little land, farming will not be shown for that household as a principal livelihood.

¹⁴ Newly formed households, for the purpose of this research, include both newly separated households (from ‘parent’ households), and the older, remaining households (i.e. the ‘parent’ household minus the departed).

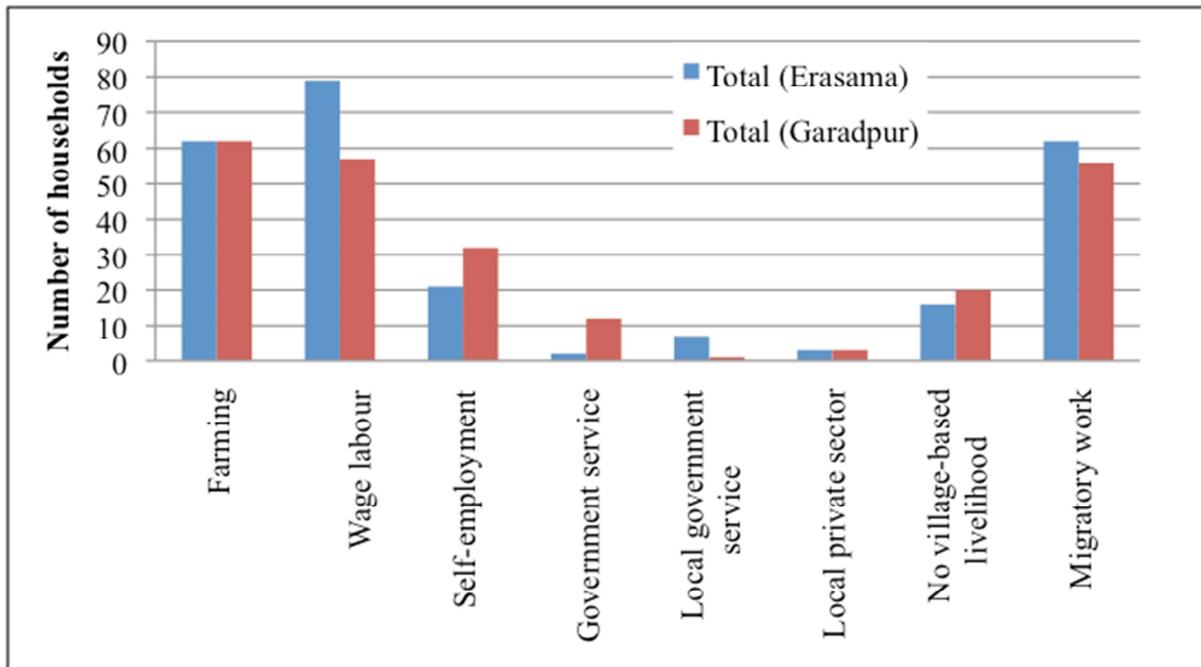


Chart 3.1: Number of households (n=120 per site) pursuing certain livelihoods

In both sites roughly a half of households rely on farming to run their households (note that prawn cultivation in the Erasama site is classified under farming here). In Chapter 4 it is shown that 97 and 80 households in Erasama and Garadpur, respectively, cultivated in 2009-10 (Table 4.3), therefore the data in Chart 3.1 indicates that some 30% of all cultivating households (53 of 177 households) do not consider farming a principal livelihood. Although our sample size of 120 households per site is not large, it is evident that more households in the Erasama site rely on wage labour and migratory work than do Garadpur households, and this will be confirmed in later chapters. It is especially interesting to note that some 13% and 17% of households, in Erasama and Garadpur respectively, rely solely on the remittances of migrant household members; the members residing in the village have no significant (i.e. money or food grain generating) village-based livelihood. Livelihoods will be detailed further in the next Section of this report (Chapters 4 to 8).

Section 2: Livelihoods

Chapter 4: Agricultural trajectories since the 1999 super-cyclone

This section seeks to explore how livelihoods have been re-established since the super-cyclone in Erasama, and following the super-cyclone and recurrent floods in Garadpur. A re-establishment of livelihoods would ideally lead to households recovering to their former economic position, and actually improving their position so to become stronger and thus more resilient towards the next, inevitable major disaster (be it cyclone or flood). This section seeks to answer the key research questions: how have livelihoods changed in the past ten years, how have livelihoods been affected by the super-cyclone and floods, and what pressures are affecting these livelihoods and how are these being addressed in the present day?

The questions are answered through four main chapters organised according to the principal livelihoods found in the sites: agriculture and prawn cultivation; migration; the National Rural Employment Guarantee Scheme; and finally, other key livelihoods that revolve around livestock, fruit trees and fishing. The four chapters pertain (Chapters 4 to 7) to a detailed discussion of these particular livelihoods, and a fifth chapter (Chapter 8) reflects on some crosscutting livelihoods issues in the research sites. This present chapter focuses exclusively on agriculture.

Agriculture is considered to be the mainstay for the rural population of the coastal districts of Odisha. In our two research sites agricultural production differs substantially – in the first, paddy is mono-cropped and in recent decades, prawn cultivation has become popular whereas in the Garadpur site a second crop, most often a pulse, is cultivated after paddy is harvested. Floods destroy the *kharif* paddy crop of the Garadpur site's farmers every two to three years, although the floodwaters fertilise the land ensuring good harvests in normal years. By contrast, in the Erasama site, soil salinity, lack of irrigation, and drainage of excess water are the major concerns for farmers. In this chapter the major trends and changes in agriculture over the past ten years are explored and reasons are sought to explain these. This chapter considers the Erasama and Garadpur sites separately.

4.1 Agriculture and aquaculture in the Erasama site: Trends and analysis

In the Erasama research site, falling within the coastal strip some 4-5 km from the seashore, the main issues for cultivators include fresh and saline water management, choice and availability of seed and other inputs, and accessing advice and credit. Contemporary landownership and land use (2009-10) is discussed, followed by an investigation of trends in paddy and prawn production over the decade.

Landownership and land use patterns in Erasama in 2009-10

In the agricultural year 2009-10, the 120 sampled households in Erasama owned and/or operated¹⁵ just less than 200 acres of land (198.6 acres). The breakdown of this (also in Table 4.1) is as follows:

- 65.3% of the total area is under one crop of paddy (129.7 acres).
- 24.5% under aquaculture (48.6 acres), prawn, fish, or mixed prawn and fish¹⁶.

¹⁵ The phrase 'owned and/or operated' is used throughout, because the data collected includes all land owned, whatever its status (i.e. cultivated, rented-out etc), plus land rented-in and operated. The data is presented in this way because 1) many households rent-in land, and 2) those that rent-out land benefit from this arrangement. An analysis based solely on owned land, or one that separates owned and rented land, would not capture the complexity.

¹⁶ There is no clear division between pisciculture and prawn cultivation because many farm plots are used for mixed cultivation of fish and prawn, thus the term aquaculture is used. Aquaculture is practised in farm plots whereas this report reserves the term pisciculture for fish cultivation in ponds on homestead lands (Chapter 7).

- 4.5% of the total area is under two crops of paddy (2.1 acres), paddy and fish culture (3.0 acres), paddy and another crop (3.0 acres), and rock salt production (0.8 acres).
- The remaining 5.8% is fallow/idle, half since before the super-cyclone (5.9 acres) and half having become idle since the super-cyclone due to land use changes (5.6 acres).

The total area owned and/or operated by the 30 households of each of the four sampled wards varies considerably, with Shuakunda's farming households owning and/or operating almost three times the land area of Garia's households:

- Garia, 26.7 acres (13% of the total area owned and/or operated by the 120 households).
- Shuakunda, 72.2 acres (36%).
- Sahadabedi, 55.1 acres (28%).
- Kalabedi, 44.5 acres (22%).

There are significant inter-ward differences in land use (see Chart 4.1, also Table 4.1), most noticeably between the wards located close to the seashore (Sahadabedi and Kalabedi) and those located 4-5 km inland (Garia and Shuakunda).

- Garia's Oriya folk, the majority scheduled caste and Shuakunda's Bengali folk devote 90% (24.0 acres) and 96% (69.3 acres) of their total landholdings, respectively, to mono-cropped paddy. A tiny area is under rock salt production and aquaculture.
- Sahadabedi's Oriya folk, having their land inland some 2 km, devote 48% (26.4 acres) of land to mono-cropped paddy, 4% to double-cropped paddy, and 3% to paddy plus a second crop/fish. 21% (11.7 acres) is under aquaculture, 14% under pisciculture, and 11% idle.
- Kalabedi's Bengali's have just 22% (9.9 acres) of land under mono-cropped paddy, 10% under paddy plus another crop/fish, 24% (10.5 acres) of land under aquaculture, 33% under pisciculture, while over 10% of land is idle.

Land use	Garia (n = 30)	Shuakunda (n = 30)	Sahadabedi (n = 30)	Kalabedi (n = 30)	Site total (n = 120)
Paddy – one crop	23.97 (89.8%)	69.35 (96.1%)	26.42 (47.9%)	9.92 (22.3%)	129.66 (65.3%)
Paddy – two crops	-	-	2.08 (3.8%)	-	2.08 (1.1%)
Paddy + pisciculture	-	-	0.80 (1.5%)	2.23 (5.0%)	3.03 (1.5%)
Paddy + other crop	-	-	0.58 (1.1%)	2.39 (5.4%)	2.97 (1.5%)
Pisciculture	-	2.04 (2.8%)	7.50 (13.6%)	14.88 (33.4%)	24.42 (12.3%)
Prawn cultivation	1.50 (5.6%)	0.50 (0.7%)	11.66 (21.2%)	10.50 (23.6%)	24.16 (12.2%)
Rock salt production	0.48 (1.8%)	0.30 (0.4%)	-	-	0.78 (0.4%)
Fallow	0.76 (2.9%)	-	3.10 (5.6%)	2.00 (4.5%)	5.86 (3.0%)
Uncultivable since cyclone	-	-	3.00 (5.4%)	2.61 (5.9%)	5.61 (2.8%)
Total	26.71 (100%)	72.18 (100%)	55.14 (100%)	44.53 (100%)	198.57 (100%)

Table 4.1: Erasama site: Acreage under different land uses, and % of total, in 2009-10

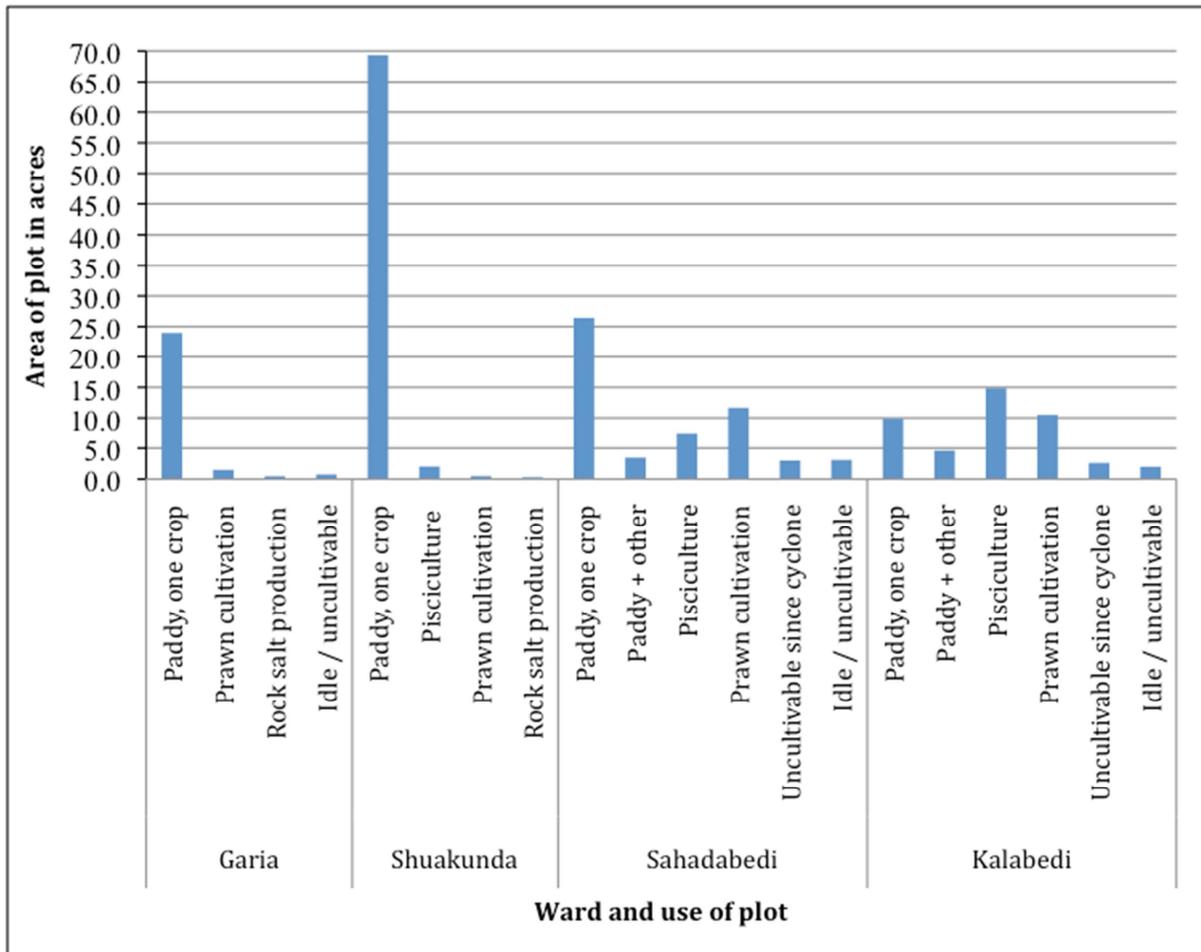


Chart 4.1: Erasama site: Ward-wise (n=30) total area under different land uses, in 2009

In our research site it is evident that aquaculture is largely confined to the immediate strip of land some 2.5 km inland from the seashore. Beyond this strip, between 2.5 km to over 10 km inland, paddy is mono-cropped – aside from small pockets of land where farmers one way or another find a source of water with which to cultivate with irrigation a second paddy crop.

There are major inter-ward differences in land ownership (Chart 4.2), which can be summarised as follows:

- Garia's 30 households hardly rent-in land, for many of them are wage labourers rather than farmers. They grow paddy on 18.1 acres of their own land (5 acres of which is owned and operated by the *sarpanch's* household) and on 4.0 acres of government land allocated to them by the gram panchayat, totalling 22.1 of the 26.7 acres they own and/or operate. Six of Garia's households – all scheduled caste Bauris – have mortgaged 2.4 acres (in acts of desperation, for example, to get cash for medical care) in return for loans (10.6% of land).
- Shuakunda's farmers cultivate paddy on more rented-in land (37.6 acres) than on owned land (30.5 acres), and this rented-in land, they told us, belongs to Bengalis residing in Shuakunda's three wards – generally they do not farm other village's lands. Shuakunda's 30 sample households have not been allocated government land. One household has mortgaged 1.5 acres, and another rented-in 2.0 acres of mortgaged land.

- The closer the ward to the sea, the larger the proportion of the total land owned and/or operated is found to be rented-in on contract agreement, because aquaculture is practised via contract agreement: 46.3% (20.6 acres) and 23.4% (12.9 acres) of the total land owned and/or operated by Kalabedi's 30 households and Sahadabedi's 30 households, respectively, is rented-in on contract agreement. Much of this land is jointly rented-in, by two, three or even ten households. For example one household, along with eight other households, rents-in on contract agreement 100 acres of land for mixed fish and prawn cultivation. Much of this rented-in land is owned by wealthy outsiders (see Chapter 8), an area that requires further research.
- Sahadabedi's households own and use 43.6% (24.1 acres) of their total owned and/or operated land, compared to Kalabedi's who own and use just 20.9% (9.3 acres) of the same.

What has not been observable in the above discussion and charts is that 23 of the 120 sample households (19% of households) in the Erasama site do not own land. The majority of landless households are found in the Bengali wards of Kalabedi (30% of households) and Shuakunda (27% of households), and this explains why households in these wards rent-in so much of the land they cultivate¹⁷. 10% of households in the Oriya wards of Garia and Sahadabedi do not own land.

¹⁷ One landless Shuakunda couple said that they rent-in 2 acres of land on share agreement, harvesting 15-16 quintals of paddy, of which they have to give half to the landowner. This lasts them 5-6 months after which they have to purchase rice. They lament that their land is not as fertile as that of Balikuda's, where they reckon they could harvest 19-22 quintals of paddy from 1 acre alone. They said they are unable to cultivate 'hybrid' paddy supplied by the block because with its short height it cannot withstand water logging, and said that they dislike eating the local variety of paddy (respondent no. 60).

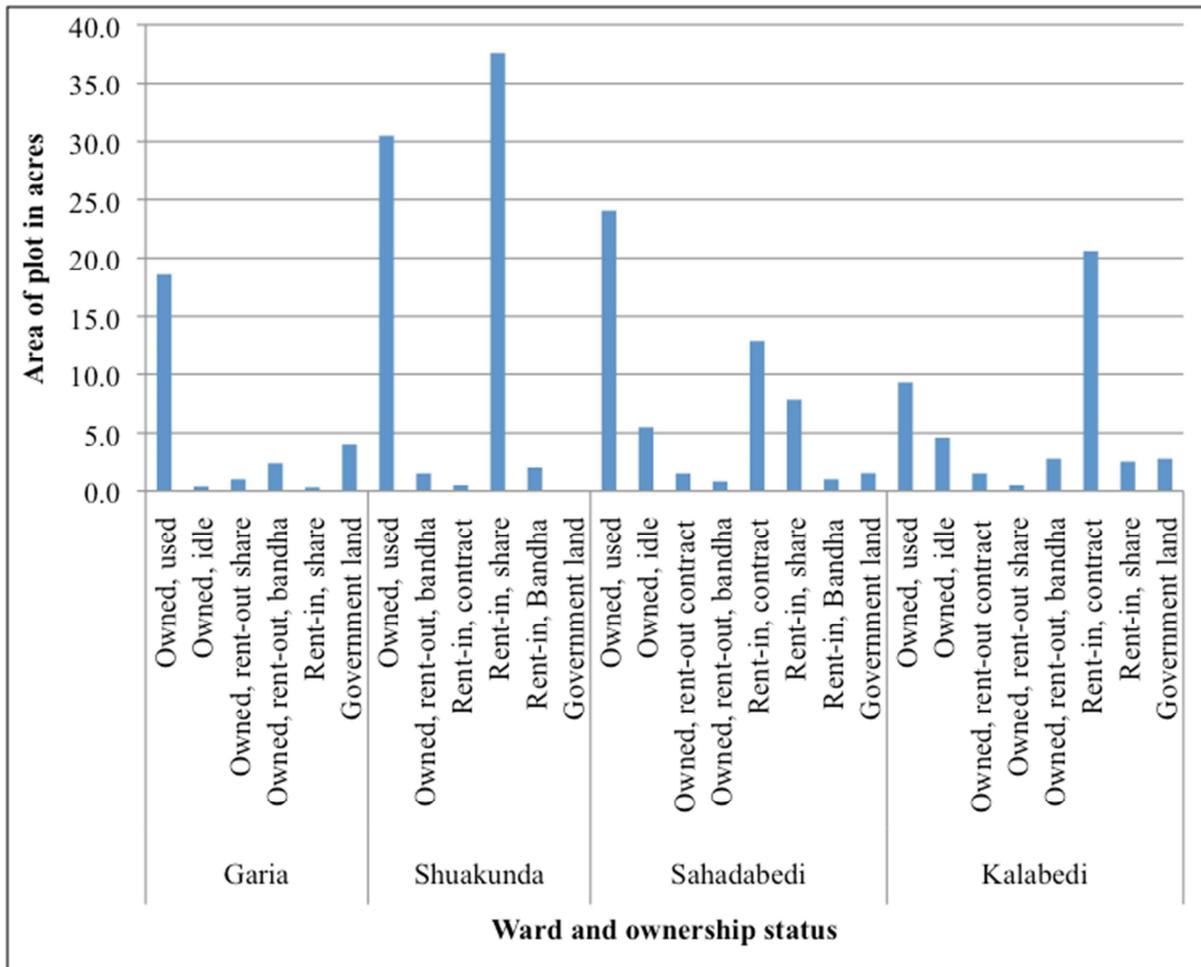


Chart 4.2: Erasama site: Ward-wise (n=30) total area under different ownership statuses, in 2009

Trends in land use and land ownership over the past ten years in the Erasama site

Over the ten year period, between 1999 (the year of the super-cyclone) and 2009-10 there have been some significant shifts in land ownership status at the site level. The total area owned and/or operated by the 120 households has reduced from 248.2 to 198.6 acres, a 20% decrease. In 1999, a total of 153 acres of land was ‘owned and used’ by 93 of our 120 sampled households, but ten years later, just 82 acres is ‘owned and used’ by 76 of the same 120 households – nearly a 50% decrease in area (Chart 4.3). Some of this land has become idle, some mortgaged, while a majority of the decrease (not shown on the chart) is attributable to generational sub-division of land and household separation/formation. Only a tiny fraction of this land has been rented-out by households: 4.5 acres by 5 households in 2009-10.

At the site level, the total area rented-in (on share and contract agreements) has increased marginally over the ten years, from 76 acres to 82 acres, as has the number of household renting-in land, from 38 to 43. The relative proportion of ‘owned and used’ land to ‘rented-in’ land has changed significantly. Whereas in 1999 58% of the total area owned and/or operated was ‘owned and used’ and 29% rented-in for cultivation, in 2009 the proportion of land ‘owned and used’ has dropped to 41% and the proportion rented-in has risen to 41%. Total landholding size is falling and the proportion of rented-in land to owned land is rising.

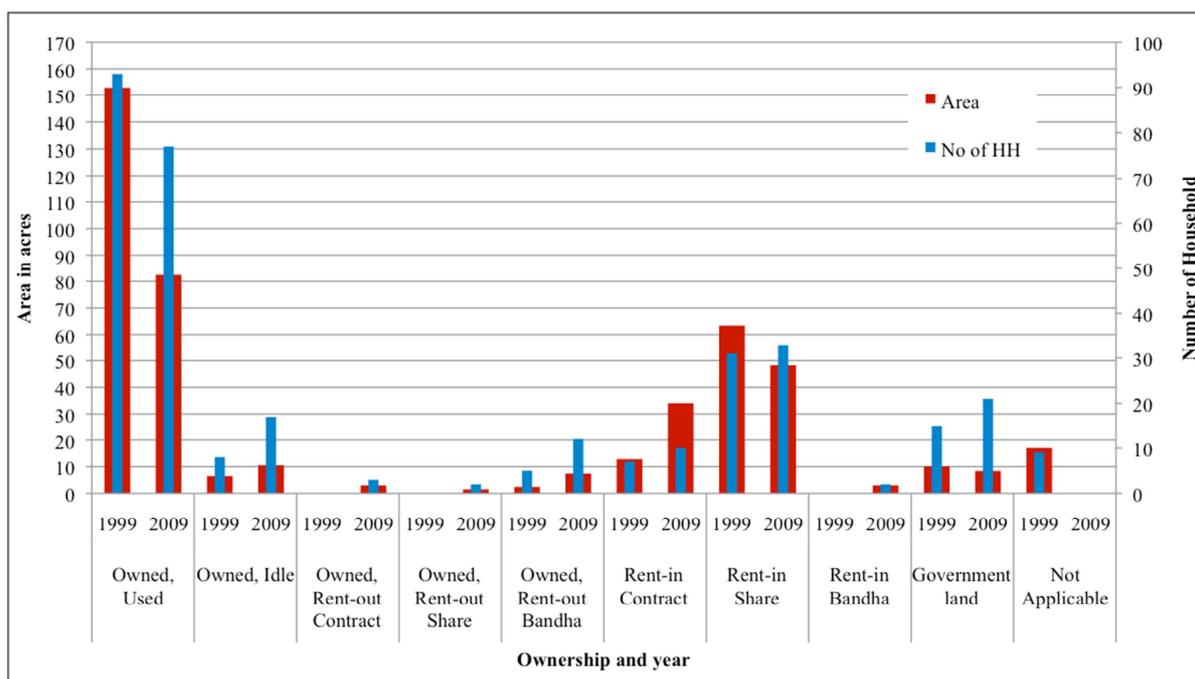


Chart 4.3: Erasama (n=120): Ownership status of land owned and/or operated in 1999 and 2009

In the Erasama site, the total area of owned land has reduced from 161.8 to 104.9 acres over ten years. Owned and idle land in the same period has risen from 6.5 to 10.5 acres (from 4% of all owned land in 1999 to 10% in 2009-10). In Garia, one household's 0.4 acres of owned land has remained idle over the ten years, while in Shuakunda, three households' 2.8 acres of idle land in 1999 is in 2009-10 no longer idle. The increases in owned and idle land are therefore concentrated in the wards adjacent to the sea, Sahadabedi and Kalabedi, where a total of four households had 3.3 acres of owned and idle land in 1999, which has increased to 16 households having 10.1 acres of owned and idle land in 2009-10. At the ward level, the proportion of the total owned area that is left idle/fallow has increased from 7% to 25% in Kalabedi and from 2% to 17% in Sahadabedi.

One Sahadabedi farmer who owns 1 acre of land, said that since the super-cyclone he only cultivates *dalua* (*rabi* season) paddy upon 0.48 acres of land, with the remaining 0.52 acres of land having become unusable. In the *kharif* season he leaves the land idle. The farmer used to get 7.5-9 quintals of rice from his 1 acre, but nowadays gets only 1.5-5 quintals, whereas he needs 15 quintals to sustain his household (respondent no. 72). This farmer's story is not unique. Farmers in the coastal strip within 2 km from the sea are nowadays suffering because of drainage problems in their cultivable area, the result of poorly planned road construction and the unregulated expansion of prawn farms that block drainage routes of water (discussed shortly).

Trends in paddy cultivation in Erasama, including impact of super-cyclone

Paddy cultivation¹⁸ by our 120 sample households has decreased substantially over the ten years period, 1999 to 2009, from a gross cropped area of 223 acres in 1999 to 150 acres in 2009, a 33% decrease (Chart 4.4). Though the area under paddy has decreased significantly, the numbers of households cultivating have decreased less so; comparing 1999 and 2009-10 there has been a 9%

¹⁸ Here we are considering paddy cultivation irrespective of land ownership status, i.e. on all land owned and/or operated by the 120 sampled households.

decrease, from 106 to 96 households (out of 120 households). The chart shows a curious trend: a steep reduction in 2000, then a lull stretching till 2005-06, followed by a rise from 2007-08 to the present year 2009-10. This is explained below.

In 2000, the first *kharif* season after the super-cyclone, the gross cropped area under paddy was 151 acres as compared to 223 acres in 1999, and the number of cultivating households was 80 as compared to 106. Many farmers could not cultivate in 2000 as they did not have the means to and/or their land had been seriously affected by the tidal surge. Three-quarters of households evidently did cultivate (80 of 106), but most did not get a harvest that year. It was in 2000 that NGOs came to the aid of some of the farmers in these gram panchayats. For example, Father Augustine (a missionary from the Cuttack diocese of the Catholic Bishop Conference of India) was entrusted to work in four gram panchayats that included Gadaharishpur. They formed and worked with 178 self help groups, covered 3807 households, and supported the preparation and cultivation of 5181 acres of farmland. They supported the tilling of land and supply of seeds, fertiliser and pesticide, with technical support from the Central Rice Research Institute (CRRI), Cuttack and the Orissa University of Agriculture and Technology (OUAT), Bhubaneswar.

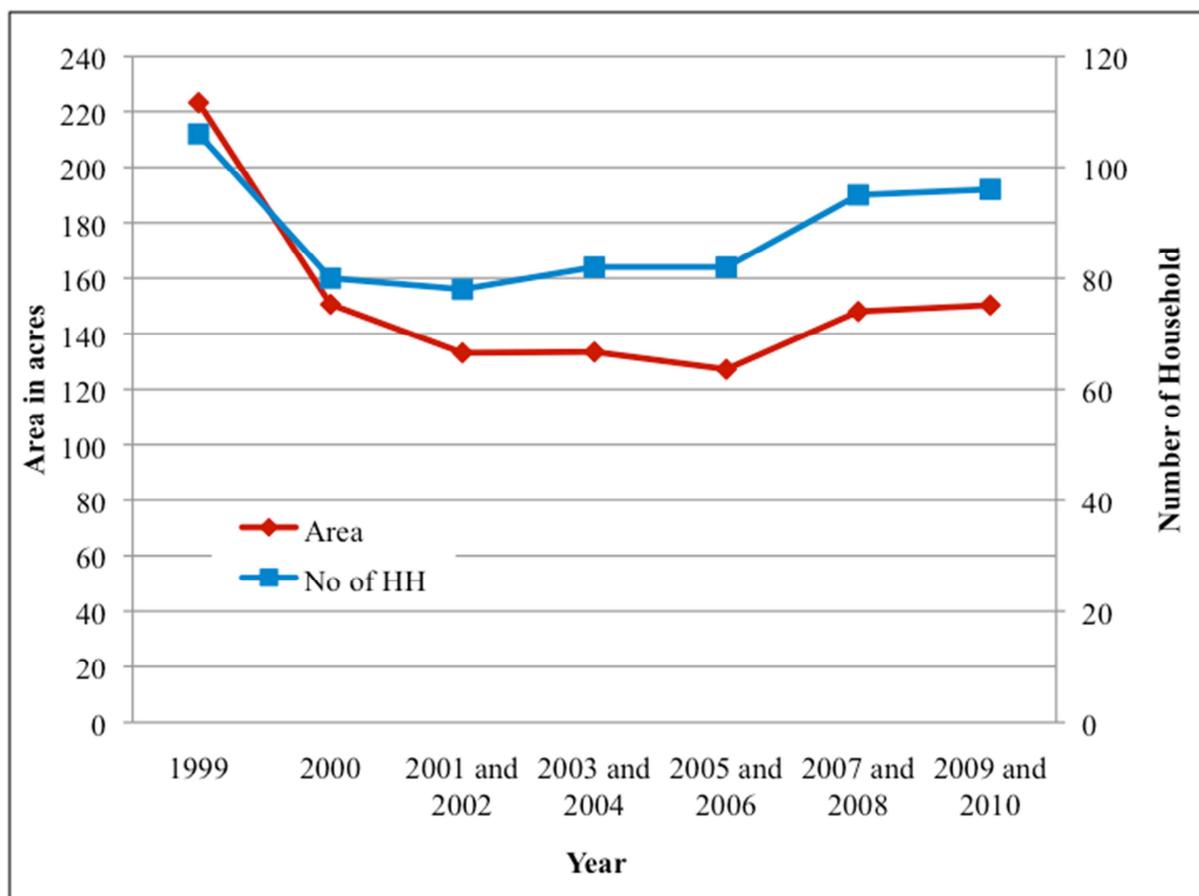


Chart 4.4: Erasama site (n=120): Gross cropped area under paddy, and no. of households cultivating

From 2000 to the present, the numbers of households sowing paddy from Shuakunda and Garia have slowly increased towards their 1999 numbers, however the land available to them for cultivation is decreasing (though many are renting-in land). In Kalabedi in particular, the number of households

cultivating paddy has never recovered, because it was in the immediate years after the cyclone that more households began to practise aquaculture (Table 4.2). Whereas in 1999, 20 households from Kalabedi sowed paddy on 35.5 acres, by 2003-04 just 9 households sowed paddy on only 5.9 acres: an 83% decrease in area under paddy. However this has increased again, following losses in aquaculture (see below), to 15 households sowing 14.3 acres with paddy. Over the ten years period, there has been an overall reduction of 60% in the area sowed with paddy by Kalabedi's 30 sampled households, from 35.5 acres to 14.3 acres. So the reasons for the reduction in area sown with paddy include decrease in landholding size (per household, due to generational sub-division), conversion of land to other uses (most often aquaculture) either willingly or unwillingly and often dependent on local land use changes, and land become idle due to changing land use.

Year(s)	Garia		Shuakunda		Sahadabedi		Kalabedi		Site total	
	Area	Number of cultivating households	Area	No. hhs	Area	No. hhs	Area	No. hhs	Area	No. hhs
1999	42.02	30	96.72	30	48.95	26	35.48	20	223.17	106
2000	34.66	23	60.57	24	31.99	21	23.38	12	150.60	80
2001-02	26.6	25	62.57	25	31.18	20	12.73	8	133.08	78
2003-04	24.42	25	72.37	26	30.68	22	5.93	9	133.40	82
2005-06	23.42	25	65.07	25	30.02	24	8.68	8	127.19	82
2007-08	27.82	28	70.72	26	33.80	24	15.7	17	148.04	95
2009-10	24.9	26	74.72	28	36.38	27	14.31	15	150.31	96

Table 4.2: Erasama site: Gross cropped area under paddy (hectares), and no.of cultivating households

The analysis so far has not distinguished paddy grown on owned land or on rented-in land. The total area of owned land upon which paddy is mono-cropped fell from 154 acres to 73 acres over the ten years period, beginning with a drop from 154 acres to 109 acres in 2000, steadily continuing to drop to 67 acres in 2007-2008, and then rising slightly to 73 acres in 2009 (Chart 4.5). The number of households growing their own paddy has also fallen, from 91 to 65 households. Ward-wise, the trend is similar. Paddy grown on owned land has fallen from 35 to 19 acres in Garia, 42 to 29 acres in Shuakunda, 47 to 18 acres in Sahadabedi and 30 to 7 acres in Kalabedi.

In the same period the total area rented-in on share agreement for paddy cultivation has more or less remained stable, from 66 acres in 1999 to 63 acres in 2009, though the number of sharecroppers has increased, from 30 to 39 households. However at the ward-level, the trends differ. In Shuakunda 22 households sharecropped on 55 acres in 1999, which dropped to 13 households on 30 acres after the super-cyclone, and slowly rose again over the period to 18 households sharecropping 45 acres in 2009. In Sahadabedi sharecropping has increasingly been practised, from one sharecropper of 2 acres in 1999 to 14 sharecroppers of 14 acres in 2009. This data shows that people are nowadays farming less land than they did in the past.

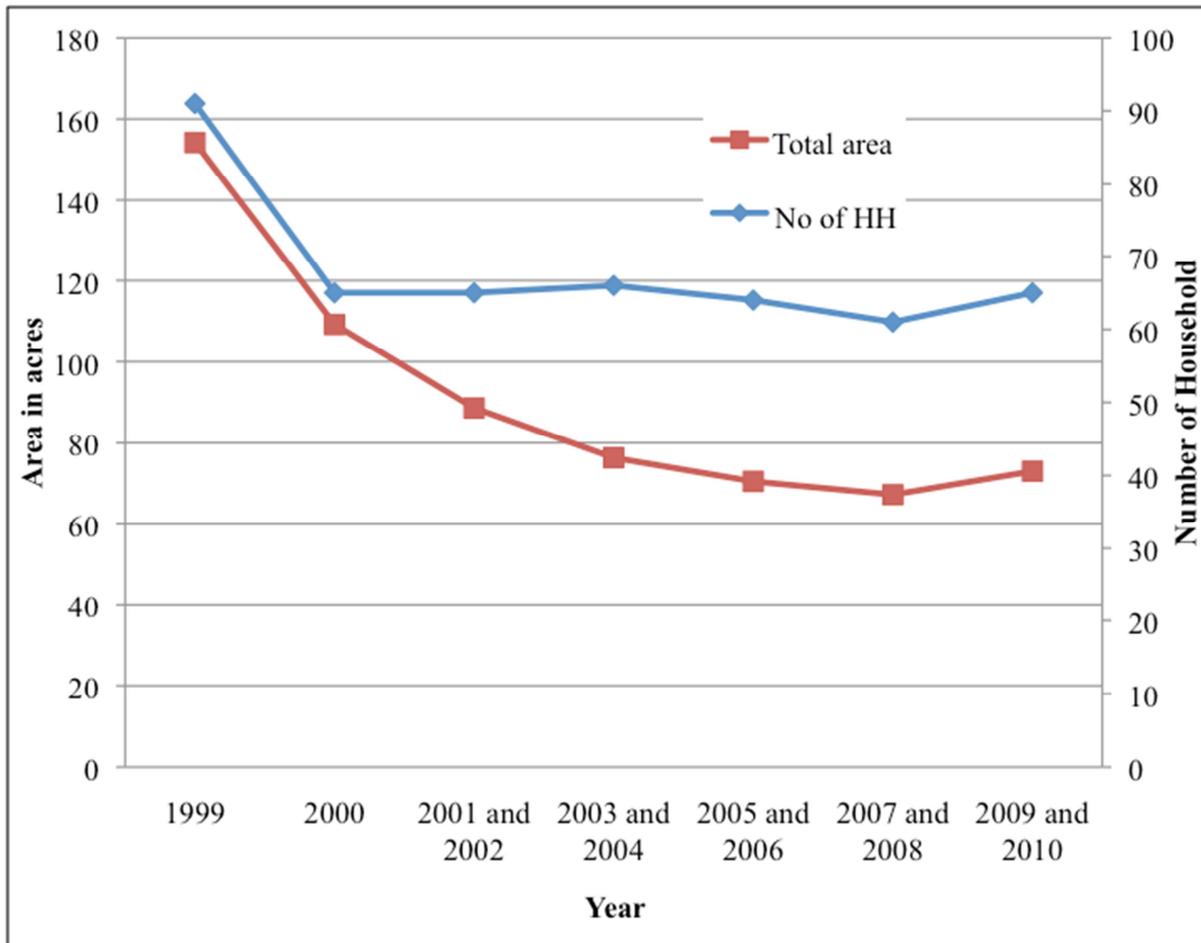


Chart 4.5: Erasama site (n=120): Total area under paddy sown on owned land (acres), and number of households cultivating

Food security using rice as proxy, in the ten years since the super-cyclone

Fewer households are sowing less paddy ten years on from the super-cyclone, which suggests that households will be harvesting less paddy – unless extension work by the agricultural department (and/or private market initiatives) have helped farmers to increase their yields. To gauge paddy production over the decade the 120 survey respondents were asked how many months their own produced rice (be it from owned land or rented-in land) lasted them each year, for the years since the super-cyclone. The results of this food security proxy are interesting (Chart 4.6). The 1999 data reflects respondents’ recall on their harvests in the year before the super-cyclone. In 2000, after the tidal surge that accompanied the super-cyclone had destroyed standing crops and ruined farmland, very few households had any harvest. Over the period 2001-02 to 2007-08 harvests improved, such that by 2007-10 the scenario seems to have ‘recovered’ to that of 1999, though it has not improved. The situation is fairly pitiful. 23% of households have no harvest (28 households), another 44% have less than six months of rice to eat from their harvest (53 households), and another 28% have between six and 12 months of rice to eat (34 households). Just 4% of households (5 households) produce enough rice to be termed food secure from their own production.

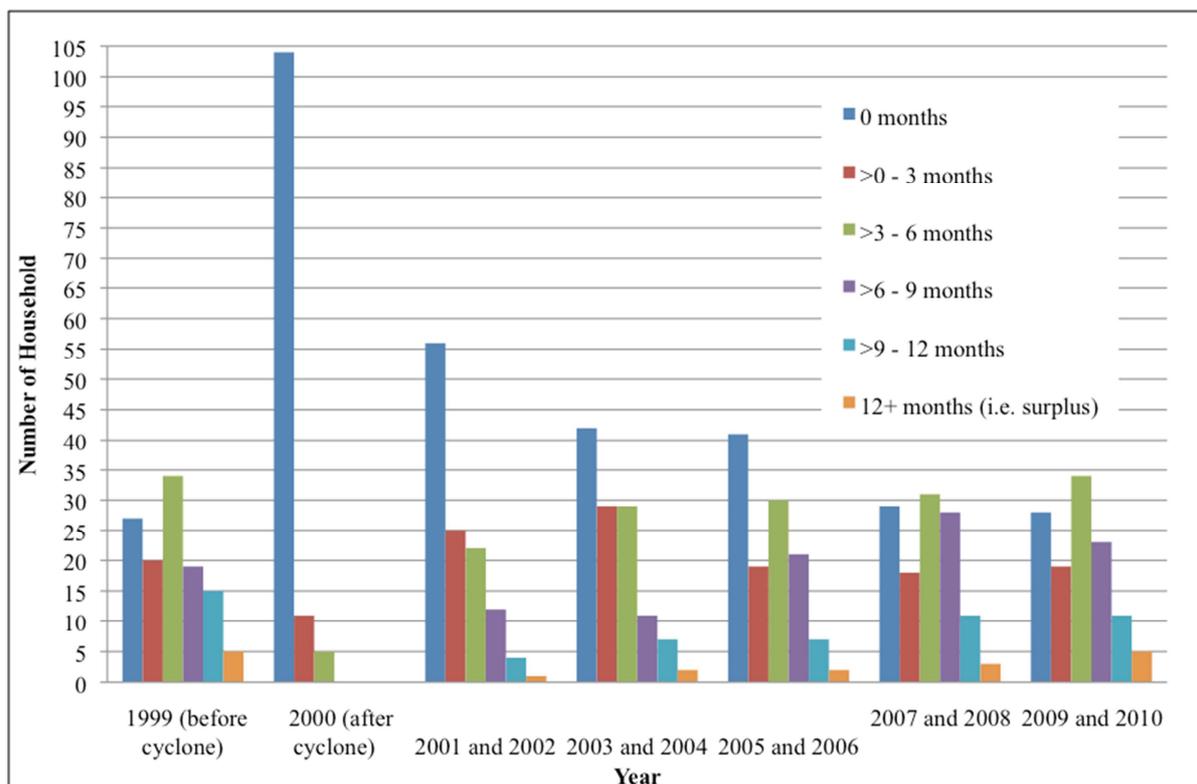


Chart 4.6: Erasama site (n=120): Number of households consuming their own rice (for number of months), over the decade

The reasons for which there has not been an improvement in the ten years stem partly from the fact that as the population has increased, landholding per household has dropped. Of the sample, 24 households in the past ten years have sub-divided the land on which they grow paddy amongst brothers. Another 26 households switched from sowing paddy, and converted their land to aquaculture (17 households) or other uses (9 households). This land conversion was at least partly a response to the difficulties of paddy cultivation in the years following the super-cyclone, because of high levels of soil salinity following the deluge of seawater during the tidal surge. The land converted to aquaculture is mostly that of Sahadabedi and Kalabedi, where farmers were tempted by potentially high earning prawn cultivation. Other households have in the past ten years mortgaged their land in return for a loan, and a few have sold land.

The food security changes vary substantially by ward. Taking the number of households without any harvest as an example, the number has decreased in Garia (from 13 households to 5), but increased slightly in Shuakunda (0 to 2 households), Sahadabedi (4 to 7) and Kalabedi (11 to 14). Kalabedi's data is revealing because in the intermittent period, from 2001-06, about 23 households had no paddy harvest. Taking those households whose harvest provides food for 9 months or more in a year, the number has increased marginally in Garia and Kalabedi (from 1 to 2 households in each ward), and decreased in Shuakunda (13 to 9) and Sahadabedi (from 5 to 3 households).

As stated above, at the site level (i.e. the 120 households) the 2009-10 food security scenario does at least seem to have 'recovered' to the pitiful state it was in in 1999. This recovery must in part relate to an increase in production for those farmers who have been able to access and cultivate improved

varieties. One Kalabedi farmer told us that he used to sow deshi (traditional variety) paddy in the *kharif* season without fertiliser and pesticide, and harvest 5-6 quintals of paddy per acre. Nowadays he farms fish in the *kharif* period and grows 'hybrid'¹⁹ paddy in the *rabi* season, applying fertiliser and pesticide and harvesting 13-15 quintals, an almost three fold increase. The hybrid seeds are purchased from the block agricultural office, about 20 km away (respondent no. 112). So this farmer has managed to increase his paddy harvest and additionally cultivate fish, both of which must have improved his household's food security.

However Shuakunda's farmers, 4 km inland, have been unable to sow higher yielding varieties of paddy because they claim, seeds suited to the saline and water logged conditions of their fields are not available from the block agricultural office. The dysfunctional sluice gates are not serving their purpose (see Chapter 8) so rainwater cannot drain off their fields in a timely manner, causing water logging, and saline water continues to intrude up the Sankha and Gaipadia Rivers and to over-spill into their fields, turning the water in their farm plots saline (see Map 3.3). This continues to be an ongoing cause of anxiety for the inhabitants of Gadaharishpur.

Introduction to prawn cultivation in Erasama²⁰

According to villagers, prawn cultivation began to the east of Sahadabedi (see Map 3.3) some two decades ago, when outsiders bought up land and converted it to gheris (prawn farms). Locals learned how to cultivate prawn by working for the new gheri owners, one of whom was a local man from Sarbant. Following the super-cyclone some households sold their land to wealthier people who converted the land to gheris (see Chapter 8) while others converted their land to gheris because they had seen gheri owners make large profits, and wanted to try their luck. This change in land use affected paddy farmers too, because surrounded by prawn gheris they have found farm-level water management difficult if not impossible. This led to more farmers attempting prawn cultivation.

For example, one Sahadabedi household used to sow paddy on their 2.76 acres of land, harvesting 11 quintals that would see them through the year, however since the super-cyclone their land's fertility has declined due to salinity and they now only get 2-3 quintals harvest from 1.76 acres. They converted one acre to prawn farming around 2003, hoping to diversify and improve their condition. For this they borrowed 12,000 rupees, interest-free, from an individual in Gadaharishpur, but made a huge loss. The moneylender took a share of the little prawn they produced, and by 2010 they have repaid 9,000 rupees and still owe 3,000 rupees. After that one attempt they have not tried to cultivate prawn again. Since 2003, their one acre of land remains idle – unfit to sow paddy upon (respondent no. 83).

Such stories are extremely common in the wards of Sahadabedi and Kalabedi. In this way prawn cultivation spread from the area adjacent to the seacoast (0.5 to 1.5 km) to areas further inland (1.5 to 3 km from the coastline), to the west of Sahadabedi and along the Sankha River. Prawn cultivators, it

¹⁹ Farmers in Kalabedi refer to this HYV (high yielding variety) seed as 'hybrid'. There are differences between HYY and the F1 hybrid type seeds introduced since the late 1990s, e.g. HYYs are publicly produced and F1 hybrids largely privately produced; HYY seeds can be sown for several years whereas F1 hybrid can be sown only once, etc. We did not collect full details on seed types, so cannot be sure whether the seeds used are HYYs or F1 hybrids.

²⁰ As noted earlier, in this report the term prawn, not shrimp, is used. We consider the two terms interchangeable.

may be added, can use fresh water in the production of prawn because of the saline coastal alluvium soils of Erasama's coastal strip – the salinity of which has increased post super-cyclone.

Trends in prawn cultivation in Erasama

The total area upon which prawn is cultivated by our 120 sample households increased by 26% (from 33.5 to 42.3 acres) from 1999 to 2009-10:

- In 1999 prawn was cultivated on 33.5 acres by 19 households (of our 120 household sample).
- The total area cultivated has varied slightly in the intermittent period from 25.3 acres (in 2000) to 39.5 acres (in 2001-02), and the number of households pursuing prawn cultivation rose to a peak of 35 households in 2003-2004.
- In 2009 15 of 120 households cultivate prawn on 37.8 acres and 4 households have rented-out 4.5 acres for prawn farming, a total area of 42.3 acres.

This trend complements the qualitative information gleaned via interview with respondents: many (local) villagers attempted to cultivate prawn in the years immediately after the super-cyclone, but on making great losses gave it up. This same general trend is found for all four wards, though few households have cultivated prawn in Garia and Shuakunda.

Prawn has been farmed by our respondents on owned land and on land rented-in on contract agreement. The trends are revealing. On owned land:

- In 1999, 10 households cultivated prawn on 17.7 acres of their own land.
- This rose to 22 households cultivating 23.25 acres in 2001-02, and 24 households cultivating upon 22.3 acres in 2003-04.
- The number then dropped drastically, to just 6 households cultivating upon 4.7 acres of their own land in 2009.

On land rented-in for prawn cultivation:

- 9 households farmed prawn on 15.8 acres in 1999.
- The number of farmers rose to 12 in 2001-02 but then fell again.
- 9 households are farming on 33.1 acres in 2009 (note: one third of the 2009 acreage (i.e. 11.1 acres) is due to one farmer who has rented-in 100 acres along with eight other prawn cultivators).

Villagers are increasingly farming prawn on land rented-in on contract agreement, while doing so less on their own land. This is because those locals who attempted prawn farming on their own lands have largely failed, whereas the largest proportion of land under prawn cultivation is owned by outsiders who are nowadays renting-out smaller parcels of their total landholdings, rather than cultivating it all themselves (see Chapter 8.3). This is an area that needs further research.

Profitability of prawn cultivation

It is clear that prawn cultivation is not an exclusively post-super-cyclone livelihood. Of our 120 sampled households, some 20 had begun to cultivate prawn in the years leading up to the super-cyclone, including 13 households that started in 1999 just before the super-cyclone struck. One Kalabedi respondent was renting-in 2.5 acres to cultivate mixed prawn and fish at the time of the cyclone; he lost his fish and prawn, incurred losses of 100,000 rupees and subsequently returned the land to its owner, and has not since attempted to cultivate prawn (respondent no. 119).

Chart 4.7 presents data on the profitability of prawn production by villagers over the decade, and gives an entry for each household farming prawn in each year(s) category. The blue columns indicate where the household lost money (an overall total of over 50% of local prawn cultivators lost money in any given year) whereas the green and purple columns highlight where the household profited (an overall total of 35% of local prawn cultivators in any given year). It is fairly clear to see that most households have lost money or broken even (65% of households).

Since 2005 in particular, more cultivators have lost money (two-thirds of households) than have profited (25% of households) (Chart 4.7). One Kalabedi farmer attempted to cultivate *saradh* paddy on his own and government land in 2000 but failed. The owners of a nearby gheri had blocked the canal used to drain water from his field, and his crop failed. He then farmed prawn upon 2 acres from 2001-04, but incurred heavy losses. This farmer then rented-out the same land to another household for prawn cultivation in the years 2005-08. Since 2004 he has not farmed prawn, and does not wish to again. He likens prawn cultivation to gambling, and said that in one year a person can profit but in the next year make a huge loss. He presently grows *dalu* paddy on the 2 acres (respondent no. 93).

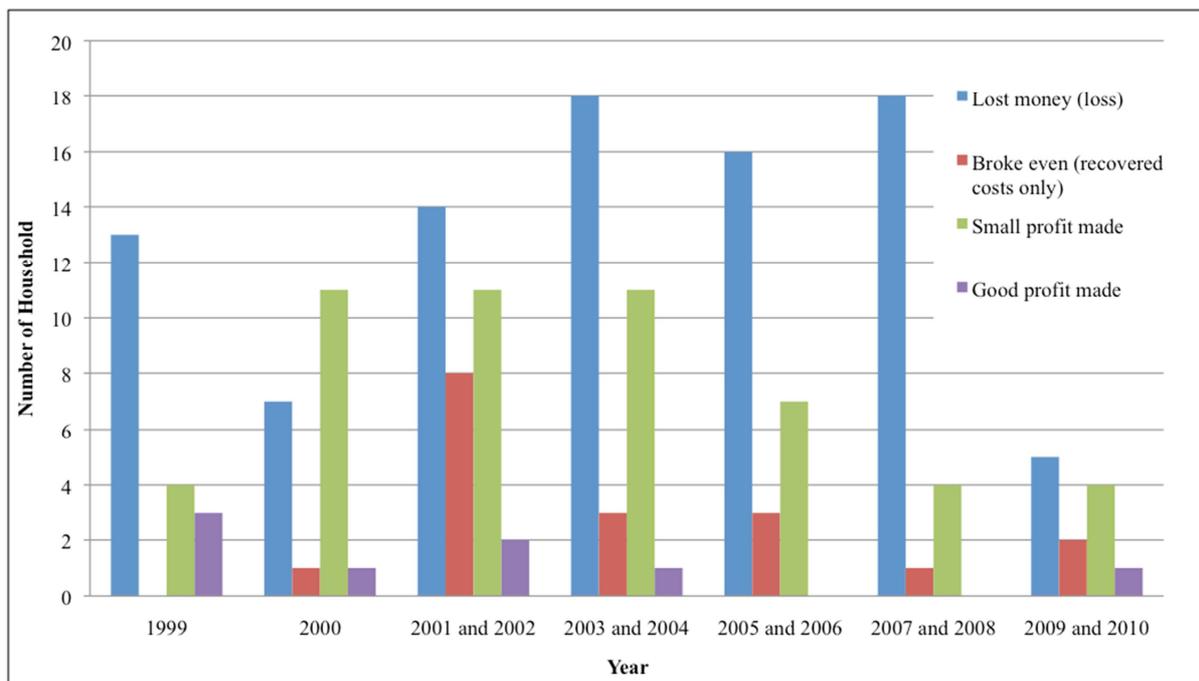


Chart 4.7: Profitability of prawn production and sale, by number of household (n=57 out of 120)

Surprisingly, nearly 50% of our sampled households, 57 in total, have attempted to cultivate prawn over the decade – though most have made a loss in doing so. Chart 4.8 shows that more households in the wards closest to the seashore have attempted to cultivate prawn in the past ten years. 22 of the 30 sampled households in Kalabedi have cultivated prawn, as have 17 of Sahadabedi’s 30 households. In 2009, a total of just 15 of our 120 households were pursuing prawn farming –13% of all households²¹.

²¹ Prawn cultivation has become extremely controversial along the coastline of Odisha. The Coastal Regulation Zone (CRZ) Act of 1991 prohibits prawn farming within 0.5km from the coast (see also Chapter 8).

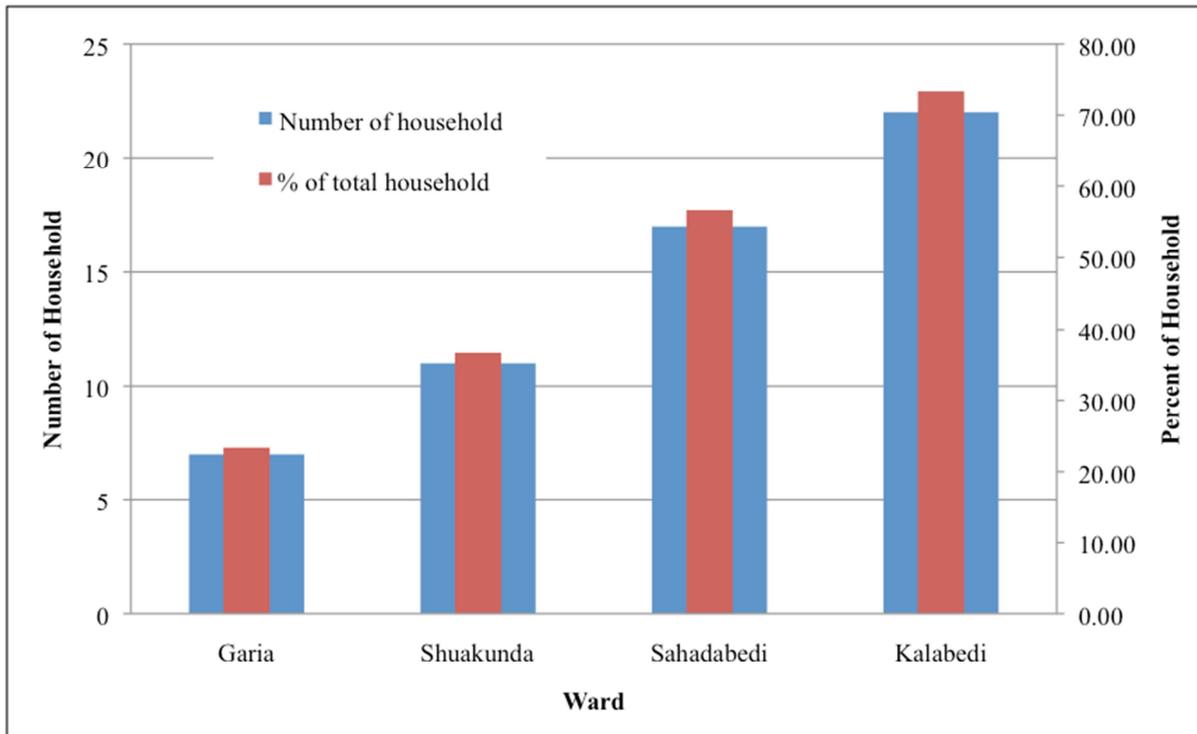


Chart 4.8: Erasama site: Ward-wise (n=30) total number of households who have cultivated prawn over the decade

4.2 Agriculture in the Garadpur site: Trends and analysis

Surrounded by the Mahanadi's branch rivers and lying closest to the Chitrotpala River, the main issues for cultivators in the Garadpur research site differ greatly from those facing Erasama's farmers. They include irrigation and drainage, recruiting farm labourers, accessing credit, and receiving compensation and crop insurance waivers when their paddy crop is lost to recurrent floods. Landownership and land use in 2009-10 is first discussed, then trends in paddy and pulse production are explored.

Landownership and land use patterns in Garadpur in 2009-10

In 2009-10, the 120 sampled households in Garadpur owned and/or operated just less than 160 acres of land (158.4 acres), some 80% of the total area owned and/or operated by our Erasama households. Most farmers in Garadpur sow two crops each year, paddy and then a pulse, in contrast to Erasama where paddy is mono-cropped. The breakdown is as follows:

- Upon 51% of the total land owned and/or operated by our 120 sample households is sown paddy and green gram (80.4 acres).
- 29% of owned and/or operated land is under paddy and black gram (46.6 acres).
- Upon 8% of land is cultivated paddy and groundnut (12.8 acres).
- 6% is under mono-cropped paddy (9.3 acres).
- Finally, some 5% of land is idle (8.4 acres).

The proportion of the total area of land owned and/or operated (158.4 acres) by the 120 sample households in each of the four wards (by their respective 30 sample households) is as follows:

- Samsara 16.3 acres (10% of the total area of 158.4 acres).

- Jamunabad 44.2 acres (28%).
- Marilo 57.1 acres (36%).
- Behula 40.8 acres (26%).

The pattern of land ownership/operation correlates to a degree with the caste make-up of the wards, from Marilo's sampled households – predominantly general caste – having the largest total holdings, to Samsara's sampled households – two-thirds other backward caste and one-third scheduled caste – having the smallest total holdings.

The ward wise differences in land use are fairly substantial. Notably Samsara has relatively less land overall and a different land use pattern, and Marilo and Behula have similar patterns, which is unsurprising given the two wards' closeness to one another (Chart 4.9).

- Of Samsara's 16.3 acres, 10.3 acres is under paddy and groundnut, 3.2 acres is idle, and 2 acres is under paddy and black gram.
- Of Jamunabad's 44.2 acres, 19.9 acres is under paddy and green gram, 10.5 acres under paddy and black gram, and 7.5 acres is under one crop of paddy, besides 4.2 acres being idle.
- Of Marilo's 57.1 acres, 35.9 acres is under paddy and green gram, and 19.1 acres under paddy and black gram (96% of land is under paddy and green/black gram).
- Of Behula's 40.8 acres, 24.6 acres and 15.0 acres are under paddy followed by green and by black gram, respectively (97% of land is under paddy followed by green or black gram).

Land ownership patterns at the ward-level show important differences between the wards (Chart 4.10 and Table 4.3):

- The most striking difference is that nearly 20% and 10% of the lands owned and/or operated by Samsara and Jamunabad farmers, respectively, are idle. The reason in the case of Samsara relates to the location of landholdings upon the narrow floodplain of the River Chitrotpala, between the river and embankment.
- In Tikanpur Gram Panchayat very little land is left idle: in the two wards Marilo and Behula, just 1% of land is left idle.
- A larger proportion of 'owned and/or operated' land is owned in Marilo (80%) and Jamunabad (80%) as compared with Samsara (68%) and Behula (64%). Samsara and Behula rent-in nearly as much land as they own and use, whereas Marilo and Jamunabad own and use three times as much land as they rent-in on share. This may relate to the relative numbers of scheduled and 'other backward' castes in these latter wards.
- Behula and Marilo, which have a high proportion of government service-holding households, rent-out 20% and 16% of their owned and/or operated land, respectively.

Land ownership status	Samsara (n =30)	Jamunabad (n = 30)	Marilo (n = 30)	Behula (n = 30)	Site total (n = 120)
Owned, used	6.87 acres (42.0%)	26.73 acres (60.5%)	35.66 acres (62.4%)	17.65 acres (43.3%)	86.91 (54.9%)
Owned, idle	3.15 (19.3%)	4.19 (9.5%)	0.82 (1.4%)	0.24 (0.6%)	8.40 (5.3%)
Owned, rented-out, share	1.12 (6.9%)	4.52 (10.2%)	9.36 (16.4%)	8.32 (20.4%)	23.32 (14.7%)
Rented-in, share	5.20 (31.8%)	8.63 (19.5%)	11.28 (19.7%)	14.56 (35.7%)	39.67 (25.0%)
Rented-in, contract	-	0.10 (0.2%)	-	-	0.1 (0.1%)
Total	16.34 (100%)	44.17 (100%)	57.12 (100%)	40.77 (100%)	158.40 (100%)

Table 4.3: Garadpur site: Ward-wise proportion of total area under different land use

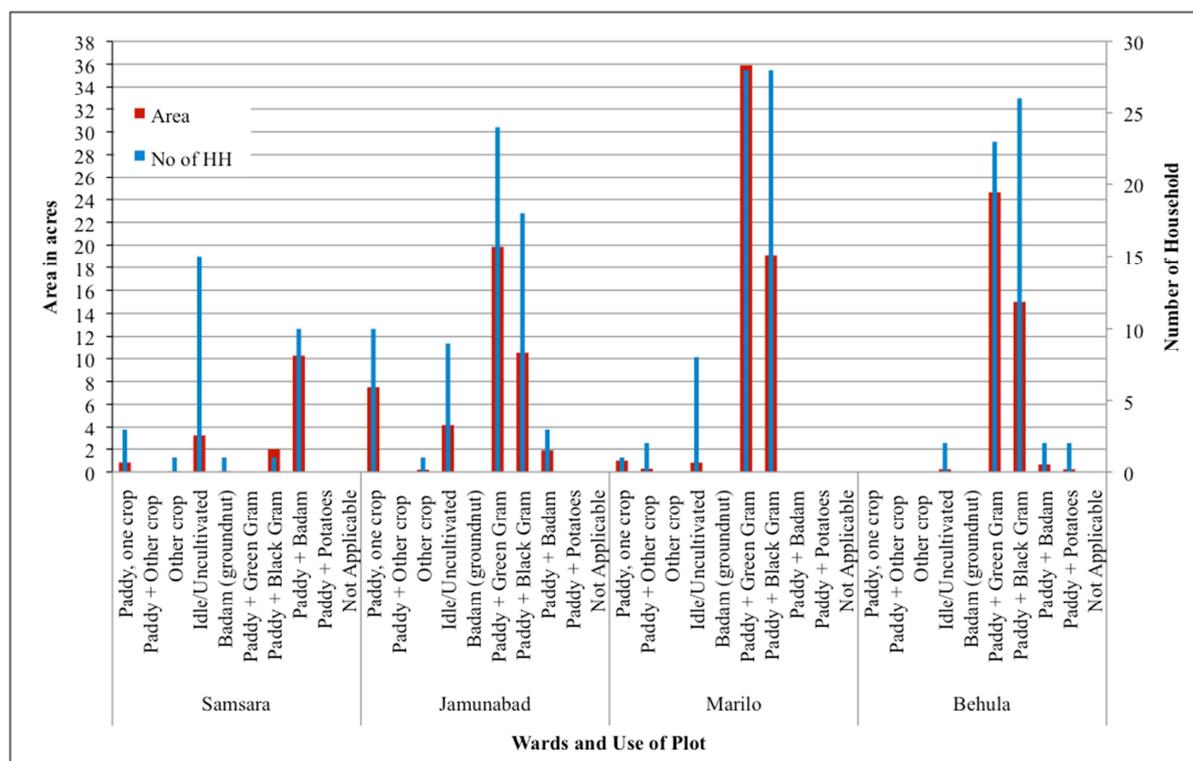


Chart 4.9: Garadpur: Ward-wise (n=30) total area under different land uses, in 2009

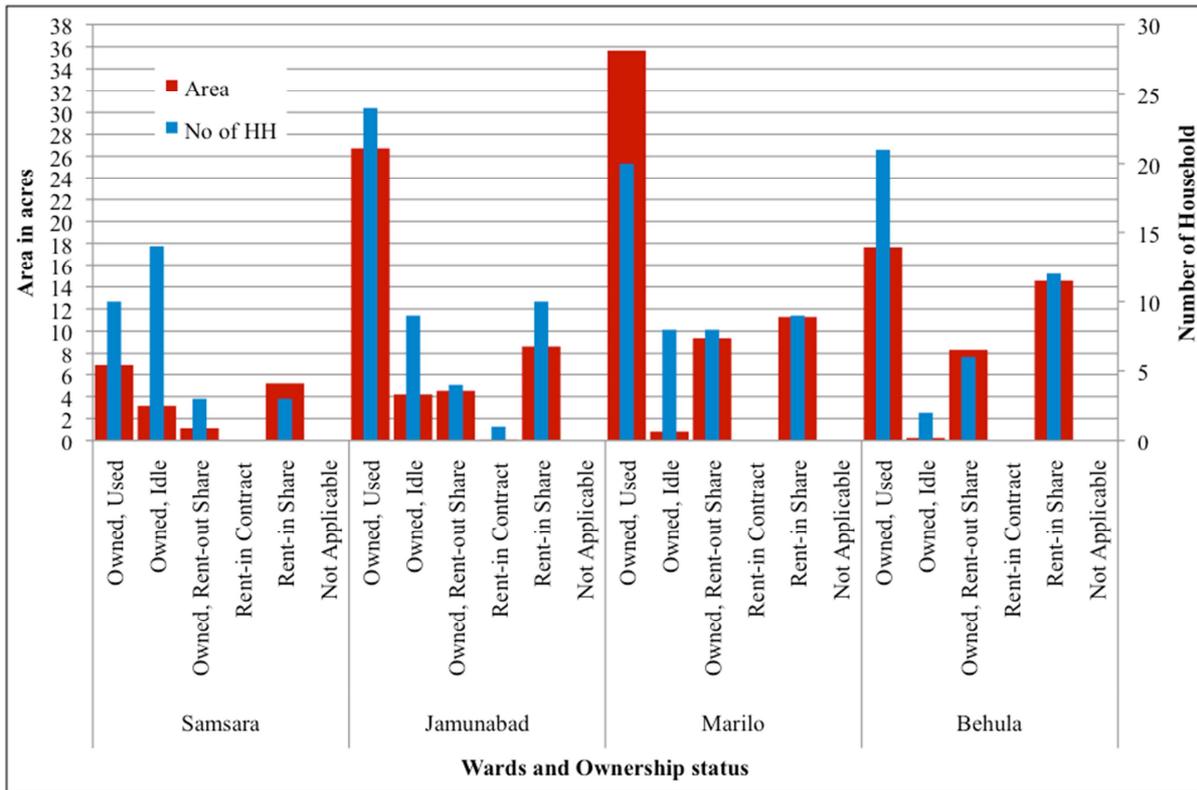


Chart 4.10: Garadpur: Ward-wise (n=30) total area under different ownership statuses, in 2009

In the Garadpur site, some 22 households are landless (18% of the sample households, which is the same proportion as found in Erasama). 12 of the landless households are from Samsara, which explains why the total landholdings in Samsara are so low compared to the other wards. In Jamunabad, Marilo and Behula, two, four and four households, respectively, are landless.

Trends in land use and land ownership over the past ten years in the Garadpur site

In Garadpur (as in Erasama) the trend over ten years is towards a lesser proportion of land being ‘owned and used’, and a greater proportion of land being ‘rented-in on share’ (Chart 4.11). In 1999 a total of 132.4 acres was ‘owned and used’ (72% of the total owned and/or operated land) by 86 of the 120 sampled households, compared with 86.9 acres being ‘owned and used’ (55% of the total) by 75 households ten years later in 2009 – a 34% decrease in area and 13% decrease in number of cultivating households. Some of this land has become idle, some has been rented-out on share agreement, and some has been sold, but a majority of the decrease is attributable to generational subdivision of land.

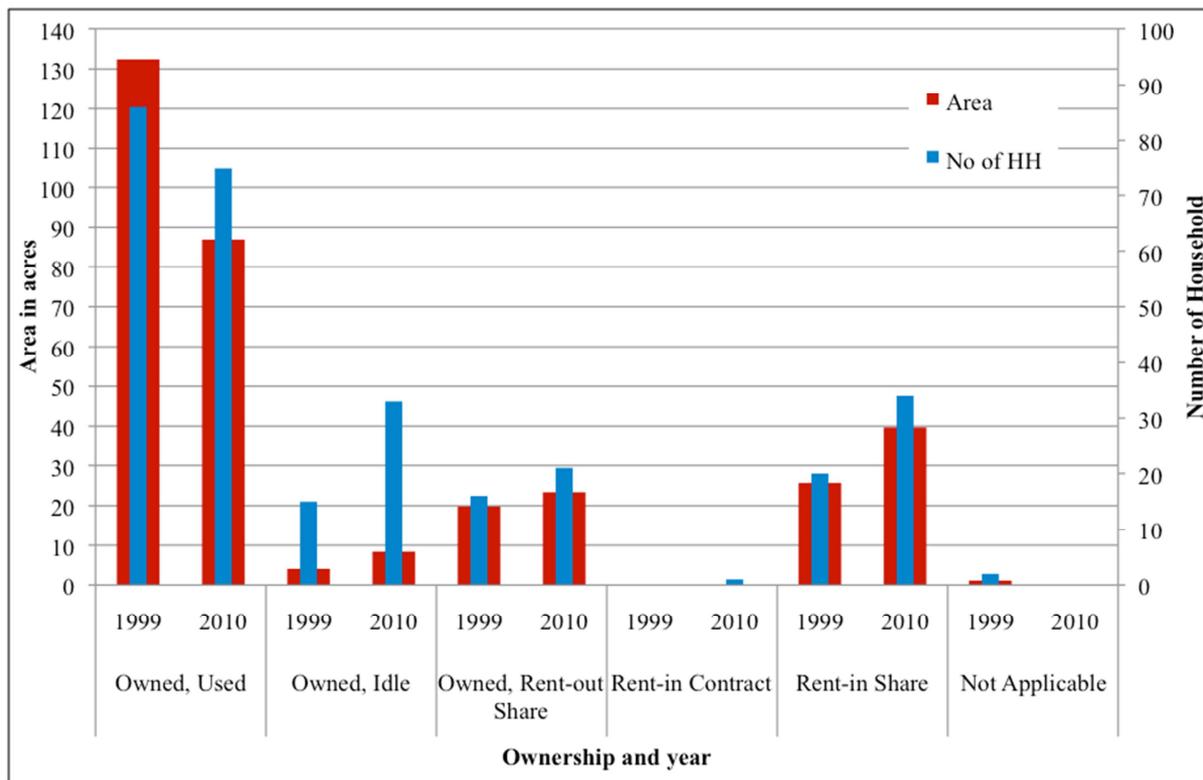


Chart 4.11: Garadpur site (n=120): Ownership status of land owned and/or operated in 1999 and 2009

Land rental and the non-cultivation of land are both increasing phenomenon. Land rented in on share agreement was just 14% of owned and/or operated land in 1999, but in 2009 makes up 25%. Land rented-out on share agreement comprised 11% of the total area owned and/or operated in 1999, which has in 2009 risen to a 15% share. Looking solely at owned land, land left idle was 2% (4.1 acres) of the total land owned and/or operated in 1999, whereas it is now 5% (8.4 acres) – land owned but left idle is concentrated in Samsara and Jamunabad wards. The number of households leaving some or all their land idle has rose from 15 to 33 households over the ten years, and in 2009-10 14 of the 33 households leaving all or some of their land idle are of Samsara (6 households leaving it all idle, and 8 leaving part of it idle).

Finally, in the sampled households and wards of Garadpur no government-owned land has been distributed to farmers, for perhaps there is no such land to distribute. Furthermore, farmers have not mortgaged their land for loans, which suggests farming households are less desperate than in Erasama, i.e. can source credit from elsewhere. No land is rented in or out on contract agreement in Garadpur, which is an arrangement that largely prevails for aquaculture, and is thus found in Erasama.

Trends in cultivation in Samsara over the ten years, including the effects of floods

It is clear from the analysis so far that Samsara is the exception of the four sample wards in Garadpur. Samsara has taken the full brunt of two floods in recent years, in 2001 and 2008. On both occasions there were breaches in the embankment at Samsara, with the bulk of the population surviving by moving up on to the embankment. The floodwaters washed away their houses, some livestock, and deposited sand on their farmland (known as sand casting). As a result, land use has changed over the years (Chart 4.12):

- One crop of paddy was in 1999 sown on 22% of land (3.3 acres) by 7 households (out of 30), but in 2009 paddy is sown on just 5% of land (0.8 acres) by 3 households.
- Paddy followed by black gram was sown on 30% of land (4.5 acres) in 1999, but in 2009 is sown on just 12% (2 acres) of land.
- The number of households sowing paddy followed by groundnut (*badam*) has increased from 4 to 10, as has the area – from 35% of land (5.4 acres) to 63% (10.3 acres) of the land owned and/or operated. Farmers have switched to sowing groundnut after paddy because of the sand deposited on their land by the floodwaters of 2001 and 2008.

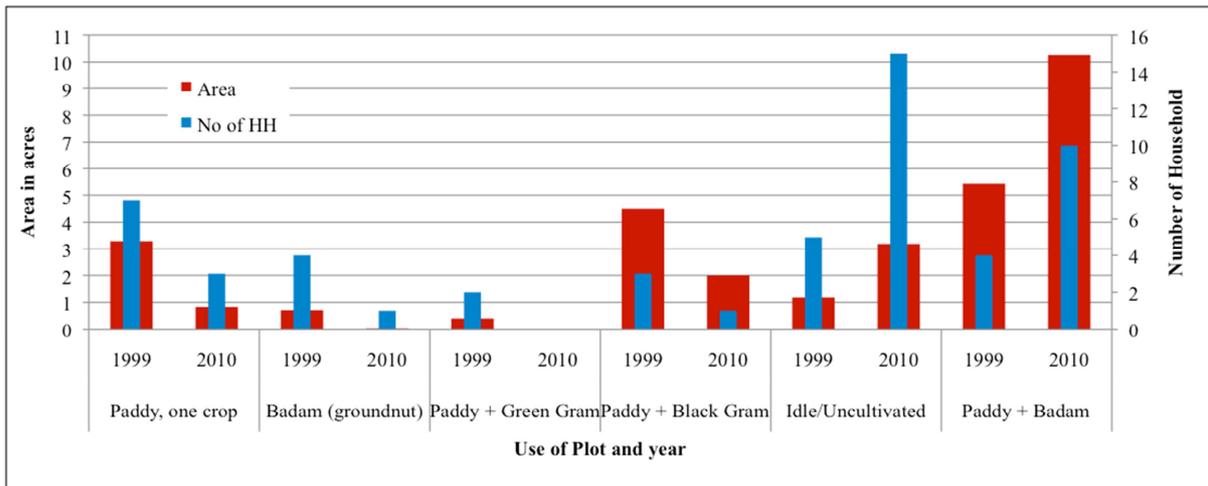


Chart 4.12: Samsara (n=30): Change in land use over ten years, 1999 and 2009

Key changes in land ownership over the ten years in Samsara (Chart 4.13) are as follows:

- There has been a 38% decrease in the area ‘owned and used’, from 11.1 acres to 6.9 acres, and the number of farmers of such land has dropped from 16 to 10 (out of 30). The reason relates to the fact that much of the land is located on the floodplain of the Chitrotpala.
- Just 8% of owned land was idle in 1999 (1.2 of 14.9 acres) but in the present day some 28% of owned land is idle (3.2 of 11.1 acres). The numbers of households having idle or fallow land has risen dramatically from 5 to 14 households.
- Land rented-in on share agreement has risen from 0.7 to 5.2 acres, though only three households rent land in 2009-10 compared with one household in 1999.

The recent flood episodes have evidently affected the farming population of Samsara and its crop production schedule.

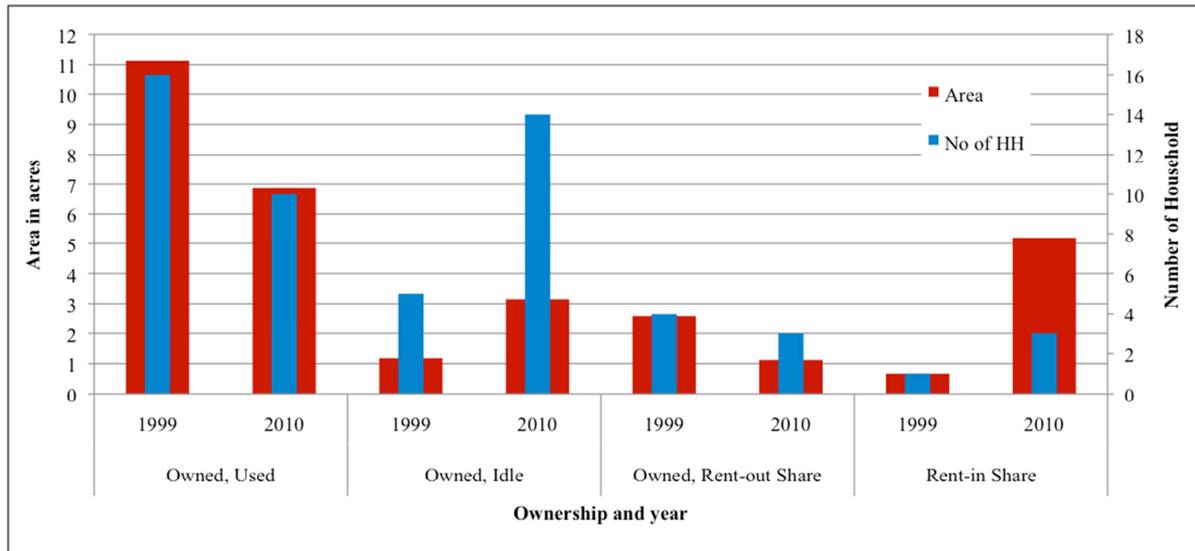


Chart 4.13: Samsara (n=30): Change in land ownership status over ten years, 1999 and 2009

Trends in paddy cultivation in Garadpur over the ten years

Paddy cultivation²² by our 120 sample households has decreased over the ten years period, 1999 to 2009, from a total of 176 acres in 1999 to 149 acres in 2009²³, a 15% decrease (Chart 4.14). The number of cultivating households has fallen only by 5%, from 100 to 95 (in the Erasama site, for comparison, area under paddy decreased 33% and number of farmers 9%). Unlike in the Erasama site where the tidal surge that accompanied the super-cyclone damaged agricultural land (by salinisation), in Garadpur there was no permanent damage to land; only the paddy crop was destroyed. In Garadpur farmers faced less difficulty to cultivate in 2000, such that there is not such a dramatic decline in area sown and number of households farming paddy between 1999 and 2000 in Garadpur, as compared to Erasama (compare Chart 4.14 with Chart 4.5).

Ward-wise changes in paddy cultivation help to illustrate where and why the decline has taken place. It is in Jamunabad and Marilo where the gross area cropped with paddy has declined, though in both wards the number of cultivators remains roughly the same. These two wards have the highest proportion of owned land – 80% of total land owned and/or operated is owned – therefore it would appear that land sub-division is the principal reason for the decline in paddy cultivation (Table 4.4):

- In Behula there has been a 28% increase in the area under paddy, from 31.6 to 40.3 acres.
- In Samsara the area has decreased only slightly, from 13.6 acres in 1999 to 13.1 acres in 2009, with fewer farmers cultivating the land (from 15 to 12).
- In Jamunabad there is a 24% decrease to 39.4 acres from 51.6 acres.
- In Marilo the decrease is of 29%, from 79.4 to 56.0 acres.

²² Here paddy cultivation is considered irrespective of land ownership status and of the second crop type.

²³ Coincidentally the total area under paddy in our Erasama sample is 150 acres in 2009.

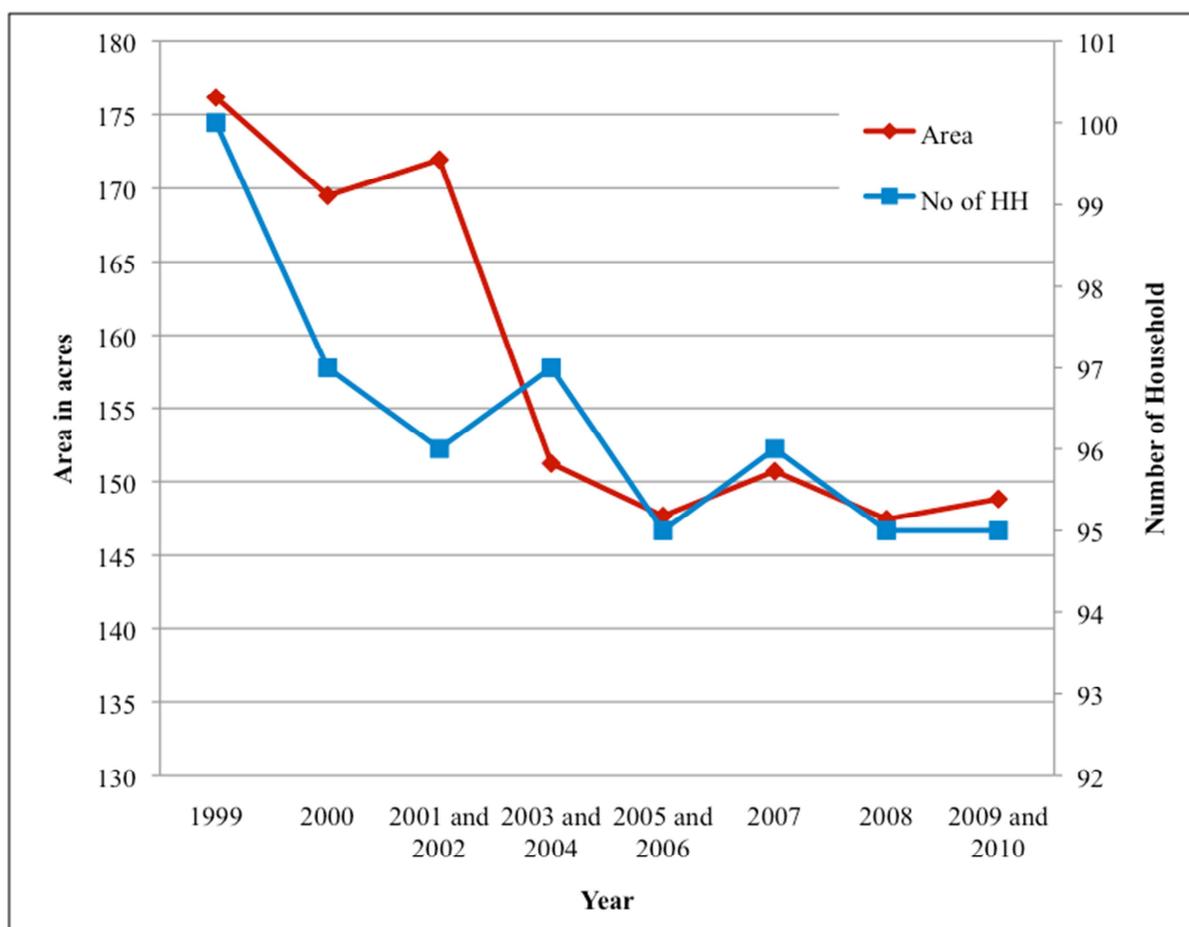


Chart 4.14: Garadpur site (n=120): Total area under paddy production, and number of households cultivating, over ten years

Year(s)	Samsara (n=30)		Jamunabad (n=30)		Marilo (n=30)		Behula (n=30)		Site total (n=120)	
	Area (acres)	No. of cultivating households	Area	No. hhs	Area	No. hhs	Area	No. hhs	Area	No. hhs
1999	13.62	15	51.60	30	79.36	28	31.59	27	176.17	100
2000	10.57	13	51.88	29	75.07	28	31.97	27	169.49	97
2001-02	12.60	13	47.34	28	77.35	28	34.65	27	171.94	96
2003-04	12.10	14	40.23	28	62.73	28	36.17	27	151.23	97
2005-06	10.52	13	40.43	28	59.84	28	36.87	26	147.66	95
2007	11.44	13	39.24	27	61.48	29	38.54	27	150.70	96
2008	11.20	13	39.94	28	57.72	27	38.58	27	147.44	95
2009-10	13.13	12	39.38	28	56.02	28	40.29	27	148.82	95

Table 4.4: Garadpur site: Gross cropped area under paddy (acres), and no. of households cultivating

A majority of this decrease in area under paddy is due to a decrease in area owned by farming households because of generational land sub-division. For example, considering paddy and green gram cultivation (Chart 4.15), at the site level there is a 32% decrease in area sown from 64.5 acres to 43.7 acres, though the change in number of cultivating households is minor – a 6% decrease from 62 to 58 households. The decrease in area sown is 33% in Jamunabad, 34% in Marilo, 24% in Behula and 100% in Samsara, with the largest decreases in absolute terms in Jamunabad (6 acres) and Marilo

(11 acres). Other trends confirm that in 2009-10, generally speaking, cultivating households own less land and/or (some of) their land has become idle, as a result of which they are renting-in more land.

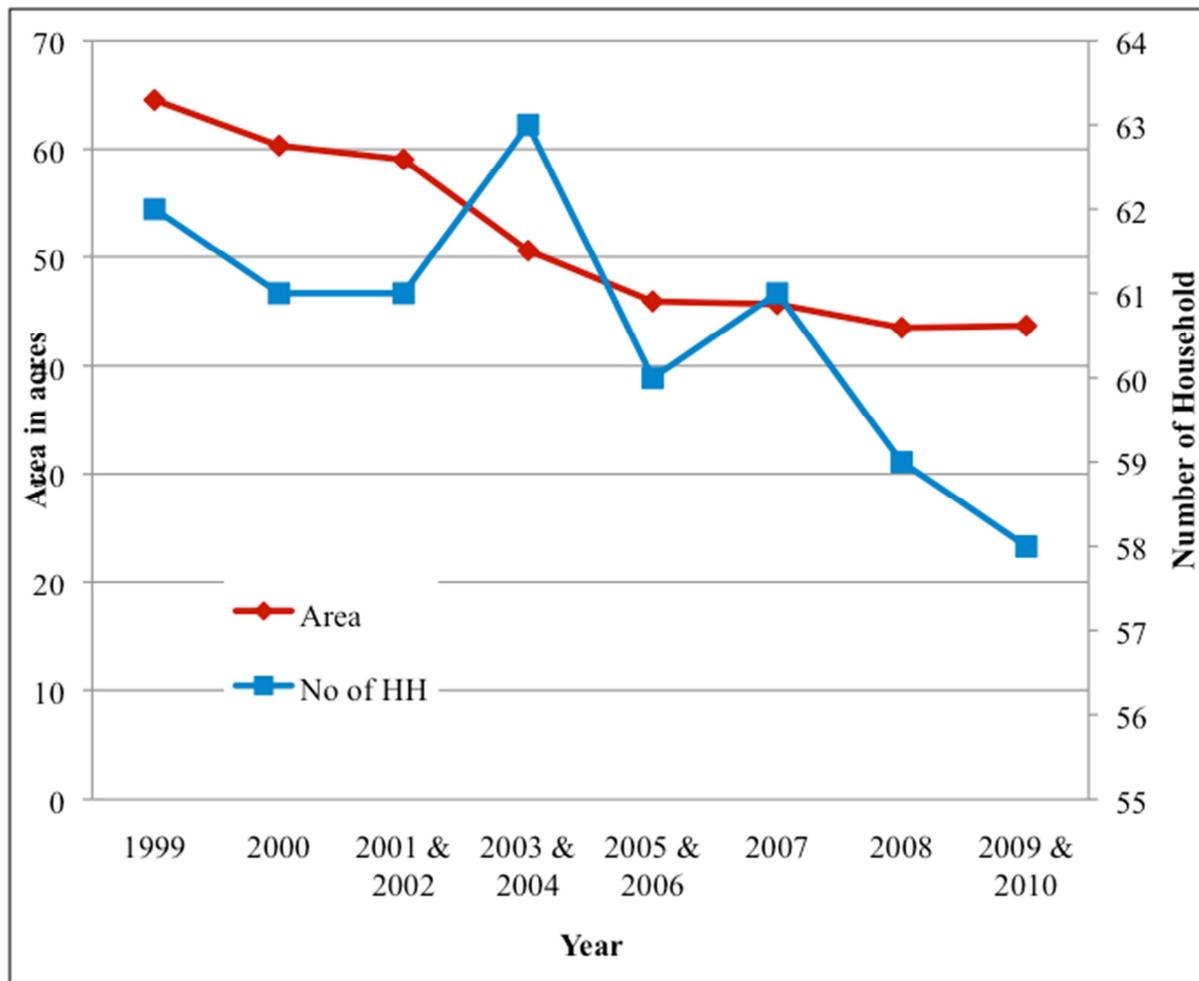


Chart 4.15: Garadpur site (n=120): Total area under paddy and green gram, sown on owned land (acres), and number of households cultivating

Food security using rice as proxy, in the ten years since the super-cyclone

In Garadpur the majority of households lost their *kharif* harvest for four years of the ten years period – a significant number of times. Chart 4.16 attempts to show the number of months in a year, over the ten years period, that households have been able to consume their own rice. The chart shows that following the 1999 cyclone, for the year of 2000, the vast majority of households had no produce. It also attempts to show how households lost their harvest in the major floods of 2001, 2003 and 2008 (though the data is imperfect, because years are paired, it highlights the trend). The 2001 and 2008 floods were the major floods that affected our four sampled wards hence almost no households had their own rice in the subsequent year. The 2003 flood was not a major event, and did not affect Samsara, and so some of Samsara’s households did have a harvest in the year after the 2003 flood.

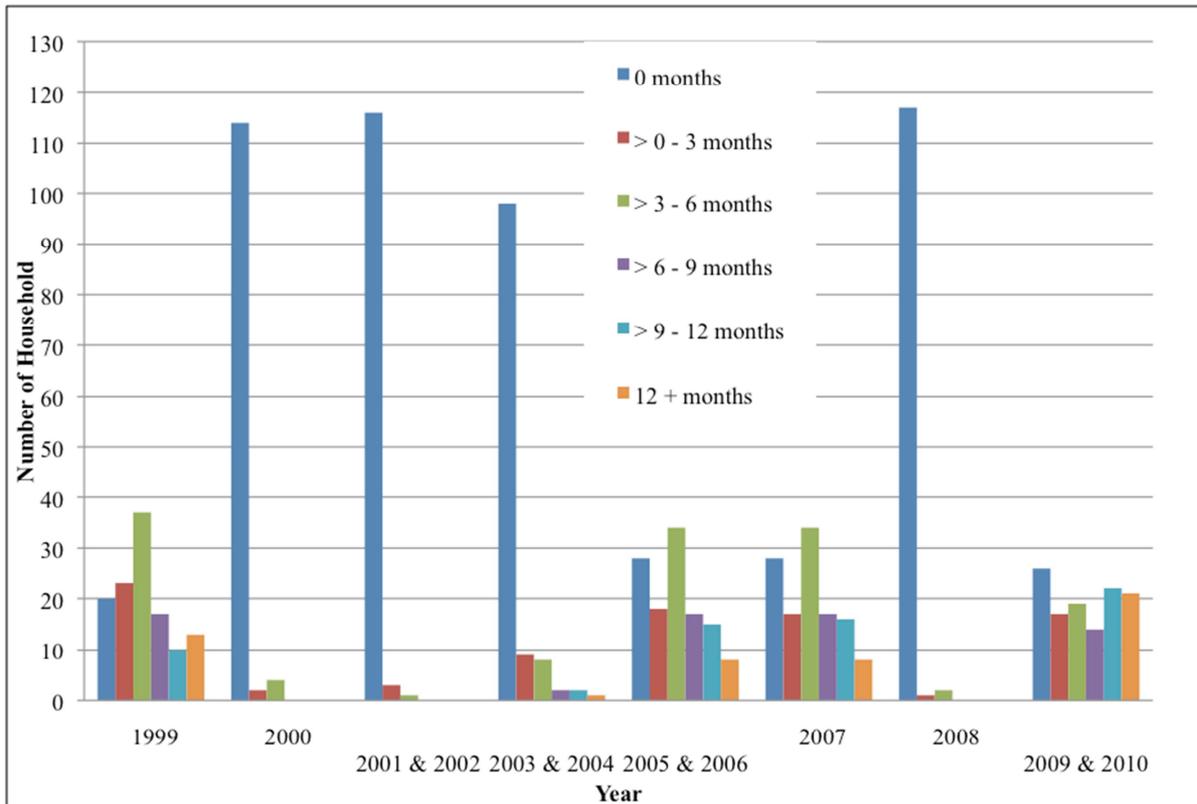


Chart 4.16: Garadpur site (n=120): number of households consuming their own rice (for number of months), over the decade

Comparing the 1999 and 2009 data of Chart 4.16, it appears that some households' food security has improved (in normal, non-flood years) whereas others' has deteriorated over the ten years period. In the period before the super-cyclone (i.e. 1999), 20 households had no harvest whereas by 2009 some 26 households have no harvest – a 30% increase in the number of households having no harvest (i.e. not cultivating). On the other hand, whereas in 1999 23 households had over 9 months rice from their harvest, in 2009 this has increased by 87% to 43 households. This data, though tentative, can be seen to both reveal a promising trend for some, and/or to reflect a general increase in inequality.

Comparison of the food security trends in Erasama and Garadpur for 1999 and 2009 (Charts 4.6 and 4.16) shows that in Erasama there has been little change over ten years in the distribution of households falling in different 'months consuming own rice' categories, whereas in Garadpur there is obvious change. For some in Garadpur, food security is becoming more achievable – 21 households (18% of all households) produced over 12 months of rice in 2009, compared to 13 households in 1999. Yet in Erasama there is no such trend – just 5 households (4% of all households) produced over 12 months of rice in both 1999 and 2009.

Sharecropping and crop loss in Garadpur

The phenomenon of sharecropping, whereby a landless or marginal household farms the land of its owner, paying the majority of the input costs, but having to share the produce 50:50, is on the rise. For the 120 sampled households, since 1999 the area rented-in to grow paddy then green gram has risen 30% to 22.3 acres in 2009, and the area rented-in to grow paddy then black gram has risen 84% to 11.2 acres in 2009. The total number of sharecroppers has risen from 20 in 1999 to 34 in 2009, a 70% increase. This represents 28% of Garadpur's 120 sampled households or 43% of Garadpur's 80 cultivating households. The sharecropping agreement includes all crops grown on farmland, so in Garadpur the sharecropper must divide both paddy and gram harvests.

Some have argued that sharecropping offers a way for both sharecroppers and landowners to 'minimise risk' (see Roy et al, 2002). However farming in much of India is a risky occupation due to rainfall variation and poor irrigation facilities, and marginal and small farmers are increasingly finding it difficult to cultivate given high rises in for example, the daily wage rate for agricultural labourers. In flood-affected areas, such as Garadpur, the risks increase greatly: losing one's *kharif* paddy crop four times in ten years is not a small matter. In the prevailing sharecropping arrangement the sole party taking the risk is the sharecropper (see example below). The risk to sharecroppers is rising with, for example, climate variability and poor resource governance at the river basin level (e.g. the management of flood water levels in the Hirakud Dam), yet the risks to landowners appear to be decreasing with the arrangements that have so far been made. In Odisha, landowners now receive crop loss compensation and take compulsory insurance when taking loans from cooperatives such that most of the loan is waived if a disaster strikes; however many sharecroppers are yet to benefit from these newly developed arrangements. Below the example of one sharecropper is offered.

A sharecropper of Marilo is landless since before 1999 because his elder brother sold their 3 acres of land to pay for their sisters' weddings, about which he has no regret. 'We are men', he said, 'so we can manage – it was for their betterment'. At the time of the 2008 flood he was renting-in on share agreement 0.92 acres of land from two different landowners, and growing paddy and green gram on 0.32 acres (*saradh*, low lands) and paddy and black gram on 0.6 acres (*biali*, high lands). He would share the harvest 50:50, even though he made all the investment barring the small fertiliser cost, which is split 50:50²⁴. The 2008 flood occurred in September, and he lost his paddy crop. After the flood the government provided compensation ('gratuitous relief') for crop loss to landowners, at the rate of 800 rupees per acre. However these payments are made directly to landowners, who at their discretion may or may not pay their tenant, the sharecropper. In our research site we found no direct example of any landowner having voluntarily done this; rather the landowners receive the payment, which more than covers their meagre outlay, and the sharecroppers remain empty handed having expended their time and purchased inputs such as seed, plough, labour and fertiliser.

The Marilo sharecropper was not given a share of the crop loss payment. For this he felt angry with the two landowners. He had farmed on 0.24 acres of a Marilo landowner for 12 or so years, and on 0.68 acres of a neighbouring village's landowner for 9 or so years. The 2008 floods were the first time

²⁴ The estimate of the cost of *biali* paddy cultivation is 720 rupees per *guntha*. The cost of fertiliser is only 36 rupees of this, and the landowner pays half of this, a mere 18 rupees. So the sharecropper will pay 97.5% of the costs of production, and the landowner just 2.5% of the costs.

crop loss compensation was properly distributed following the implementation of the 2005 Disaster Management Act with its new relief guidelines. To vent his anger, he decided to cease to sharecrop upon the landowners' farm plots. He nowadays sharecrops the same area of land but owned by four landowners, including three new ones: the Marilo landowner, after unsuccessfully trying to cultivate in 2009, ploughed the land in 2010 and offered it back to the sharecropper (respondent no. 189). The sharecropper has no alternative but to continue sharecropping.

4.3 Agrarian conditions and support available to farmers

This section discusses a few important issues affecting farmers and cultivation, namely agricultural extension services and credit support available to farmers. The larger issues of fresh/saline water management and aquaculture in the Erasama site, as well as the role of self help groups (SHGs) in providing credit are discussed in Chapter 8.

Agricultural extension services

The contact point for farmers with the agricultural department is the block agricultural office, so distance to the block is a major determinant of whether or not farmers access information, seeds or fertilisers, besides other various schemes on offer. The Garadpur wards are about 7 km by road from the block, whereas the Erasama wards are much further away, up to 20 km by road. Erasama's agricultural office covers 25 gram panchayats, comprising 208 villages, and has just six village agricultural workers (VAWs) headed by the assistant agricultural officer (AAO). The AAO in an interview expressed that farmers do not contact them enough. Garadpur's agricultural office covers 18 gram panchayats, and assisting the AAO are just three VAWs. Garadpur's AAO feels the relationship between farmers and his department is getting stronger, though complains that he has too few staff²⁵.

In Erasama, there is a mismatch between the support being provided by the Block office and farmers' needs following the super-cyclone. Erasama's agricultural officer said land close to the seashore recovered within two years of the tidal surge that accompanied the super-cyclone. Some respondents agree with this view, and claim their harvests increased within two to four years of the super-cyclone, whereas others' claim that salinity levels have increased in their land and as a result production is less. During the *kharif* season, cyclonic storms cause high tides that bring saline water inland disturbing paddy production, so winter season paddy cultivation obtains higher yields. However *dalua* paddy can only be cultivated where there is a source of fresh water, and thus for a majority of farmers *dalua* paddy production is not an option. Some of Kalabedi's farmers source high yielding variety (HYV) seeds from the block (at the rate of 300 rupees per 30 kg) and using pumpsets grow *dalua* paddy. Although they are happy with increased yields, they are concerned with the sharp rise in the price of this paddy seed, from 200 rupees in 2008 to 300 rupees per sack in 2010 (a 50% increase in two years): the loss in self-reliance and dependency on outside (state/market) procurement of paddy seed scares marginal/small farmers. The block does not provide fertiliser and pesticide, vital inputs for cultivating high yielding varieties of paddy. Farmers, because of livestock losses in the super-cyclone, no longer have sufficient livestock to produce manure and have to buy fertiliser from private dealers. Pesticides are also procured in this way, and farmers are bewildered by the varieties on offer. Farmers complained that when they do find a pesticide that works, the next year they find it unavailable on the

²⁵ Interviews with Assistant Agricultural Officers of Erasama (16/12/10) and Garadpur (18/12/10).

market. Some villagers stated that the unregulated, increased usage of pesticide has caused an increase in human disease in their villages²⁶.

Use of high yielding variety seeds sourced from the block office is limited for many coastal farmers because suitable seeds are not always available. Some saline friendly varieties of paddy seed have been developed and introduced, but not all such varieties are resistant to water logging and/or heavy rain, characteristics that have evolved in traditional varieties. Therefore a majority of farmers some 2-4 km from the seashore continue to sow traditional varieties of paddy (principally bhaluki and bhandi), which have a low yield and a propensity to fall (lodge) in high winds as occurred in late 2010. Gadaharishpur's *sarpanch* made a plea that farmers require advice on saline-friendly crop varieties, and that agricultural support, such as seed provision should be handled through the gram panchayats. Shuakunda's farmers confirmed that before the super-cyclone they had sufficient cow dung to use as fertiliser, but since 2000 many NGOs and the government have encouraged them to use high yielding varieties (HYVs) and chemical fertilisers. Initially farmers were excited however use of HYVs was unsuccessful for the majority due to water logging. Shuakunda's farmers said since the super-cyclone they have become reliant solely on paddy (see Chapter 7), and with the state of cultivation as it stands, they nowadays feel increasingly vulnerable. The villagers have begun to migrate on a daily basis to agriculturally more productive areas, inland at Balikuda and Jagatsinghpur whereas before, they claim, they did not have to do so.

Block and district level agricultural officers named many schemes they are introducing, such as 'system of rice intensification' (SRI), trials of newly introduced paddy seeds, distribution of gypsum and paper mill sludge to farmers to reduce farm soil salinity, and trials of second crops such as sunflower. However these trials have not taken place in the gram panchayats selected in this study. The district agricultural officer complained that in the saline belt, which is non-irrigated, farmers that are able to, sow a second crop of paddy, which is harmful to the soil, instead of green gram. The Zilla Parishad member said that agricultural development in Erasama has been grossly overlooked, as have irrigation and drainage systems, and as a result farmers are nowadays less interested in farming. He said that before the super-cyclone farmers close to the seashore grew paddy and vegetables, however the loss of fertility since the super-cyclone and lack of irrigation has led farmers to sow only paddy²⁷.

Farmers in the Erasama site complain that extension workers do not visit their villages, so they are left to rely for advice from fertiliser, pesticide and prawn feed salespersons. One Padmapur farmer said, 'we hear about schemes and training on the radio, but at the village level nothing is happening. There are salt-tolerant paddy varieties but we know nothing about them'. One *ex-sarpanch* of Gadaharishpur said 'programme officers do not come here, only marketing agencies come to hold meetings and give advice. There is no improvement in agriculture'²⁸. A Gadaharishpur farmer said, 'agricultural extension services are totally absent here, the village level worker does not come nor does he give tips on proper cultivation techniques. Last year someone from the agricultural office came, took soil samples even charging households 5 rupees each, and left. The results were never shared with us'.

²⁶ Interview with four male residents of Kalabedi on 15/2/10.

²⁷ Interviews conducted with district agricultural officer in April, and block agricultural officer, April and December 2010. Interview with Zilla Parishad member was held in April 2010.

²⁸ Interview held in Garia on 23/4/10.

In Garadpur the scenario is entirely different. The block agricultural officer said most farmers sow hybrid paddy and this has led to a great reduction in the number of traditional varieties of paddy sown. He also said that farmers do not use hybrid gram seeds because they are unfamiliar with the cultivation technique, SRI trials have increased yields by 50%, and Garadpur's farmers do not suffer from water logging because of a network of drainage channels. However some farmers beg to differ. One Jamunabad farmer said, 'When we do not suffer flood or drought we get a good harvest. We use hybrid seeds but they cannot bear water logging even for one day. Local varieties could, but nowadays these are disappearing. Actually local varieties do not give a good yield compared to hybrids'. A Marilo farmer worried about the impact of use of chemical fertiliser and insecticides on human health, but said people are too lazy to use manure these days. One Behula farmer said similar to the above, adding that chemical fertiliser use has caused a grave decline in the numbers of fish found in paddy fields in the monsoon season. In Garadpur, people did not seem discontent with the agricultural department rather they were concerned with frequency of floods and labour issues.

Credit support available to farmers

Farmers require credit for cultivation because a majority are subsistence farmers, i.e. not generating a surplus. According to our household survey data, just 18% and 4% of households in the Garadpur and Erasama sites, respectively, produced an annual surplus of paddy in 2009-10. In Erasama the total number of cultivating households (97 of 120) equals that of landowning households although these are not all the same households (Table 4.5). In Garadpur just 80 of 120 households cultivated in 2009-10, although 98 households owned land; the rate of renting-out land is high in Garadpur.

Erasama site			Garadpur site		
Ward	Cultivating in 2009-10	Landowner in 2009-10	Ward	Cultivating in 2009-10	Landowner in 2009-10
Garia (n=30)	24	27	Samsara (n=30)	10	18
Shuakunda (n=30)	29	22	Jamunabad (n=30)	24	28
Sahadabedi (n=30)	26	27	Marilo (n=30)	23	26
Kalabedi (n=30)	18	21	Behula (n=30)	23	26
Site total (n=120)	97	97	Site total (n=120)	80	98

Table 4.5: Erasama and Garadpur sites: Numbers of cultivating and landowning households

Households were asked from where they obtained credit for cultivation purposes in the agricultural year 2009-10²⁹. Results show a surprisingly low number of households tried or were able to access loans the previous year. The poorest farmers seek to farm with minimal expenditure, using their earned income from wage labour work, and practising exchange labour with other households in similar positions. In total 45 and 40 households, or 46% and 50% of cultivating households, in Erasama and Garadpur respectively, do not access any kind of credit and instead seek to cultivate without incurring debt:

- In Erasama 20 of 97 households (21% of cultivators) use solely their own cash earnings to purchase inputs for farming, whereas in Garadpur 28 of 80 households (35%) do so.
- 25 of 97 Erasama households (26%) use only cash earning and exchange labour to undertake their work, compared to 12 of 80 households (15%) in Garadpur.

²⁹ For calculating proportion of farmers accessing credit, only households cultivating in 2009-10 are considered.

- A further 13 and 8 households, or 13% and 10% of cultivating households, take loans only from family or friends (and may use their own cash/exchange labour).
- 12 cultivating households (12%) in Erasama and 10 cultivating households (13%) in Garadpur take loans from local moneylenders (*mahajans*), a practice entailing high interest rates. Of these households, about one-third (4 in Erasama and 3 in Garadpur) also take loans from more formal sources (banks, cooperative societies or self help groups).
- In total 28 and 24 cultivating households (29% and 30% of cultivating households) in Erasama and Garadpur respectively, access formal sources of credit, often in addition to other sources.

While cooperative societies rate fairly well as a source of credit (with 16 and 12 households, 16% and 15% of cultivating households in Erasama and Garadpur, respectively, taking loans from them in 2009), as do SHGs (10 and 12 households, or 10% and 15% of all cultivating households in Erasama and Garadpur, respectively, took loans from SHGs), loans from banks are the least accessible, with just three and one households from Erasama and Garadpur respectively, accessing a bank loan for farming purposes. Respondents informed us of their experiences with banks. One Sahadabedi man had taken a loan of 7,000 rupees from Goda's Indian Bank for betel cultivation before the super-cyclone, for which he had to bribe 3,000 rupees (see Chapter 7). Another Sahadabedi man said that he took a loan from Goda's Indian Bank before the super-cyclone, for 7,500 rupees for prawn cultivation, for which he had to pay 2,500 rupees bribe. The bank is now demanding he repay them 20,000 rupees (respondent no. 63). Such has been the experience of farmers with the only commercial bank in Erasama's locale; hence it is unsurprising that very few households take loans from the bank.

Co-operative societies, according to the bank manager of Patkura Cooperative Society in Korua, in 2010 provided loans to farmers of up to 8,000 rupees per acre (2010-2011), raised from 6,000 rupees per acre in 2009. Farmers may take their loan for the *khariif* season, and if they repay by the 25th March, the interest rate is a mere 3% (9%, but centre gives 2%, and state gives 4% subsidy, see Chapter 3). Further, since the 2008 flood the central government has declared a loan waiver scheme, which meant that in the 2008 flood about 80% of each and every loan was covered by insurance. Farmers pay a 2.25% non-negotiable insurance premium on their paddy cropping loans, and the government matches this. To get a loan however, farmers must be able to show their land *patta*, so landless sharecroppers face difficulties. However a scheme has been introduced in 2008 to allow four or five sharecroppers to form 'joint liability groups'. This is an area in need of further research – to understand how sharecroppers fare in taking loans and repaying them, and in getting coverage under the loan waivering scheme. More generally, research is required to understand the credit situation in disaster prone areas. Self help groups (SHGs) are returned to in Chapter 8.

In Erasama, one effect of the pathetic economic condition of most households combined with an unsatisfactory credit scenario is an increase in the number of households who mortgage their land for loans, from five households that had mortgaged a total of 2.4 acres in 1999 to 12 households that have mortgaged 7.43 acres in 2009-10. This translates to 10% of sampled households in Erasama having mortgaged their land for a loan. One Garia respondent said that he mortgaged 0.16 acres of land for a loan of 3,000 rupees, five years ago, to organise his parents' funeral, and has not been able to raise the money in the intermittent period to repay the loan. Until 2009-10, he was cultivating on a tiny piece of government land, however this land was reclaimed by the gram panchayat to dig a pond (respondent

no. 30). In the Garadpur site, there has been no instance of land mortgaging by households in the sampled households over the ten years period, a sign that the local economy is healthier.

4.4 Agricultural trajectories: Summary and key recommendations

This chapter has attempted to address three key issues: the changes in cultivation practices and patterns over the past ten years, the effect of the super-cyclone and floods on cultivation, and the pressures affecting agriculture and how they are being addressed in the present day. Some of these latter issues will be returned to in Chapter 8.

The chapter has shown that farmers have been unable to diversify production in a planned way. Ten years on from the super-cyclone the majority of Erasama's farmers continue to mono-crop paddy while Garadpur's farmers continue to sow paddy and gram. A minority of farmers in disaster-affected locations have been forced by locally-specific environmental changes to alter their cropping schedule: such as Sahadabedi and Kalabedi's farmers in Erasama who, surrounded by prawn farms (the number of which having increased following land salinisation after the super-cyclone), have begun to cultivate paddy in the months of January to April; or Samsara's farmers in Garadpur who have switched from sowing paddy and gram, to sowing paddy and groundnut because of sand casting in their fields due to repeated breaches in the nearby embankment. The chapter strongly notes the difficulty of attributing causality to disasters alone for these agricultural trajectories. The super-cyclone in 1999 did leave visible impacts, especially in Erasama, as did recurrent floods in Garadpur, but a host of other factors have played a key part. These include trends in landownership over time, (lack of) access to appropriate seeds, water and credit, and not least, a deficit in much needed assistance from state agriculture and fisheries departments.

The chapter has shown how those farmers that attempted prawn cultivation in the Erasama site, particularly the wards close to the sea, did so without any assistance from the fisheries department. At least half of those who tried made huge losses, getting themselves into serious debt. Agriculture has progressed to the extent that the seeds of higher yielding varieties (HYVs) of paddy and other key crops are now widely available, although farmers living immediately adjacent to the coast are not receiving saline-friendly seeds able to withstand water logging. Although it is perhaps understandable that huge investments, in for example water management, are not made along the unstable coastline (returned to in Chapter 8), thorough livelihood support to villagers ought to be provided.

Improvements in yields may have to some extent countered the reduction in area available for cultivation. Ten years on from the super-cyclone, food security at both sites appears to have recovered to (unsatisfactory) 1999 levels (i.e. overall, for the 120 households sampled), though some households' scenario has definitely deteriorated. But there have not been improvements such that farmers have been able to move away from subsistence farming – the majority produce less than their annual requirements thus marketing of a surplus is not a question. In both sites, there is a marked increase in the renting-in of land on share agreement, which suggests that sharecroppers ought to be paid sustained attention by policy makers. As things stand, larger farmers have the resources and contacts to benefit from (agricultural and fisheries) state schemes whereas many marginal and small farmers seem unable to access the many schemes seemingly on offer by these departments.

There is also an increasing incidence of farmers mortgaging their land in the Erasama site, and it is clear that a majority of households cannot access credit from formal sources. Many have large debts to clear from earlier loans. Monitoring of progress in provision of credit needs to move away from simple enumeration of the total amount of money provided, to a more careful accounting of the number and proportion of households served. Regulation of banks and societies ought to be enacted and enforced to prevent the exploitation of vulnerable households by wily bank managers.

The implications of the highlighted trajectories of change in the two research sites need to be taken seriously because of the respective population's continuing vulnerability to further cyclones and floods. The chapter concludes with some recommendations for the government and NGOs for tackling the raised points:

- The agricultural department could increase its extension services, taking its staff to more villages. As it stands, trials take place in certain villages but not all farmers are benefitting or being exposed to new technologies. Farmers need assistance, for example, in selecting from the private market the appropriate pesticide to use for their paddy crop, the seed for which they source from the block office.
- That businessmen have been able to prevent seeds from reaching government depots (e.g. groundnut in Garadpur in 2010), and instead sell the seed privately, points to the need for government regulation of such malpractices.
- There is a need for increased planning at the gram panchayat level to ensure farmers are able to access inputs including land, information, seeds and other essentials. The area cultivated per household has decreased substantially in ten years, making subsistence farming difficult for the majority. In Ersama fresh and saline water management is a major concern for farmers having their paddy fields alongside estuarine rivers, or next to prawn farms. Procuring farm labour has become a headache for marginal and small farmers who find it difficult to pay high rates. Improving access to crop loans and crop insurance will improve this scenario.
- The fisheries department has started issuing licenses for prawn cultivation along the coastline of Odisha, however this process is in no way being speedily implemented. Registration of prawn farms should aid planning along the coast line, both for mangrove and other forestation projects, and also to ensure those farming prawn do so with the support they need.
- Irrigation in the Garadpur site is in a pitiful state, and needs to be paid serious attention (Chapter 8). The numerous rivers running through Garadpur contain a plentiful supply of fresh water, so the irrigation department ought to see that water for agriculture is made available to farmers.
- Credit support to farmers is an area in need of vast improvement. Banks seem to take advantage of the lack of information afforded to farmers, for example, by requesting farmers to repay loans taken prior to the 1999 super-cyclone, which farmers thought had been cancelled. The mortgaging of land for small cash loans is indicative of the seriousness of the credit scenario. Land mortgaging is not prevalent in Garadpur, but in Erasama 10% of households (all marginal farmers) have mortgaged their land for small cash loans. This indicates that marginal farmers are not able to access the (credit) support they require.
- Cooperative societies can provide the sizeable loans farmers' need, and there is little doubt the crop insurance scheme is serving an important role for farmers in Garadpur. This scheme

ought to be rolled out to other areas, such as to Erasama where farmers are unaware of the scheme. Efforts are required to enrol marginal and small farmers.

- Food security trends are worrying, based upon the simple 'rice as a proxy for food security' model used in this chapter. There is an urgent need for Below Poverty Line (BPL) rice to be targeted properly to those households not producing sufficient rice – as things stand many households do not produce rice nor receive PDS rice, and as a result live in hunger (see Chapter 13).

Chapter 5: Migration and remittances

This chapter seeks to understand the phenomenon of migration in our study sites. It starts by examining the extent of migration, and work opportunities in and outside the villages over the past ten years. It examines where migrants head and why, including the pull factors that take individuals to certain locations over others. Remittances, increasingly a necessary income source for households who otherwise cannot maintain themselves, are investigated as are some of the reasons that lead migrants to return home, such as poor living and working conditions. The depleting base of village livelihoods, namely agriculture (Chapter 4) and other livelihoods covered in the subsequent Chapters 6 and 7, combined with a deficit of agency support for such livelihoods, seem to be the principle factor pushing people (mainly male youngsters with few skills) to migrate.

5.1 Trends in migration

In the past ten years there has been a tremendous increase in migration, especially to work in the hugely diverse private sector (i.e. registered or non-registered private companies or businesses). In 2010, 49% of the 240 sampled households for the two sites, Erasama and Garadpur, had at least one migrant household member³⁰. 62 households from Erasama and 56 households from Garadpur had 78 and 89 migrant household members, respectively. There is little ward-wise variation with respect to the number of households having a migrant member – of 30 sampled households in each ward between 10 and 19 households (one-third and two-thirds of all households) have at least one migrant (Table 5.1).

Erasama site			Garadpur site		
Ward	Number of households with migrant	Total number migrants	Ward	Number of households with migrant	Total number migrants
Garia (n=30)	13	17	Samsara (n=30)	10	14
Shuakunda (n=30)	15	19	Jamunabad (n=30)	17	26
Sahadabedi (n=30)	19	24	Marilo (n=30)	17	27
Kalabedi (n=30)	15	18	Behula (n=30)	12	22
Total (n=120)	62	78	Total (n=120)	56	89

Table 5.1: Number of households having a migrant member, and total number of migrants

There are four types of work that the migrants from our research sites pursue – private sector employment, government sector, wage labour, and self-employment. Some 79% of migrants work in the private sector (131 of 167 migrants), 16% work in the government sector (27 of 167 migrants), while just 2% and 3% work as wage labourers or are self-employed. Of Erasama's migrants, 90% work in the private sector (70 of 78 migrants), compared to 69% of Garadpur's migrants (61 of 89 migrants). The majority of 'migrant' government employees are from the Garadpur site, 25 out of 89 migrants (28%), as compared to just two migrants from Erasama (3%).

³⁰ We define a migrant as a member of a household who stays away from his home for most of the time for work, i.e. economic reasons, but who is considered a household member. Therefore government employees are also considered migrants if they are staying away from their home but remitting money. For the purpose of enumeration, we do not consider household members who stay away for education, or to accompany a migrant but not to work (e.g. a wife), as migrants.

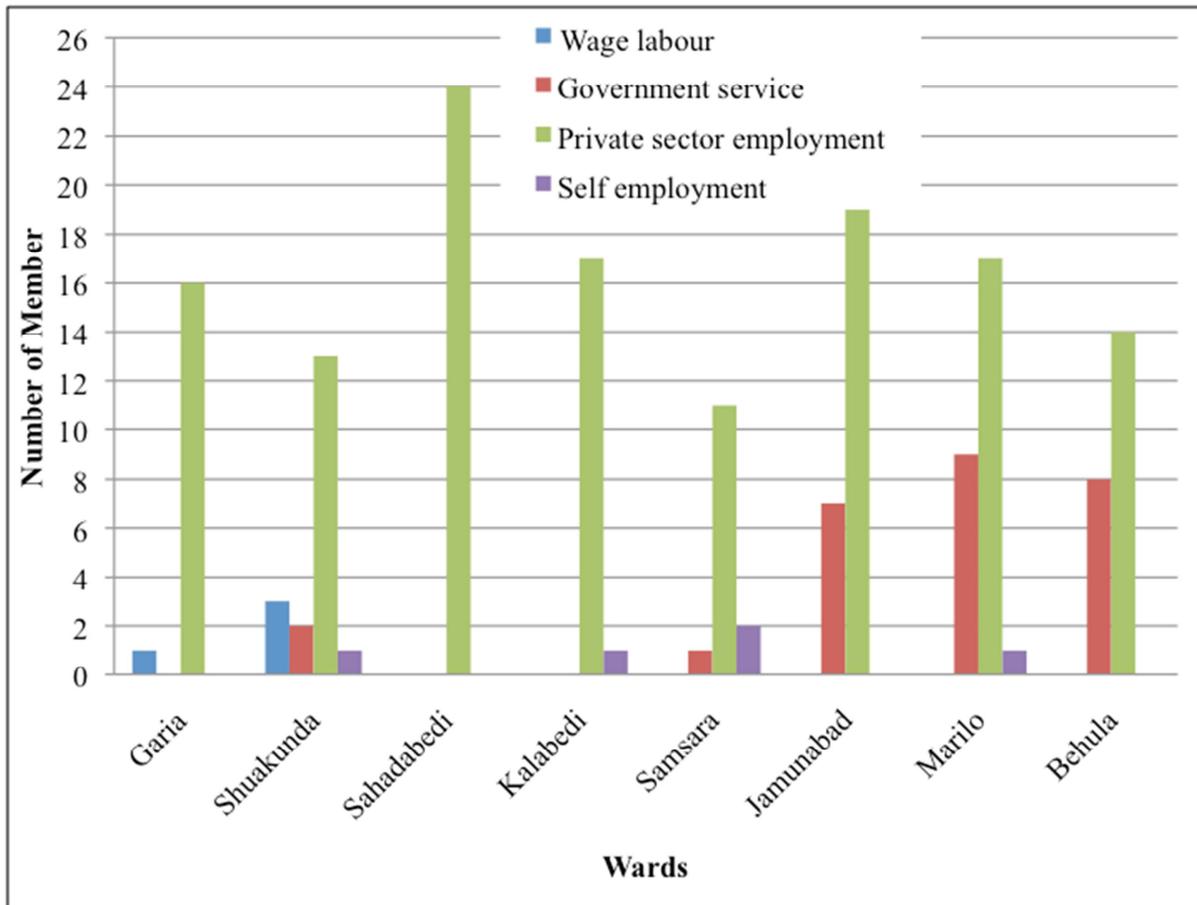


Chart 5.1: Ward-wise (n=30) analysis of type of work pursued by migrant, for both sites

Migration, in particular to work in the private sector, i.e. for private companies, is a rapidly increasing phenomena. In the Erasama site, there has been a steady increase in such migration over the decade, from 19 households (16% of households) having at least one member migrate in 1999 to 61 households (51%) having the same in 2009. In Garadpur, 33 households (28% of households) had migrants in 1999, and this remained stable till 2004, before it rose to 51 households (43%) in 2009. This trend is shown in Chart 5.2.

There have been no major changes in the number of households pursuing village-based livelihoods over the past decade, though it is evident that fewer households are cultivating, working as agricultural labour or doing wage work in 2009-10 as compared to 1999 (Table 5.2). Self-employment in villages has remained constant (though in Erasama it had to recover from a steep decline in the aftermath of the super-cyclone), and private sector work in villages is practically non-existent. The rise in migration most probably relates to a lack of economic development in the research locales combined with resource use pressure and population growth, which seems to push villagers outside to earn and remit cash earnings. Besides this there is a sense of restlessness amongst the youth, and to migrate outside presents an opportunity for exploration and new experiences. Some migrants and their family members consider the status of working outside the village or Odisha in a prestigious way, though the parents of migrants generally worry a great deal for the wellbeing of their children, mostly sons (only 3% of migrants are female).

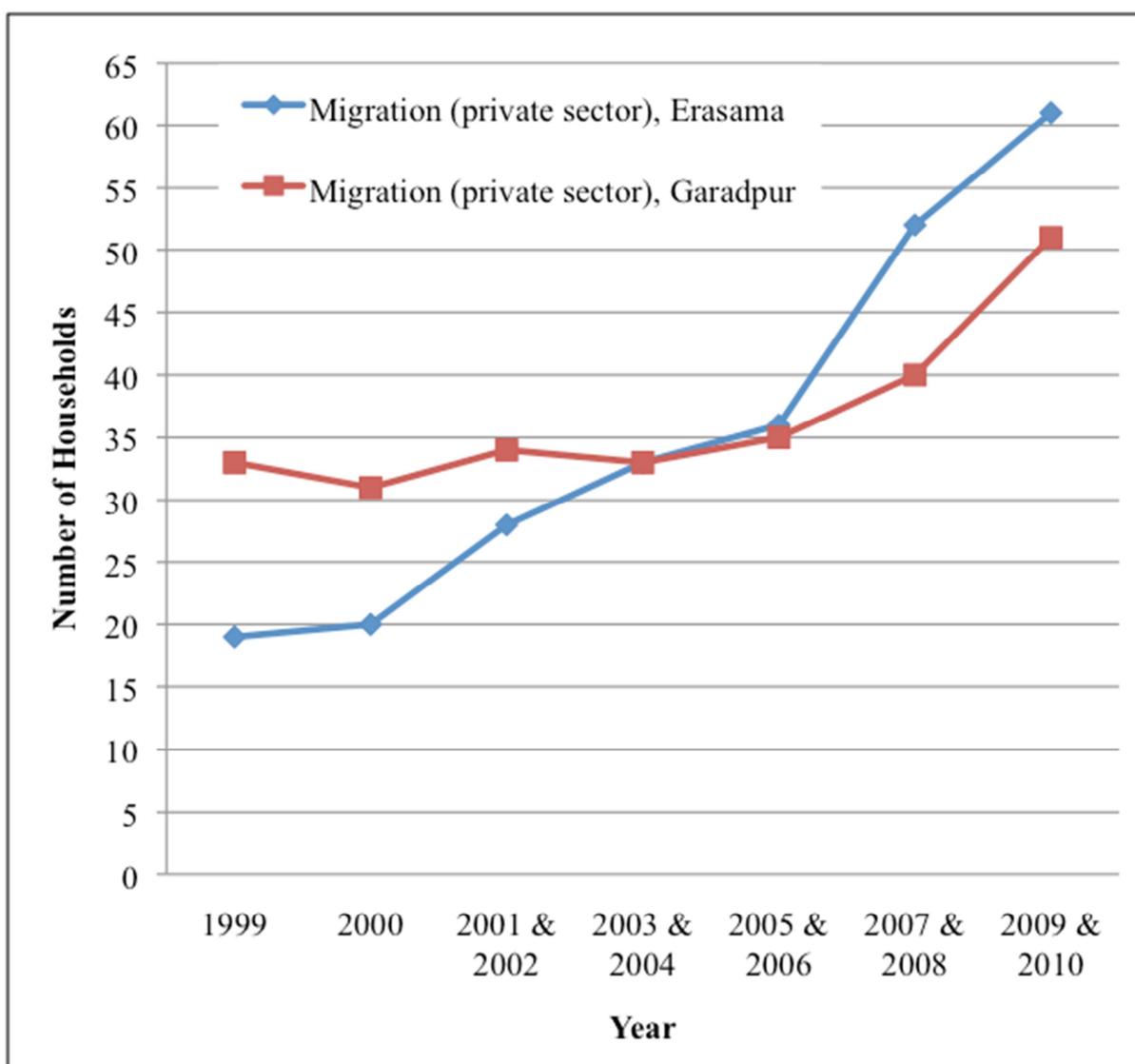


Chart 5.2: Number of households having a member migrate (private sector), for both sites

Type of livelihood	Erasama site (n = 120)		Garadpur site (n = 120)	
	1999	2010	1999	2010
Cultivation in village	109	97	89	80
Agricultural labour in village	101	86	63	58
Agricultural labour outside village (but nearby)	66	66	45	38
Wage labour in village	93	84	49	45
Wage labour outside village (but nearby)	72	68	41	40
Self-employed in village	17	17	31	34
Private sector in village	1	0	0	0
Private sector (migration)	19	61	33	51
Government sector (in village or migratory)	3	6	20	23

Table 5.2: Number of households pursuing different village-based livelihoods, 1999 and 2010

Garadpur's migrants are of an older age than Erasama's (Table 5.3). Garadpur's 89 migrants have a mean average age of 34 years, compared to Erasama's 78 migrants' mean average age of 24 – a ten years difference in mean average age. Yet, there is no correlation between occupation type and age.

Research site	Average age of migrant, in years (number of migrants in brackets)				
	Wage labour	Government service	Private sector	Self employment	Total
Erasama	29 (4)	29.5 (2)	23.9 (70)	29 (2)	24.4 (78)
Garadpur	NA	36.7 (25)	31.9 (61)	42.7 (3)	33.6 (89)

Table 5.3: Mean average age of migrants, by employment type

5.2 Destinations of migrants

The vast majority of migrants from both sites are heading outside the state of Odisha and are employed in the private sector, as shown in Chart 5.3. Some 90 of 167 migrants are working outside of Odisha (54% of migrants), compared with 63 working within Odisha but outside their home district (38%) and 14 working within their home district but staying away from home (8% of migrants). Some 92% of migrants working outside of Odisha do so in the private sector (83 of 90 migrants), compared to 60% of migrants working inside Odisha but outside of their home district (38 of 63 migrants). The majority of government sector employees are working within Odisha but outside of their home district (74% of government employee migrants, or 20 of 27 such migrants).

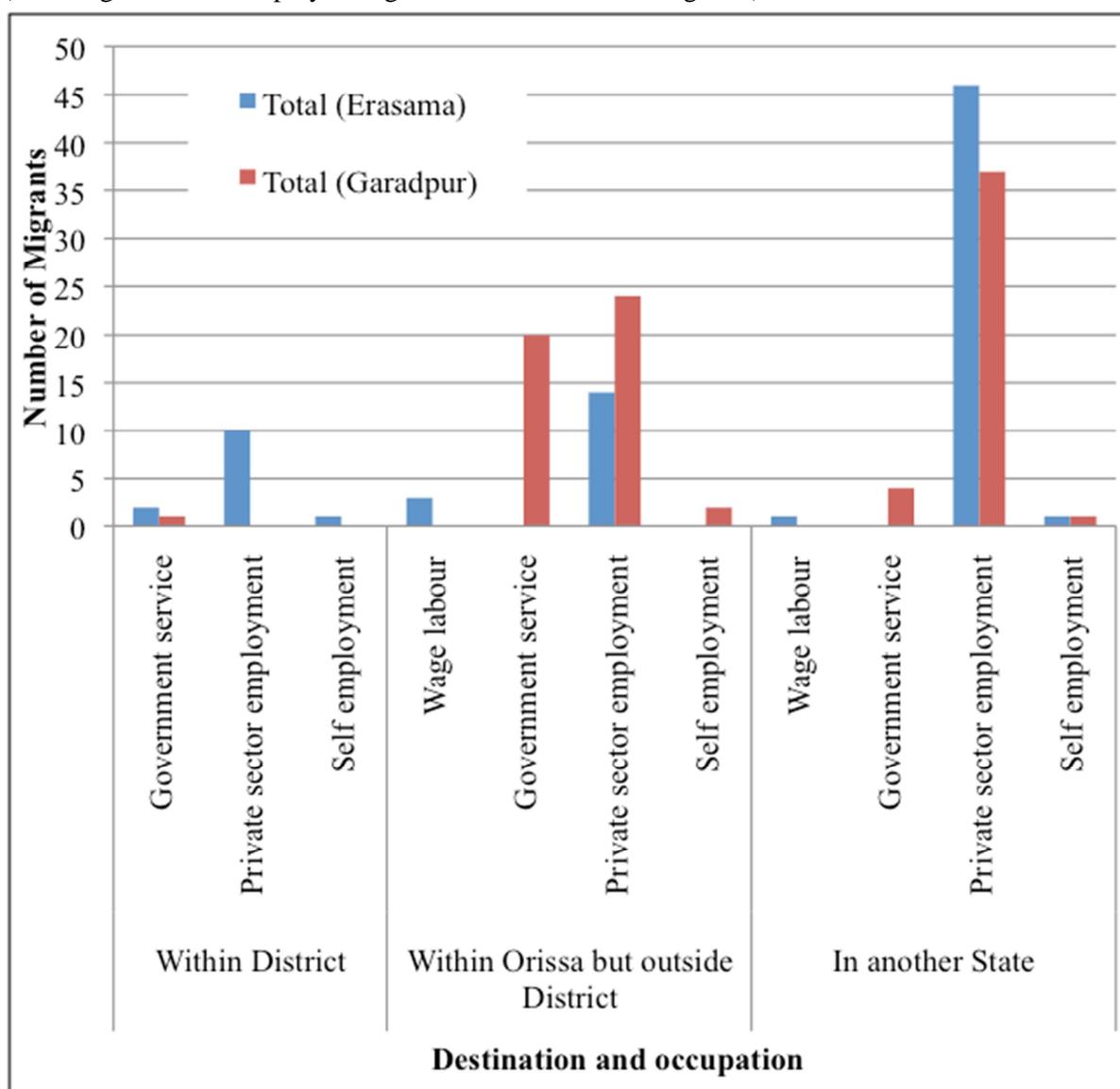


Chart 5.3: Destination of migrants and their occupation, for both sites

Looking in detail at the destination of migrants, we see that for migrants working outside of Odisha, the most popular destinations are Maharashtra (Mumbai/Pune/Nashik), 32 migrants, and Tamil Nadu (Chennai), 20 migrants (Chart 5.4). Another 38 migrants work in Delhi/Gurgaon, Bangalore, Kolkata, and some nine other Indian states – from Kerala to Uttarakhand. Within Odisha, 11 and 17 migrants work in Bhubaneswar and Cuttack, respectively, while another 33 migrants work across the four corners of the state, from Mayurbhanj in the northeast, to Sundargarh in the northwest, to Malkangiri in the southwest, and to Puri on the coast. Finally, 14 of 167 migrants work within their home district.

In Erasama’s Shuakunda, villagers said that migration began following the super-cyclone, due to a lack of employment opportunity, and that the youth, many of whom have completed higher studies, migrate because they are reluctant to do hard labour work in the villages. Nowadays many of them go through a relative or friend, but in earlier days contractors (or middle men) used to motivate many of them to migrate. One youth from Sahadabedi said that he worked for 12 months in the pipe industry in Kerala. A contractor in Balikuda had convinced him and others to go, and had accompanied them. Once there, the contractor would take their pay on the 1st of every month, and would only give it to them on the 25th. The company would give its workers a free meal, but the contractor would tell the boys from Odisha that it was not free, and would deduct the amount from their salaries. The older boys will no longer work through this man, so these days the middle man, with a local accomplice, is approaching 15-17 year old ‘first-timers’ in a neighbouring village.

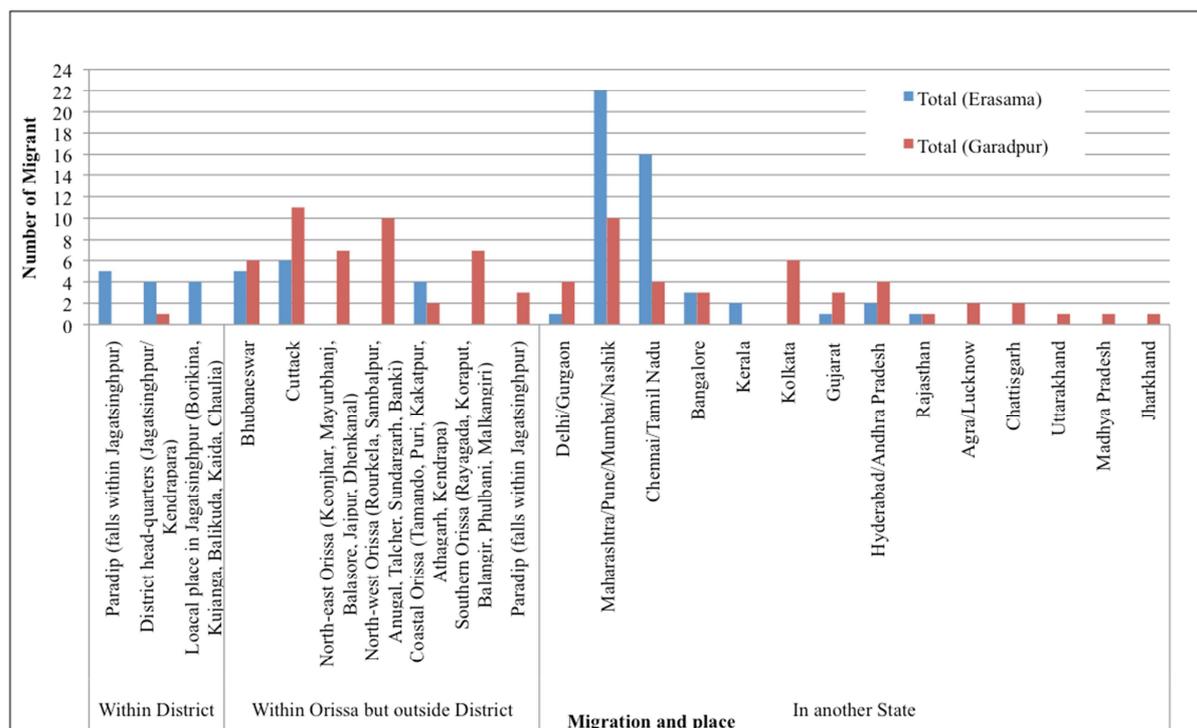


Chart 5.4: Destination of migrants, for both sites

Kalabedi’s villagers said that the loss of productivity of farm land, since the super-cyclone, has led to youth migration. Household sub-division has also caused a reduction in landholding, and led to migration. Some unskilled migrants began by working in hotels within the district, and later moved to

far off places such as Tamil Nadu. One Garia migrant first left his village before the super-cyclone, due to financial crisis. Numerous testimonies reveal that villagers are migrating after getting into debt through, for example, prawn farming. Delays in the payment of NREGS wages is also cited by villagers as a cause of migration, though the MLA of Balikuda and Erasama expressed the view that NREGS is checking migration (an unlikely proposition given the state of NREGS, see Chapter 6).

In Garadpur's Samsara, one youth said that he migrated because his family had no money to survive – they have no land to cultivate and no regular source of income. A respondent in Marilo said that she sold her land to marry her daughter, though with little dowry she had to marry her into a poor family. The daughter now lives in Gujarat with her husband, and on the mother's request, her brother also stays there and works as a daily labourer. The daughter has requested her mother to find a local job for her brother, but no such job is available.

In summary, a variety of personal circumstances dictate household level decisions around migration. But these unfold within commonly experienced structural constraints to do with the lack of economic opportunity and ineffectiveness of state employment programmes in and around their residential villages.

5.3 Remittances

To analyse remittances, only those migrants who have been working for 12 months or more are considered. 55 and 76 such migrants are found in Erasama and Garadpur, some 71% and 85% of the total number of current migrants, respectively³¹. Remittances vary a great deal, from 0 rupees in the case of migrants who struggle to get by in their place of work, but who probably buy gifts for their family on their visits to the home, to 150,000 rupees per year (as in the case of a 28 year old female from Marilo who works in the government sector in Odisha's Keonjhar District). In between these extreme examples lie the majority of migrants, who remit a median average of 8,000 and 8,500 rupees per annum, for Erasama and Garadpur respectively, to their families back home (Table 5.4). The mean average remittances, 11,300 and 16,800 rupees per annum for the two respective sites, are higher than the median remittances because of a minority of high earning migrants. The mean average remittance for the entire data set of 131 migrants is 14,500 rupees per annum.

Occupation	Number of migrant	Mean	Median	Minimum	Maximum
Wage labour	4	3875	3000	0	9500
Government sector	2	61000	61000	61000	61000
Private sector	47	10234	9500	0	55000
Self employment	2	750	750	0	1500
Erasama total	55	11273	8000	0	61000
Government sector	22	28882	12500	0	150000
Private sector	51	12444	8100	0	60000
Self employment	3	2467	3000	0	4400
Garadpur total	76	16809	8500	0	150000

Table 5.4: Annual remittances, by occupation and site totals, in Indian rupees

³¹ The breakdown of these is as follows: In Erasama, 4 are wage labourers, 2 government employees, 47 in private sector, and 2 self-employed. In Garadpur, 22 are in government service, 51 in private sector, and 3 self-employed.

Examining remittances by occupation type, it is evident that wage labourers and self-employed migrants send the least remittances (Table 5.4). Government employees remit the highest amount as compared to other occupations, whereas private sector employment remittances lie in between and exhibit high variability. Migrants from Garadpur working as government sector employees on the whole remit large amounts, though a few do not remit because in some cases they are staying with other members of the family. The mean annual remittance for government sector work is 28,900 rupees, though the median is 12,500 rupees per annum, which shows a high variability in the types of work government employees undertake – from well paid to low paid.

Private sector migrants' remittances are of chief concern here, because such migrants comprise 79% of all recorded migrants in the two research sites. Private sector migrants make up 75% of the 131 households analysed for remittances, and with 47 and 51 migrants from the Erasama and Garadpur site respectively, comparison of remittances is possible. The data shows that Garadpur's private sector migrants earn more on average than Erasama's, 12,400 rupees per annum compared to 10,200 rupees. However the median average reveals another story; Garadpur's private sector migrants remit a median average of 8,100 rupees per annum compared to 9,500 rupees for Erasama's migrants. This translates to a median average of 675 and 790 rupees per month for Garadpur and Erasama respectively. The data furthers a suspicion that Garadpur contains a higher proportion of better-educated people who can earn and remit greater amounts, but that it also contains a large proportion of poorly educated and young migrants who earn and remit less. In Erasama on the other hand, migrants are more likely to earn similar amounts, and hence the mean and median values lie closer to one another. This suggests a wider inequality amongst the sampled households in Garadpur than Erasama, a finding confirmed also by the experiences of housing recovery (see Chapter 9).

Kalabedi's villagers said that youth migrants from their village are living hand-to-mouth whilst away, and earning 3,000-5,000 rupees per month, are only able to remit 1,000-1,500 rupees per month. Remittances can also be extremely irregular, dictated by personal circumstance. But household level testimonies also provided a glimpse into the difficult working conditions confronting migrants. The two sons of a Sahadabedi respondent work in Pune and remit 2,000 rupees per month, with which the respondent hopes to repay a debt to a village *mahajan* (money-lender). His sons work for an automobile company, earning 100 rupees per eight hours, plus overtime, and with one week off per week. There is no labour union. This afflicts migrants from Garadpur too. A youth from Marilo, working in Gujarat, works 12 hours a day as a wage labourer, and sometimes remits 500-1,000 rupees, though irregularly. When he first arrived in Gujarat, he was bullied and money was stolen from him. He was even robbed while travelling home on the train one time. Nowadays he has become weak through the long hours he works. But despite such irregularity, remittances can and do make a concrete difference to households. Besides, not all cases are irregular. A youth from Samsara, mentioned earlier, manages to earn up to 5,000 rupees per month with overtime, and spends 2,000 rupees per month on his expenditure, sending home 2,000-2,500 rupees to his family. His family, he says, are now living a better life, having improved clothes and more food to eat, and also having money in case of a medical emergency.

Garadpur's migrants are, generally speaking, older (Table 5.3) and better educated than Erasama's. There is however no correlation between age and amount of remittance, or education and amount of

remittance, for the Garadpur dataset. In Erasama where the majority of migrants included in the dataset are private sector workers, there is a moderate and high significant correlation between education level and remittance, and a low and significant correlation between age and amount of remittance.

5.4 Return of migrants

A number of observed factors have led migrant workers to return home to their village. Many migrants find the conditions too tough to bear, or even dangerous and so return home. A Samsara resident said that he had migrated before the super-cyclone, to Delhi and then to Mumbai, but because he had to work so hard for dwindling returns, he decided to return, preferring to work hard locally and return home to his family each day. Another Samsara respondent said that her husband had migrated to Mumbai recently, but had returned because the work he was assigned was dangerous to his life – he was made to work six feet underground. The respondent and her husband feel it is better to earn (less) and eat at home than to risk death in a faraway place.

Another reason for returning home is illness. The Samsara respondent's husband had earlier worked in Mumbai for seven months, before the 2008 flood, and had managed to repay a debt he owed, but returned home after falling ill. Marilo's ward member said that his son had been working in Haryana at the time of the super-cyclone, but became ill with tuberculosis. His treatment at a hospital in Cuttack on his return home cost the family 40,000 rupees, and since then his father refuses to let his son migrate again. Until recently his two other sons worked at a jute mill in Balasore District, but this work has dried up, and the sons are now living in Marilo.

Migrants also return home when they tire of exploitation in the hands of contractors and companies. A Kalabedi respondent had migrated to Gujarat for four months after incurring losses on his prawn farm. He worked for a refined oil company in the packing department, however the contractor with whom they had travelled misused their wages and caused the party of seven from Kalabedi to suffer. The respondent claims they could not even get proper water to drink in Gujarat.

Finally, migrants return home when called to do so by family or to carry out some important work in their native place. The Kalabedi respondent who had worked in Gujarat had also migrated to Tamil Nadu in 2009, however he returned when he received the news that his grandmother was seriously ill. After 15 days of his return she passed away, but afterwards he felt no need to migrate, for he feels he earns or saves no more money locally than he does outside. Another youth returned to Kalabedi to have his voter ID card processed, but having returned decided not to migrate again.

Besides suffering illness when away, difficult working conditions combined with miserly pay act as a major disincentive to continue. A young educated lady from Garia who makes vests in a Chennai based knitting company complained that her working environment there is like a prison, that they rarely have paid holidays even during festivals, and that they do not get a day off in a week, not even at the weekend. Some of Kalabedi and Sahadabedi's migrants work in spinning mills or with machinery parts, and claim their working conditions are terrible, for which reason they frequently fall ill without their bosses spending a penny on them.

5.5 Migration: Summary and key recommendations

This chapter has sought to examine the trends in occupation over the ten years, to understand why villagers migrate. It has then sought to explore where migrants head and why, how much they earn and remit, and the reasons for their return home. The research suggests that migration is spontaneous and unregulated, and that working conditions for private sector workers and labourers are often exploitative and sometimes dangerous. However it also shows that migration is an important source of finance for households who otherwise cannot maintain themselves, and provides a route for youths to escape from their dreary villages and the limited work opportunities they present, to explore far off places and meet new people.

Importantly, this research has not detected any firm causal relationship between the super-cyclone or floods and the rise in migration. Internal migration is on the rise throughout India, and indeed, throughout Asia (Kundu, 2009). Powerful push-factors to do with the lack of growth in work opportunities in the sample villages exist, and migration is an important valve to release tension that could otherwise be explosive. While the impacts of the super-cyclone or floods have certainly not helped key local opportunities to do with agriculture, wage labour or indeed, the savings needed for the start of local enterprise, they cannot be held solely responsible either. As the discussion on agriculture in Chapter 4 has shown, what we see in the research sites reflect larger constraints and the lack of appropriately tailored assistance. Besides, population growth over time and increased fragmentation of land are undeniably important in influencing migration.

It is also difficult to see how NREGS can in any way be checking migration (see Chapter 6) although several political persons when interviewed claim this to be the case. Fewer households are participating in traditional labour work in and around their villages in the present day as compared to 1999, and migration soaks up this extra pool of labour. The younger generation are generally uninterested in agriculture and definitely aloof to manual labour work. However with 54% of migrants (from the 240 household sample) leaving their home state of Odisha to seek work, one can only conclude that the destination states benefit from this cheap uneducated labour force. Remittances are not high. Garadpur's private sector migrants remit a median average of 8,100 rupees per annum compared to 9,500 rupees for Erasama's migrants. This translates to a median average of 675 and 790 rupees per month for Garadpur and Erasama respectively, a pitiful amount considering food price inflation rates. Besides, as this chapter has shown, simple precedent plays a very important role in migrants' decisions to choose particular decisions, in addition to any other 'pull-factors' attributable to those destinations, such as the presence of factories and industry.

If the ideal of freedom of movement is to be upheld, then there can be no argument against migration. Migrants however should be able to work gainfully and in a safe environment. It seems obvious to point out that the oft-stated goal of some development programmes to check migration is out-dated and of little help for monitoring projects. Government attitudes towards internal and external migration are also changing (Harris, 2005). Besides, there is a wealth of dedicated writing that has considered the economic implications for rural-urban migration. There are lively debates on whether rural-urban migrants, while being at risk of being below the poverty line, are nonetheless at a lower risk than non-migrants (Sarangi and Kundu, 2007). This research suggests that while migration is arduous and risky, and remittances often pitiful, rural households do depend on it. It has not been

within the scope of this study to consider the actual status of migrants themselves, in their migrant destinations.

There are no specific recommendations to offer with respect to migration, beyond the one key message of this study. This research shows that migration is linked to a deficit of opportunity in the study areas, and often, the return of migrant workers signals a desperate situation for these households. It suffices to say that urgent interventions are needed with respect to other livelihoods areas, and the functioning of NREGS. Recommendations made in the other relevant chapters also therefore have a bearing on migration.

Chapter 6: Mahatma Gandhi National Rural Employment Guarantee Scheme

The Mahatma Gandhi National Rural Employment Guarantee Act (MG-NREGA), 2005, hereafter referred to as NREGA, guarantees 100 days of employment in a financial year to any rural household whose adult members are willing to do unskilled manual work. The Act came into force from February 2006 in 200 districts across India, and was later extended to all the rural districts of India from the financial year 2008-09, including our research sites' districts, Jagatsinghpur and Kendrapara. NREGA is a highly significant act in the history of contemporary India, because it attempts to secure livelihood security for the poor while also involving its beneficiaries in the planning and social audit of the scheme (Kumar, 2009)³². This chapter investigates the coverage of the National Rural Employment Guarantee Scheme (hereafter referred to as NREGS) in our sample wards, as well as the problems with the programme and its implementation. In Chapter 13, NREGS is revisited, especially to consider official reactions to the problems reported.

6.1 Coverage of NREGS

NREGS has been in operation in the Erasama and Garadpur research sites since 2009. In principle an effectively implemented NREGS could be a timely and useful supplement to peoples' livelihoods, particularly in Erasama, given that people are migrating in order to take up low paid private sector work in faraway places (Chapter 5). This research reveals a number of core problems with the way in which NREGS is being implemented.

In order to avail of work under NREGS, a household must have a job card. As one resident explained, 'Yes there is a list with the panchayat office. The *sarpanch* has made a list along with the ward members. This is submitted to the block office which then provides the job card'. As far as job cards go, the picture amongst our surveyed households is a positive one. Of Erasama's 120 sampled households, 89 households (74% of the sample) have received their job cards, the vast majority (96% of recipients) in 2009. In Garadpur 75 households have got their job cards (63% of the sample), with 17 (all from Patkura Gram Panchayat) receiving cards in 2009 and 58 households (77% of recipients) getting cards in 2010. So getting a job card has not been a problem for most households.

However for some households even getting a job card is difficult, and respondents reported a range of difficulties in obtaining help from local political functionaries. In the Garadpur site, of the 45 households that do not have a job card, some 13 told us that they had applied but had so far (by July/August 2010) not received the card. These 13 households were from all four wards in our sample. For example, a widow from Patkura Gram Panchayat's Jamunabad said 'the key persons have not allowed me to avail the [job] card. I complained to the panchayat office and have submitted my documents to the office, but the authorities denied me, saying the time limit is finished, and that I should have applied earlier. The person said my documents might have been misplaced. I had to forcefully re-submit the documents'. When asked why this has happened, she said 'the ward member and us support different parties. He should have informed me about the card [but did not]. Many people from our village have received the card but I did not. The ward member is from the Orissa Gana Parishad (OGP) and we are BJD supporters' (respondent no. 167, 26/07/10). This example

³² Kumar, A. 2009 'Monitoring report of Dhar, November 2009', see http://nrega.nic.in/CEGC/MGNREGA_Monitoring_report_of_Dhar%202009.pdf (accessed November 2010)

serves to show the interaction of party politics with NREGS (and more generally, with government schemes) at the village level in the Garadpur site.

In the Erasama's Gadaharishpur Gram Panchayat, one widow told us, 'I had a job card, in my husband's name, but when he died, I requested the *sarpanch* to change it to my name, but nothing has been done so far. I wish I had a job card so that I could go for labour work' (respondent no. 4). This lady should not actually need to change the name, because her name should already be on the card. She ekes out a living providing for her two children, since her husband died following a prolonged illness that began during the super-cyclone, and awaits her 11-year old son to become old enough to migrate to send her remittance. In Padmapur Gram Panchayat, another woman and her daughter-in-law, whose husband works in the opera, told us that they had asked the *grama sathi* for a job card, but that the *grama sathi* rebuked them, saying that they did not have a household member who could do 'hard work' (respondent no. 73).

The NREGS should cover the expense of the photograph needed for respondents' job card application. Nowadays most gram panchayat offices have a digital camera, meaning villagers do not have to pay the cost (as declared by the Gadaharishpur *sarpanch*). Villagers in Padmapur Gram Panchayat's Kalabedi who made their application in 2009 did pay for the photo however, and were not informed that this expense should have been refunded to them. Sahadabedi's job card holders each paid 30 rupees for their photograph.

6.2 Work and NREGS

The larger question emerging from this research is whether those households that have received their cards have been able to utilise their job cards to work the entitled 100 days, and receive the proper payment for work done. A host of difficulties were observed, chiefly involving the expedient use of heavy machinery by contractors to get arduous physical work done quickly. However, this resulted in the production of an elaborate facade to record the involvement of job card holders and their apparent engagement in paid work, when in fact they received either nothing or very little. The ensuing mal-governance implicated a variety of local functionaries.

During fieldwork in Erasama NREGS work was witnessed in Sahadabedi, where women and men – in separate parties – worked to renovate their village road by piling soil alongside the cement road. In Kalabedi men were seen digging soil from a roadside field and piling it upon the road. In Shuakunda men were working alongside tractors with trailers to dig up soil and improve a road, and in Garia, a JCB was seen excavating a pond besides the main road. During fieldwork in Garadpur no such work was witnessed, and villagers generally said that there was work ongoing but not in their villages. Villagers in Marilo said that they had started work on the road running behind their village, but the soil was hard and machinery took over the job.

All surveyed households having a job card told us that they have worked under NREGS, however the in-depth interviews with respondents revealed the complexities of what actually goes on with respect to the implementation of NREGS. We collected numerous testimonies from respondents, between March and August 2010, but one says it all, 'you must be aware about the job card? We are sitting at

home with our job cards and the machines are doing the work. Even I have not signed in the job card; the authorities are getting our numbers from the panchayat, and withdrawing the whole amount. Recently our *grama sathi* and two neighbouring wards' *grama sathis* have withdrawn 10,000 rupees from my account. When I asked our *grama sathi* about it, she said that she knew who had withdrawn my money but that she had no role in it. However I came to know that she is involved. They have made a fake signature in the cheque book and they have a tie up with the bank manager to withdraw the whole amount. Even when we complained to the new *sarpanch*, and he tried to act, he was shouted at' (respondent no. 72, from Erasama's Padmapur Gram Panchayat). This example shows that not all village-level functionaries are willing to so obviously extort money, for in this case the respondent shows how the *sarpanch* was powerless in front of other local functionaries.

The formal records of NREGS held by the state government are frequently unverifiable, and upon investigation revealed the systematic misuse of the recording system by local functionaries and contractors to make money at the expense of poor people. For example, the online job card details³³ of an Erasama household from Padmapur show that the son and daughter-in-law worked for exactly 13 days each in May 2009 to excavate a tank, and exactly 13 days each in August 2009 to make an earth-moorum road, and for these 52 man-days were paid 5,632 rupees, equivalent to 108 rupees per day, more than the prevailing Odisha rate of 90 rupees/day³⁴. The respondent confirmed that the contractor and *grama sathi* had withdrawn this money (respondent no. 64). In another example from Erasama's Gadaharishpur, an online record showed three higher caste household members as eligible to work under NREGS: the husband, the wife and the husband's 70 year old mother. It shows that between 19/05/08 and 01/03/10, the husband worked for 74 days, the wife worked for 64 days, and the husband's mother for 24 days, a total of 162 days. They supposedly worked to renovate a pond, and to make an earth-moorum road, and received 18,791 rupees for the work, which works out on average at 116 rupees per day, again higher than the Odisha rate of 90 rupees per day. But the wife when interviewed categorically stated that while her husband went out for some work, neither she nor her mother-in-law were strong enough to do such work; and did not. She also said that she could not work alongside lower castes, because it would not be considered appropriate (respondent no. 13, 25/03/10).

Similar examples are available from Garadpur too. One man from Garadpur's Patkura Gram Panchayat told us that in 2009 he worked for just six days, and was paid 70 rupees per day, a total of 420 rupees (respondent no. 146, 22/07/10). His online records confirm this. In 2010, he told us, he has not worked because the soil is too hard. He says he no longer has his job card, and machines are doing the work, for which he receives 15 rupees per day. His online record shows he worked for 12 days from 20/05/10 and received 1,080 rupees, a rate of 90 rupees per day. If, as he claims, he will be paid 15 rupees per day for the 12 days, then he will receive 180 rupees, meaning the remaining 900 rupees will be kept by the contractor. The online record of a man (respondent no. 190) from Garadpur's Tikanpur Gram Panchayat shows that he received 1,260 rupees for construction of a road in February 2010, at a rate of 90 rupees per day for the 14 days he worked. The records also claim that he worked for 18 days in April and May, on a road and some land development work, and was paid 1,620 rupees.

³³ See <http://www.nrega.nic.in/netnrega/home.aspx> (accessed on 26/01/2011). Using this portal it is possible to access the details of each and every individual job card holder.

³⁴ As of 1 January 2011, the revised rate is 125 rupees per day (see <http://www.nrega.nic.in/netnrega/home.aspx> for link.)

However this man was unaware of the latter 18 days work. This provides further evidence of the fudging of NREGS records in the Garadpur site.

Newspaper reports confirm that findings in the research site are not anomalies. On 17/03/10 an article titled 'NREGS: Machines work for 100 days, men felicitated' was published in the New Indian Express. The article, written from Paradip in Jagatsinghpur District, revealed that the 'skeletons tumbled' when the district administration attempted to felicitate 522 job card holders in recognition of their work. It became apparent that job cards had been issued in the name of dead persons and government employees, and that job card holders were not being given work as machines were used in their names to expedite the work process³⁵. Throughout 2010 more such articles were published.

Respondents quite readily told us their concerns with NREGS in the in-depth interviews that were conducted later in the fieldwork periods. However beforehand, during the enumeration of household surveys by team members, it proved more difficult to collect data in this regards, because some respondents feel ill at ease revealing political dramas to outsiders. Chart 6.1 gives some indication of NREGS coverage for the 120 sample households in Garadpur (site totals are on the right). 18 households (15% of households) said they have a job card and have worked under NREGS, often for five or ten days. 28 households (23% of the sample) have a job card but have not had work made available to them, and 29 households (24% of households) have a card and told us that machines are doing the work and they are receiving about 10 or 15 rupees per day. Finally 45 households (38%) have not received their job card, in many cases because they do not want one and thus have not applied, but in some cases because it is being denied to them.

³⁵ 'NREGS: Machines work for 100 days, men felicitated' New Indian Express, Bhubaneswar, 11/05/10

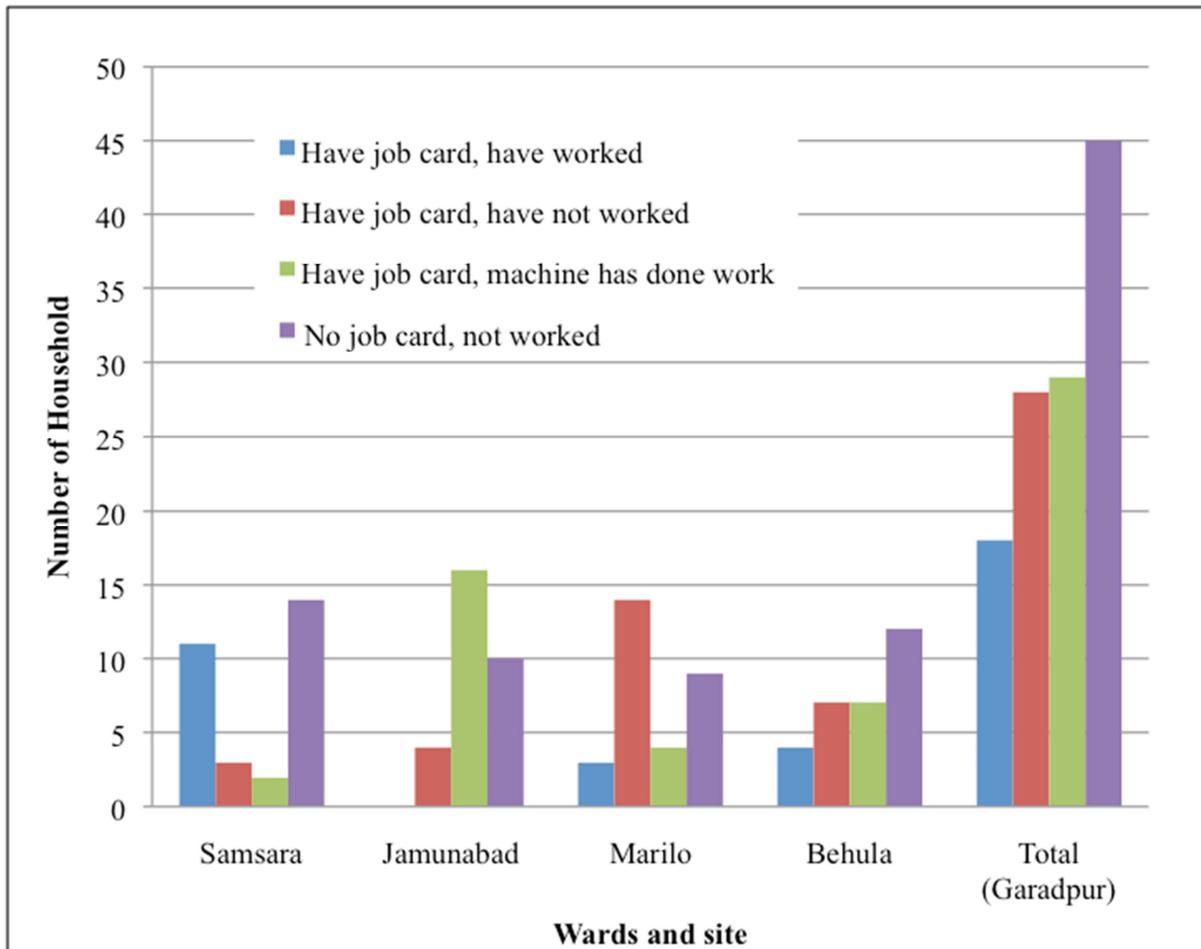


Chart 6.1: Garadpur: Ward-wise (n=30) and site level (n=120) examination of NREGS

6.3 Major problems and areas of improvement

This section further develops three key areas within which serious problems were encountered in the proper functioning of NREGS in the study sites. Equally, as this study contends, these are also areas within which there is potential for reform in order to make NREGS much more appealing to locals and more viable, as a result.

Decision-making over NREGS works

One of the major problems with NREGS as it stands is that villagers are not getting a say in which works should be undertaken. Bureaucrats at the block and district levels, off the record during interview, made it clear they do not trust locally elected people's representatives. *Sarpanches* of all parties (BJD and opposition) cannot say the same about the administrators. *Sarpanches* interviewed for the study said that NREGS was currently the only government programme being handled by gram panchayats. *Sarpanches* received a salary of just 600 rupees per month in 2010, whereas ward members received much less, perhaps 60 rupees per month ('not enough to purchase my bidis' remarked one ward member). With salaries so low, and NREGS being the sole project handled by gram panchayat functionaries, it is easy to understand how and why funds are being misused.

Villagers have strong views on who they consider are responsible for the problems plaguing NREGS. An Erasama respondent said 'whom should we ask about NREGS work? The *sarpanch* himself is

involved in the whole process, he has hired a bulldozer' (respondent no. 6). Though block development officers try to wipe their hands of the problem (see Chapter 13), villagers are not so ignorant to solely blame local actors. Another Erasama respondent said, 'the block officers are responsible, in particular the overseer of NREGS at the block level' (respondent no. 7). Yet another said, 'local politicians such as the MLA and other ministers are responsible, not the *sarpanch*.' He also said, demonstrating that villagers do understand the bigger picture, 'the two leading parties have united to undertake NREGS so not to lose money. Every year Odisha is losing funds due to lack of utilisation of centrally allocated funds' (respondent no. 13). One Shuakunda respondent confirmed that both parties have joined together to utilise NREGS money (respondent no. 42).

According to bureaucrats and ruling party *sarpanches*, *palli sabhas* are functioning properly. Opposition party *sarpanches* stated the opposite, that *gram sabhas* and *palli sabhas* are not held because of 'political reasons'³⁶. During field research little evidence of a vibrant democratic set-up was obvious. Villagers complained that decisions are taken behind closed doors after which it is declared that a *palli sabha* has taken place. No evidence was found to show that *palli sabhas* were being held at the village or ward levels, or even the gram panchayat level to determine NREGS work³⁷. Marilo's ward member complained that when he calls labourers to meet to discuss NREGS nobody comes.

There is an online NREGA complaints register³⁸. Very few complaints have been registered at the district level. In Jagatsinghpur, just one citizen and five workers have lodged five complaints against the gram panchayat and one against the block panchayat. In Kendrapara seven complaints have been made, all against the gram panchayat. None of these registered online complaints are from the sample gram panchayats. This could indicate a lack of villagers' self-organisation, and a lack of presence of a vibrant civil society working to aid villagers.

Type of work available under NREGS

Government officials frequently complained that villagers do not want to work. For example, the block Social and Education Officer (SEO) of Erasama said, 'NREGS is suffering because people go outside for higher salaries, and heavy machinery is being used because the work is too hard to do manually, and the people are anyway too lazy!' The SEO at this time told us NREGS was paying unskilled labourers 120 rupees per day and skilled workers 150 rupees per day, and those in need of work are getting work. When asked why heavy machinery was being used, the SEO exclaimed 'you know this!' as if genuinely surprised, even though it is common knowledge³⁹.

³⁶ For example, interviews were held with the *sarpanches* of Tikanpur and Patkura on the 21/8/10 and 22/8/10. While the former, who is BJD, said that *palli sabhas* were held regularly, the latter, who is an opposition party member, said that *gram sabhas* and *palli sabhas* were not being held 'due to political reasons'.

³⁷ The only *palli sabha* witnessed and attended by research team members, during three months fieldwork in Erasama and another three months in Garadpur, was a meeting held at Sahadabedi school to finalise the location for an upcoming multi-purpose cyclone shelter under the central government's National Cyclone Risk Mitigation Project. Villagers were passed around a document written in English, which none could understand, and were asked to sign it to consent to the shelter's construction alongside the school site.

³⁸ http://164.100.12.7/netnrega/writereaddata/citizen_out/citipoattend_rep.html (accessed 30/01/11)

³⁹ Interview with Erasama's SEO, 17/04/2010

The unintended outcome of NREGS funds being diverted to gram panchayat level projects may, in some cases, prove positive. Padmapur's Gram Panchayat has dug many ponds using NREGS funds, and plans to lease them out to earn 30,000 rupees per year. With the irrigation office and guided by the junior engineer, the gram panchayat is also excavating from canals and drainage systems sand deposited at the time of the super-cyclone. Why other funds have not been allocated for this task in the ten years since the super-cyclone is a separate question. The district agricultural officer (on 22/4/10) said the panchayat raj department through NREGS is creating drainage channels and tanks, but not irrigation canals. He thought there should be consultation with the irrigation department and water resource department, but nevertheless felt the work helps farmers and his department, although the gram panchayats may make mistakes.

The MLA of Erasama (and Balikuda) said NREGS is a problematic scheme that does not fit Jagatsinghpur, and is in need of technical changes. Citing the difference in soil types in Kalahandi District and Jagatsinghpur, he posed the question of why the scheme is the same for both regions⁴⁰. Yet a majority of respondents complained that NREGS work is not being made available to them. Though many in the younger generation are uninterested, as discussed in Chapter 5, NREGS does appeal to the older generation, who have fewer livelihood alternatives. One sharecropper in Erasama said, 'we are not getting work under NREGS, because machines are doing the work. From the land we cultivate we harvest 5-6 quintals of paddy, out of which we have to give 3 quintals to the landlord. I would rather go for wage work' (respondent no. 14). A Shuakunda resident said, 'I am still awaiting my wages of 400 rupees from last year. I asked the *grama sathi* for work, saying I want to work daily and receive my wages daily, but he asked me why I should work when I could get 2,000 rupees for not working. I denied him. I cannot understand this situation. The BDO is getting awards for giving 100 days work but actually machines are doing the work' (respondent no. 40). One *sarpanch* confirmed that the BDO received a 300,000 rupees award for his block having the highest number of NREGS participants⁴¹.

However not all respondents complain about machines doing the work in place of them. A sharecropping barber from Tikanpur Gram Panchayat said 'I have worked for a month and have not received remuneration for that...actually the work is difficult. For digging 100 cubic feet of soil we would receive 75 rupees. We could not manage that and were receiving 30 or 40 rupees per day, which was too little. *Hence we willingly gave our cards to the contractor who will use a machine and give us some daily payment. We go for other wage work, earn 100 rupees per day, and from our card [via the contractor] at least some money will come. The scheme is not bad, but it is too difficult to dig 100 cubic feet of soil – it would take two days*' (italics for emphasis) (respondent no. 213, 24/08/10).

One respondent from Erasama's Shuakunda said, 'the quantity of work is available if it is done by manpower alone. However people are not interested to earn 100 rupees per day doing such hard labour. They can work elsewhere and earn 200 rupees. Road construction work offers 200 rupees per day. Who will do earthen work for 100 rupees?' (respondent no. 34). Gadaharishpur's *sarpanch* said, 'it is impossible to expect people to dig out ponds and trenches. If and when they do dig, they find

⁴⁰ Interview held at Titera on 25/4/10.

⁴¹ Interview conducted on 18/4/10.

water and mud comes up to their knees'. A Samsara villager said, 'the mud is very hard here so we cannot do the work, machines are doing it and we are receiving 15 rupees per day' (respondent no. 146). So in conclusion, there is a case to be made for and against hard manual labour work, but it is evident that there is a demand for labour work under NREGS.

Payment arrangements for NREGS

Villagers are losing interest in NREGS due to delays in payment. One Kalabedi respondent said, 'I work on the job card of my brother and father. We used to get 100 rupees per day, but nowadays we are working through contractors who pay 50 rupees per day upfront, and then once his bills clear, he pays the balance up to a month later' (respondent no. 114). There are numerous other testimonies. Shuakunda's villagers even claimed the NREGS wage payment delays have led villagers to migrate.

Cases have already been presented of the misuse of workers' job cards by *grama sathis* with the complicity of bank staff. A Sahadabedi woman said, 'our *grama sathi* is the main culprit. She is taking our job cards ostensibly to correct them but then goes and withdraws money from our account. Once she was caught red-handed but because she is a girl, nobody demanded anything from her. Now that we are aware, we find it unnecessary to give our job cards to her' (respondent no. 80). There is little weight, from the discussion so far, in the claims made by the two research blocks' BDOs that the misappropriation of NREGS funds is impossible because of the numerous layers of intermediaries, i.e. *grama sathis* and ward members, *sarpanches* and junior engineers, block development officers and other officers (returned to in Chapter 13).

The question of why and how banks allow *grama sathis* and others associated with NREGS to openly commit fraud by withdrawing payments of NREGS wages intended for workers, unless there is also a measure of active connivance on the part of bank officials, is a valid one. Chapter 4 has discussed the extent to which banks cheat villagers with respect to loans, so this is plausible, although our research has not collected separate evidence to this effect. We asked Erasama's Zilla Parishad member about this banking fiasco. He offered an excuse for the behaviour, 'that the rural banks do not have the manpower to deal with hundreds of labourers' all of a sudden opening bank accounts'. When pressed to explain how *grama sathis* can withdraw money from people's private bank accounts, the representative replied, 'accounts are not so personal here'⁴².

Areas of improvement

Based on the above discussion, three key areas could be thought through to make NREGS appeal to villagers. Firstly, NREGS work ought to be decided upon openly and democratically in village-level *palli sabhas* as is intended. In this way villagers could challenge such open flouting of norms, and the abuse of public funds could be checked. Increasing villagers' understanding of the correct procedures is the first step towards making the programme more accountable and responsive. Secondly, flexibility is required in the types of work that can be undertaken. For example, the volume of earth to be excavated should be dependent upon the soil type and hardness, i.e. there ought not to be a fixed rate for all soil types. The work provided should also be tailored according to peoples' ability, depending on factors like their age, gender and health. People would thus be inclined to work in

⁴² Interview conducted in Erasama on 21/4/10.

NREGS. Thirdly, wages ought to be paid on time, and banks need to be monitored and seriously reprimanded where cases of fraud are detected – it is after all the right of Indian citizens to hold private bank accounts that nobody aside from themselves can access.

6.4 NREGS: Summary and key recommendations

This chapter has sought to document how NREGS is functioning at the gram panchayat and ward level, and to understand how villagers are benefitting from this central government mega social welfare programme. However the investigation revealed that from the perspective of villagers, NREGS is a shambolic failure. At the gram panchayat level, i.e. for functionaries such as *grama sathis*, *sarpanches*, junior engineers, and for locally powerful contractors and wealthy elites with heavy machinery, NREGS is providing a welcome and large pot of money to usurp. Many of the problems described here are common knowledge for officials at all levels and yet, there is continued unwillingness in many quarters to admit to the extent of the problem (see the discussion in Chapter 13). This presents stern questions for how seriously reform will be pursued. Nevertheless, the chapter concludes with some recommendations.

- There is need to rethink the kind of work that is offered to local people under NREGS. *Palli sabhas* should be held to decide upon the work to be carried out in each and every ward and/or revenue village.
- Widows and households in especially dire circumstances should be prioritised to receive job cards, and work, under NREGS.
- Gram panchayat level functionaries' salaries should be increased to allow them to work properly.
- Payment rates for manual excavation work should be locally appraised to make it possible for workers to earn the daily rate, 125 rupees per day in Odisha since 1st January 2011, each and every day.
- Payment should arrive on time, and compensation should be paid to those who do not receive their payment in due time, as is mandatory in NREGS.
- Interviews with villagers suggest that the managers and staff of local banks are actively involved in the withdrawing of NREGS payments from individuals' private bank accounts. This ought to be investigated.

Chapter 7: Livestock, fruit trees and fishing over the decade

This chapter examines changes over the past ten years in livestock ownership, in fruit trees ownership and sale and consumption of fruits, and in fishing patterns. Such livelihoods are important supplements to the ‘major’ livelihood pursuits namely agriculture, migration and wage labour (and government service for some), providing a source of cash income that can be depended upon in tough or normal times, besides an essential addition to household diets. The chapter is especially interested to understand the impact the super-cyclone had upon these livelihoods, and floods in the second site, and the problems facing villagers in their pursuit of these livelihoods.

7.1 Livestock ownership

Livestock and poultry were obliterated during the super-cyclone in the Erasama site however fewer animals died in the Garadpur site because there was no accompanying tidal surge. Many animals drowned as they were washed away in Erasama, while in both sites livestock were crushed to death when houses and livestock shelters collapsed upon them. In this section the impact of the super-cyclone on total numbers of livestock and poultry is explored. Trends in the total numbers of livestock owned over the decade are examined to understand how households have restocked. Barriers to restocking are discussed, as are the implications of owning fewer animals. The key finding is that Erasama’s households had more animals than Garadpur’s before the super-cyclone, and lost a higher proportion of their animals during the event. However Garadpur’s households, who benefitted from their ability to sell their surviving animals in the aftermath of the super-cyclone, have been more able to restock in the subsequent ten years.

Impact of the super-cyclone on livestock and poultry in Erasama

In Erasama, villagers keep the following livestock: cows (for milk and mothering calves), bullocks (for plough), more rarely water buffalo (for milk, mothering and plough) and goats (for meat and sale). Sheep are not found. They also keep poultry: chickens and ducks for eggs, meat and for sale. The super-cyclone decimated livestock, reducing the total numbers of livestock, cows, bullocks, water buffalo and goats, to 14% their former number (from a site total of 669 to 92, i.e. owned by the 120 households)⁴³. Cows were reduced to 9% of their former number (335 to 31), bullocks to 21% their former number (189 to 39), water buffalo to 35% their former number (48 to 17) and goats to 5% their previous number (97 to 5). It seems evident therefore that goats face the highest mortality rate, followed by cows, bullocks then water buffalo in such a ferocious storm as the 1999 super-cyclone.

Comparing the death rate of livestock from Garia and Shuakunda, an average of 4 km from the seashore, and Kalabedi and Sahadabedi, an average of 1 km from the seashore, it is unsurprising that higher numbers of livestock died in the wards closer to the sea. Cows were reduced to 6% their former number in the seashore wards (from 223 to 13), and to 16% their former number in the wards 4 km from the shore. Bullocks were reduced to 14% and 23% their former numbers in the seashore and slightly inland wards respectively, while goats were reduced to 0% and to 17% their former numbers, respectively (Chart 7.1). The impact upon the average number of livestock owned by households was terrible. Whereas before the super-cyclone households in Erasama owned on average 2.8 cows, i.e. nearly three cows per household, in 2000 after the super-cyclone just one in four households owned a

⁴³ For the Erasama site these reductions were caused by the direct and indirect effect of the super-cyclone – most animals were killed in the cyclone, though lesser numbers were sold in the aftermath. This is discussed below.

cow (an average of 0.25 cows per household). Likewise, bullock ownership decreased from just over 1.5 bullocks per household to just one bullock per three households (on average 0.33 bullocks per household). Goat ownership was reduced from about one goat per household (0.81 per household) to practically zero per household.

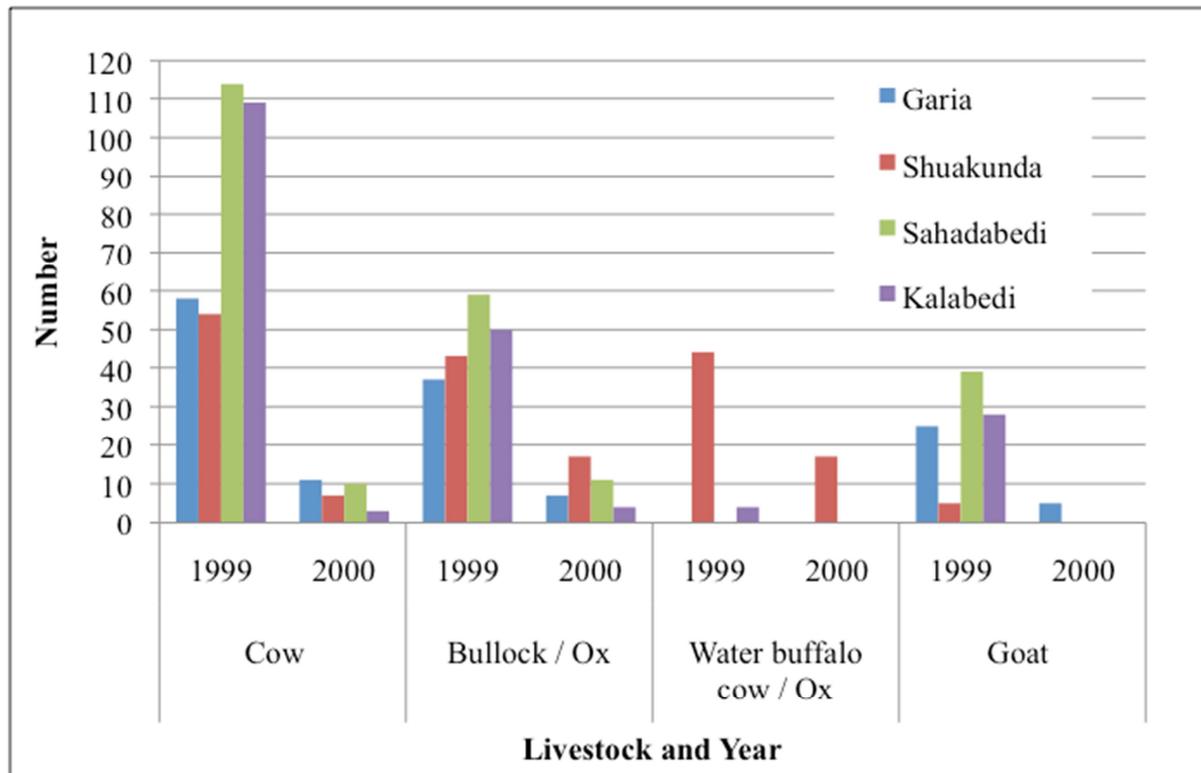


Chart 7.1: Erasama: Ward-wise (n=30) changes in total number of livestock owned, 1999 and 2000

Ducks and chickens, for the 120 households, were reduced to 5% their former number (from 1,281 to 69) (Chart 7.2). Kalabedi and Shuakunda's villagers kept the most poultry, and losses were higher in Kalabedi than in Shuakunda. Sahadabedi followed by Garia (due to lack of space) kept fewer poultry.

These figures give the general picture for the decrease in numbers of livestock and poultry during the super-cyclone. They do however mask a few important points: firstly, that some households did not have livestock/poultry in 1999, and secondly, that some households sold livestock in 2000, immediately after the super-cyclone to obtain urgently needed cash. Table 7.1 presents a summary of the number of households that had or did not have livestock/poultry before the super-cyclone, lost livestock/poultry in the super-cyclone, and sold animals in the aftermath. This allows for a more nuanced understanding of livestock and poultry losses. Take cows for example: 22 households had no cows and suffered no loss, 5 households had cow(s) but did not lose them in the super-cyclone, 89 households lost at least one if not all their cows, whereas 4 households sold their cow(s) in the aftermath of the super-cyclone to raise cash. From this it can be inferred that 91% of cow owners (89 of 98 households) lost at least one of their animals in the super-cyclone, as did 84% of bullock owners, 82% of water buffalo owners (including death by disease in the aftermath), and over 90% of goat, chicken and duck owners.

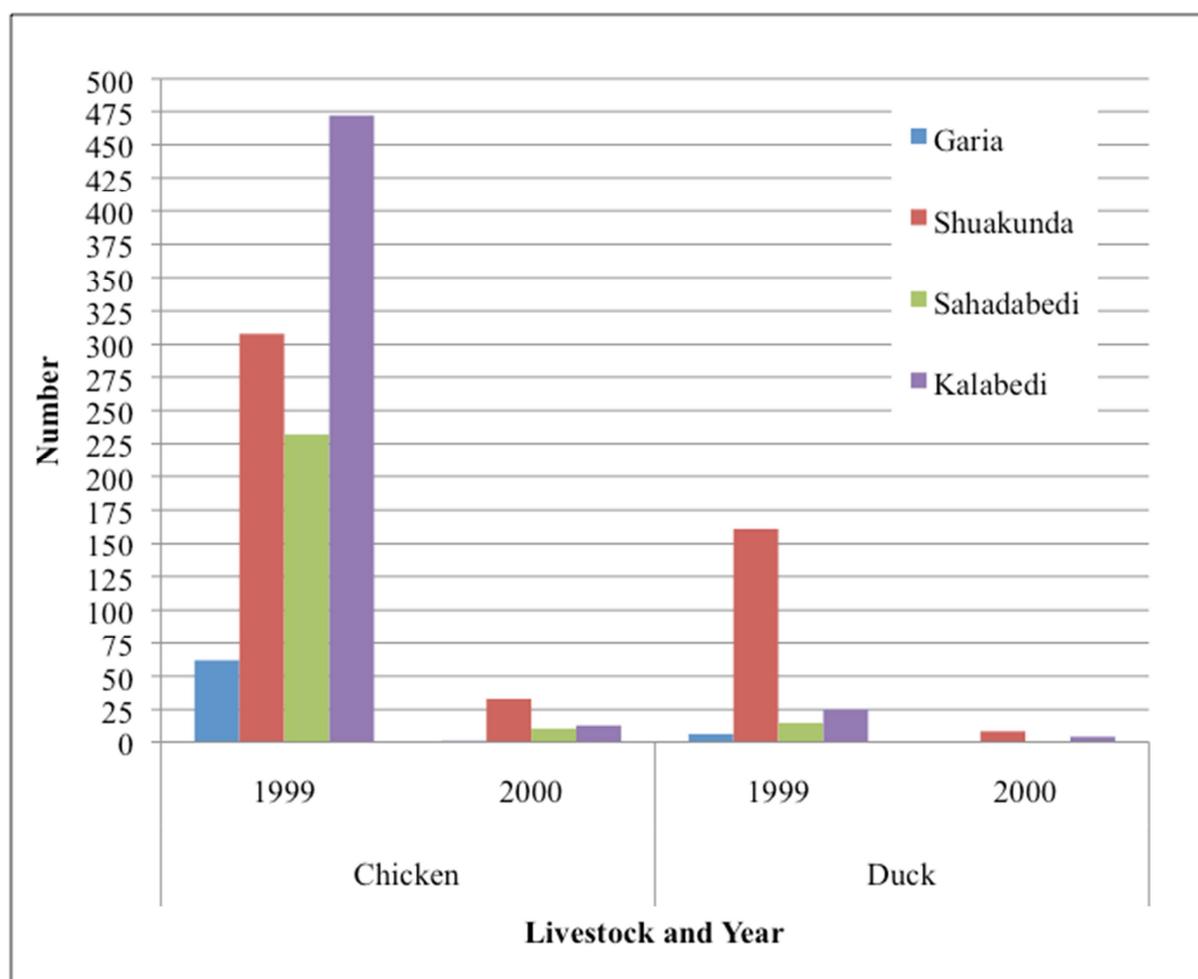


Chart 7.2: Erasama: Ward-wise (n=30) changes in total number of poultry owned, 1999 and 2000

Type of animal	No livestock	Livestock but no change	Death by cyclone	Sold animal	Death by disease	Household ate	Purchase or NGO gave	Total (number of hhs)
Cow	22	5	89	4	0	0	0	120
Bullock	38	12	69	1	0	0	0	120
Water buffalo	109	1	6	1	3	0	0	120
Goat	88	0	31	0	0	0	+1	120
Chicken	34	2	81	0	0	1	+1	119
Duck	101	1	18	0	0	0	0	120

Table 7.1: Erasama (n=120): Site level reasons for change in livestock, 1999 and 2000

Comparison of impact of super-cyclone on livestock/poultry in Erasama and Garadpur

The losses of livestock incurred by Garadpur households were small compared to those of Erasama households⁴⁴. Garadpur's 120 households suffered a 22% decrease in total number of cows (143 to 112, from 1999 to 2000), compared to Erasama's 91% decrease (335 to 31), and a 29% decrease in total number of bullocks (138 to 98), compared to Erasama's 79% decrease (189 to 39). The two water buffalo owned before the super-cyclone survived. Goats were reduced by 69% (from 118 to 37) compared to Erasama's 95% reduction (97 to 5), and Garadpur's households' sheep were reduced by

⁴⁴ These losses include death in the super-cyclone but also sale following the super-cyclone. See below.

89%, from 28 to 3. The survival rate of larger livestock, namely cows and bullocks, was high at 75%, compared to that of goats and sheep, which was low at just 27%. Chickens actually increased in number in 2000, to 304 from 134.

In the Garadpur site, much of the decrease in livestock and poultry numbers between 1999 and 2000 was not due to their death during the super-cyclone but due to their sale in the immediate aftermath (Table 7.2). Of 91 households that owned cows, 36 households (40% of owners) recorded no change in cow ownership in 2000, just 12 households claimed their cows had died (13% of owners), and some 18 households sold one or more cows (20% of owners) to raise cash. 21 households recorded an increase in cows in 2000 as compared to 1999 (23% of owners), with 18 of these stating that their cow gave birth in 2000. Similarly more bullocks were sold in 2000 than died in the super-cyclone – 23 households sold bullocks in 2000, compared to 14 households who lost bullocks during the super-cyclone. The super-cyclone did kill the majority of owned smaller animals, namely goats, sheep, and chickens (Table 7.2).

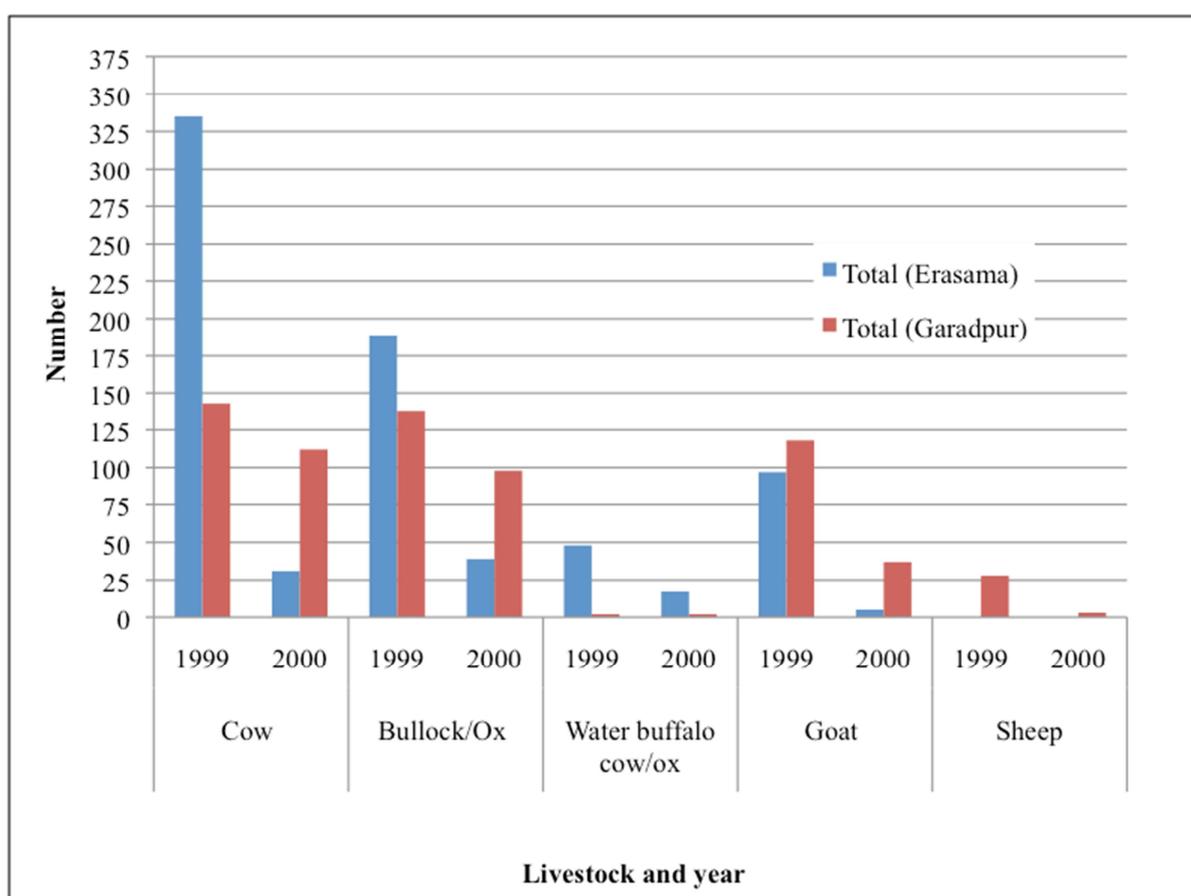


Chart 7.3: Erasama and Garadpur: Comparison of livestock losses in super-cyclone

Type of animal	No livestock	Livestock but no change	Death by cyclone	Sold animal	Death by disease /eaten /killed	Returned animal / household separation	Purchase / NGO / birth / borrow / gift	Total (number of hhs)
Cow	29	36	12	18	0	4	+21	120
Bullock	37	36	14	23	0	2	+8	120
Water buffalo	119	1	0	0	0	0	0	120
Goat	91	4	19	1	2	1	+3	120
Sheep	115	0	5	0	0	0	0	120
Chicken	103	0	13	0	2	0	+2	120
Duck	118	2	0	0	0	0	0	120

Table 7.2: Garadpur (n=120): Site level reasons for change in livestock, 1999 and 2000

Trends in livestock ownership over the decade

In the Erasama site, the 120 sampled households have been unable by 2010 to restock their livestock to levels found before the super-cyclone. Only restocking of goats has been successful; total numbers of goats are in 2010 close to 1999 levels. Total numbers of livestock (for the 120 sampled households) over the ten years period is shown in Chart 7.4. Take cows for example: 74% of households (or 89 households) lost at least one if not all their cows in the super-cyclone. The total number of cows owned by our 120 sampled households went from 335 before the super-cyclone, to just 31 in 2000, and back only to 102 cows in the present day – so ten years after the super-cyclone the 120 households collectively own just 30% the number of cows that they did before the super-cyclone. Total number of bullocks has also steadily increased, from a total of 39 to 74 over 10 years.

However the number of water buffalos has not recovered, rather it has declined – Shuakunda, the only ward to keep water buffalo, had 17 remaining after the super-cyclone and these numbers have steadily declined to just two in 2010. Total number of goats has not fully recovered though it is close – from 5 in 2000, up to 85 in 2007-08, and then back to 70 in 2010, compared to 97 before the super-cyclone. Number of chickens has fluctuated over the years, but in 2010 the total numbers are estimated at 356 compared to 1,074 before the super-cyclone struck (33% the earlier number). The total number of ducks has steadily increased, from 12 in 2000, to 63 in 2010 (30% the earlier number).

In Garadpur, trends in livestock ownership over the ten years differ to those of Erasama, bearing in mind the super-cyclone affected livestock and poultry less in Garadpur, and that the Garadpur site has suffered major floods in 2001 and 2008, and lesser ones in 2003 and 2006 (Chart 7.5). Overall however, numbers of livestock and poultry remain lower than levels prior to the super-cyclone. Chart 7.5 shows the decrease in total numbers of cows, bullocks, goats and sheep in 2000 after the super-cyclone (also shown in Chart 7.3). Many households' goats and sheep died in the super-cyclone (Table 7.2), and in the ten years period their numbers have not increased to previous levels (Chart 7.5). Total numbers of sheep, all of which are kept by five households in Behula, have only increased to 6 from 3 in the ten years period, down from 28 before the super-cyclone. Numbers of goats have increased in Marilo and Samsara, from 23 to 50 and 1 to 11 respectively, however in Behula and Jamunabad the numbers have reduced from 6 to 3, and 7 to 4, over the ten years.

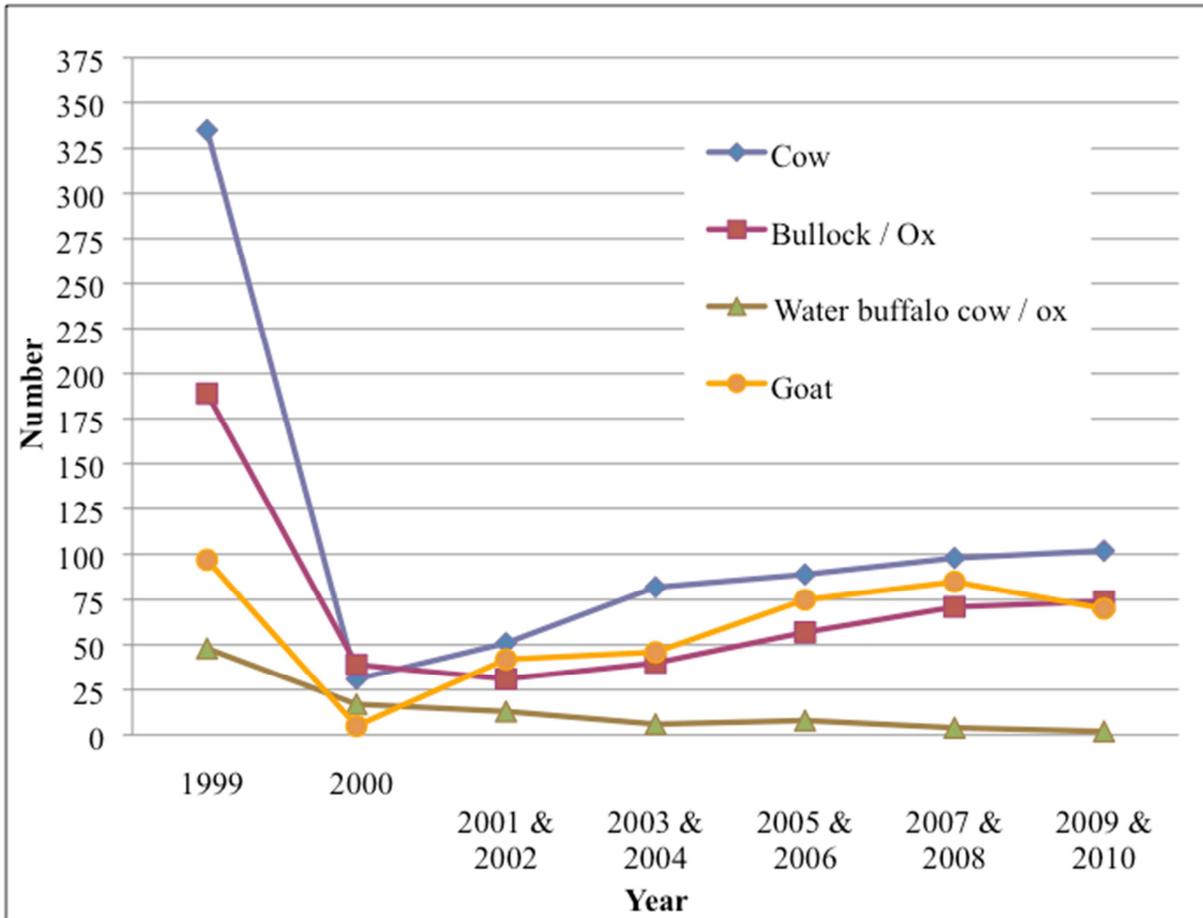


Chart 7.4: Erasama: Total number of livestock owned by 120 households, over 10 years

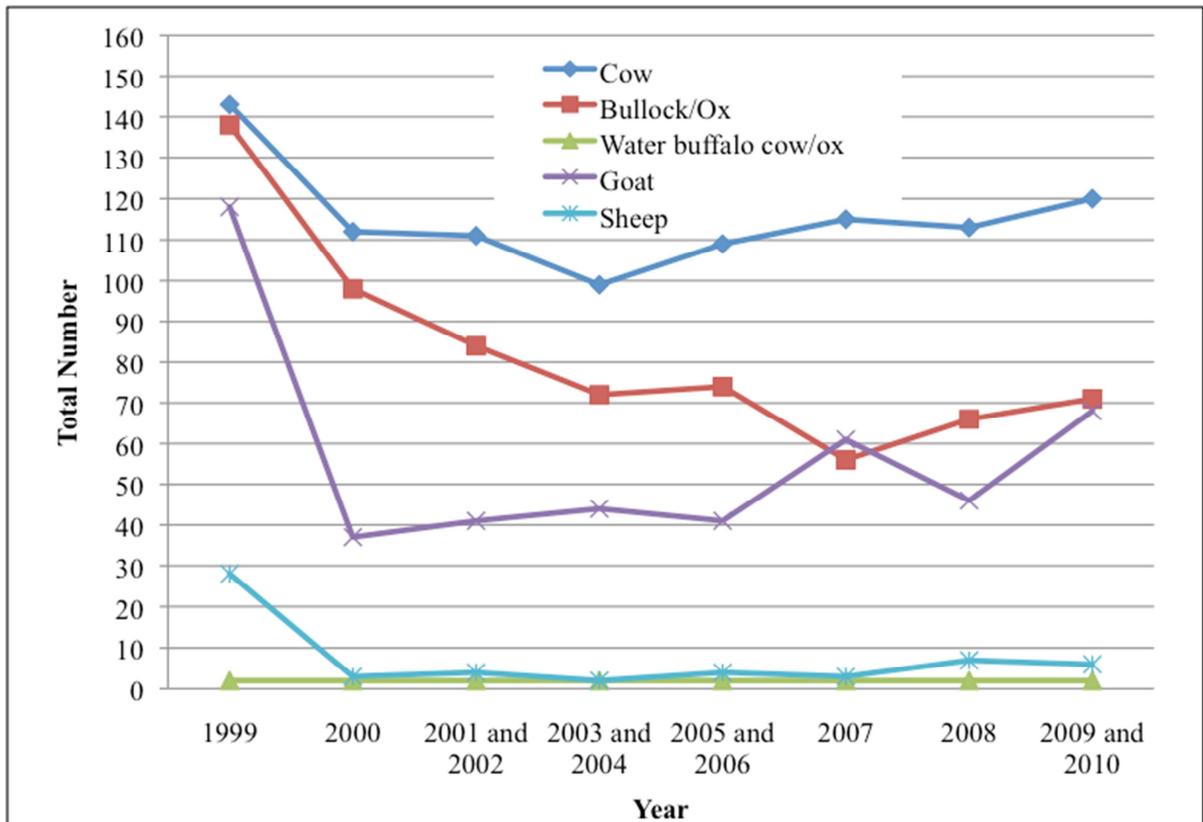


Chart 7.5: Garadpur: Total number of livestock owned by 120 households, over 10 years

The trend in total number of cows and bullocks owned by Garadpur households over the ten years is of interest. Unlike in Erasama where nearly all animals died in the super-cyclone, in the Garadpur site more cows and bullocks survived the super-cyclone and were sold in the year 2000 than died in the super-cyclone (Table 7.2). This sale of cows and bullocks provided an important source of cash to help households recover. However in the years following the super-cyclone the total number of cows has not returned to its former number, whereas that of bullocks shows a decreasing trend. In Garadpur power tillers and tractors are nowadays ploughing the land and as a result fewer households are retaining bullocks. The relatively higher level of farm mechanisation in Garadpur as compared to Erasama probably explains why Garadpur's households owned fewer animals than Erasama's in 1999.

Few households have lost animals in flood events in Garadpur because owners generally keep their livestock with them at such times. Three households have lost cows to flood events, all three losing a cow in the 2008 flood and one also losing a cow in the 2001 flood. One Marilo household lost a bullock in the 2003 flood. Four households lost goats to floods, three in the 2008 flood and one in the 2001 flood. Marilo's ward member said that he lost chickens and goats in the super-cyclone, and later lost several goats in the 2008 flood. He sold off the remaining goats in the aftermath.

Inability to restock livestock: more pronounced in Erasama

In the ten years since 1999, households in Erasama have not been able to restock to pre-super-cyclone levels primarily because of lack of resources. Although many hold the view that villagers fear restocking because another cyclone could again kill their animals, testimonies obtained during interview in the Erasama site repeatedly emphasise that households would like to restock but have been unable to. One higher caste lady of Garia said, 'we lost two cows, two goats and six chickens in the super-cyclone. Since then we have not kept many livestock. We are not getting a good harvest and so we have a shortage of straw. It would be difficult to keep cows without straw and we cannot afford to buy fodder' (respondent no. 13). A lady from Shuakunda said, 'we lost three cows in the super-cyclone and since then we have not kept even one. We do not have the money to buy a cow, and even if we did we would have to buy fodder which we cannot afford' (respondent no. 36).

Lack of pasture seems to be a major factor in Erasama. Shuakunda's villagers said all farmland is nowadays sown with paddy, and with population growth and increase in number of households there is now no place to graze livestock. Land that was once available at the sides of rivers, and left fallow because of salinity levels, has been converted to prawn gheris. In the time of their fathers' all households had cattle and buffalo and even big cow sheds, but nowadays household size has increased and cow sheds dismantled to make space for more rooms, so there is not even space to keep livestock. Kalabedi's residents also complain of lack of pasture – they have converted former pasture to prawn gheris and cut down forest to convert to paddy fields. Other pressures working against households restocking are also apparent, such as time spent to feed and care for livestock, especially now that many women are going for wage work (Chapter 8). Garia's women said that keeping livestock is a burden upon women, because men never take care of livestock leaving women to feed or graze them.

Animals have been restocked over the ten years mainly via birth, purchase and looking after others' animals. For our sampled households, little help has been provided from NGOs, which is understandable given that NGOs worked hard in other areas. In Erasama, five households have

received cows via NGOs, 13 households have received goats, and two households have received chickens. Women from Shuakunda said that Action Aid had initiated a self help group (SHG) in the village after the super-cyclone, which functioned for 2-3 years before closing due to arguments between the female members – some members had received cows, some goats and some chickens, which caused resentment amongst members. Success in self help groups appears notoriously difficult in coastal Odisha (Chapter 8). In Garadpur's Jamunabad two sisters said of their SHG, 'we used to keep all the accounts, but the other members gave the responsibility to a man from Beradi to buy chickens to make a poultry farm, and he misappropriated the entire fund. Interest on the original loan continues to accrue, and he has only repaid 2,000 rupees so far. We even complained to the police but no action was taken'. Of our Garadpur sample, just one household received goats from an NGO.

Looking after others' animals has proved to be a popular strategy to restock. This involves taking a young female calf or kid, rearing it, and then returning it to its owner after it has given birth to one or two offspring. The borrower keeps the offspring and the owner benefits because their animal has matured, and thus increased in size and value. Some one-third of households (39 households) in the Erasama sample and one-quarter of households (29 households) in the Garadpur sample have 'looked after' others' livestock in this way over the ten years. Looking after another's cattle is a successful strategy for many, but it also carries risks, as evidenced by a scheduled caste resident of Garia, 'I lost two cows in the super-cyclone. In 2006 I took another's calf to look after, and after three years she gave birth to a female calf. Both the mother and calf then died' (respondent no. 15).

Recently the government has begun to compensate those who lose livestock in disasters (this is returned to in Chapter 12). Of the few reported cases of livestock loss during Garadpur's 2008 flood, only one household received compensation. During relief in the 2008 flood, fodder was provided to all livestock owning households within the four sampled Garadpur wards, which is a positive sign.

Implications of less livestock and fowl

Livestock and fowl/poultry provide important functions in a healthy agrarian set up. Cows provide drinking milk and related products such as *dahi*, besides giving birth to calves. Bullocks are required for the timely preparation of farmland in the absence of alternative technology such as power tillers and tractors. One Sahadabedi man lamented, 'I lost four cows and two bullocks in the super-cyclone; only one cow survived. Earlier I used my bullocks to plough my own land, but now I have to hire in bullocks for 150 rupees'. Cattle in general produce cow dung used for cooking, for sale, and as an important input to the organic fertiliser applied to farmland. Goats, for Hindus and Muslims alike, provide an important if not rarely eaten source of meat for households, besides milk. Goats' short life cycle means they prove invaluable as a cash reserve, and can be sold easily when any urgent cash is required. Chickens and ducks similarly can be eaten, sold with ease to raise cash, while hens produce eggs. The far fewer number of livestock and fowl in Erasama, in 2010 as compared with 1999 (Chart 7.4) is disturbing because of the negative impacts it implies upon the dietary intake of women, children and men. The data is less worrisome for Garadpur at the site level (Chart 7.5).

7.2 Fruit trees, and fruit sale and consumption

A large proportion of fruit trees were destroyed in Erasama during the super-cyclone, while in Garadpur lesser but still significant proportions were affected. In the ten years since, mango trees but

not coconut and cashew trees have recovered to former numbers in Erasama, whereas in Garadpur both mango and coconut trees have not recovered to their former numbers. This has direct and indirect effects on the populations' well-being: with less fruits to sell and consume, villagers are further impoverished, and with less tree cover villagers become more vulnerable to future hazards. This is detailed below. Note: these major tree types are taken as indicators, although other trees such as jack fruit and tamarind are found in the research sites.

Impact of the super-cyclone on fruit trees in Erasama

Being so close to the sea, fruit trees in Erasama took a direct blow in the super-cyclone. The three principal fruit trees found in homestead land are cashew, mango and coconut. Chart 7.6 shows the trends in the total numbers of trees owned by our 120 sample households in the ten years since 1999. It shows a dramatic drop in 2000 as a result of the super-cyclone: coconut trees were reduced to nearly a third their former number (1,786 to 646), mango to less than half (408 to 171), and cashew to just under a tenth their previous number (3,905 to 348). The picture in the ensuing years is a grim one, as shown in the chart. While mango trees have regenerated to their former number (434), exceeding the pre-super-cyclone figure narrowly, cashew is not back to even a third of its former levels (1,228), and coconut is under 60% of its former level (1,030 trees). Similar trends to those of the site level are found in all four wards.

Examining average numbers of trees owned by households, ward-wise, allows some gauging of the importance of these trees to households. Table 7.3 presents data for coconut trees. Before the super-cyclone, in 1999, Shuakunda's households owned an average of 20 coconut trees each, followed by Sahadabedi (17), Kalabedi (16) and Garia with the least residential space (7 per household). The site level average was 15 coconut trees per household. The steady increase in number of trees over the early part of the decade is apparent in all wards, though by 2003-04 the increase stabilised and little further progress was made.

Year(s)	Garia (n=30)	Shuakunda (n=30)	Sahadabedi (n=30)	Kalabedi (n=30)	Site total (n=120)
1999	6.9	20.0	16.6	16.0	14.9
2000	1.8	4.9	5.7	9.1	5.4
2001-02	3.9	8.4	10.8	14.3	9.3
2003-04	4.1	10.9	8.7	11.9	8.9
2005-06	4.3	10.0	9.0	10.8	8.5
2007-08	4.6	10.3	9.1	10.7	8.7
2009-10	4.7	9.6	9.3	10.8	8.6

Table 7.3: Erasama: Average numbers of coconut trees per household, over ten years

Shuakunda's villagers said that higher salinity levels and disease is killing their coconut trees. One man said 'we had 70 coconut trees before the super-cyclone but now have only 11. The trees are not bearing fruits and die automatically. We don't know the solution to this' (respondent no. 37). A woman from Kalabedi, whose five coconut trees were reduced to one in the super-cyclone said, 'we replanted about 9 coconut trees after the super-cyclone, and a NGO also gave us nine saplings. The trees have not grown' (respondent no. 99). It is said that the cost of treating the disease affecting the coconut trees is 150 rupees per tree, however people are unsure about this, and are reluctant to try.

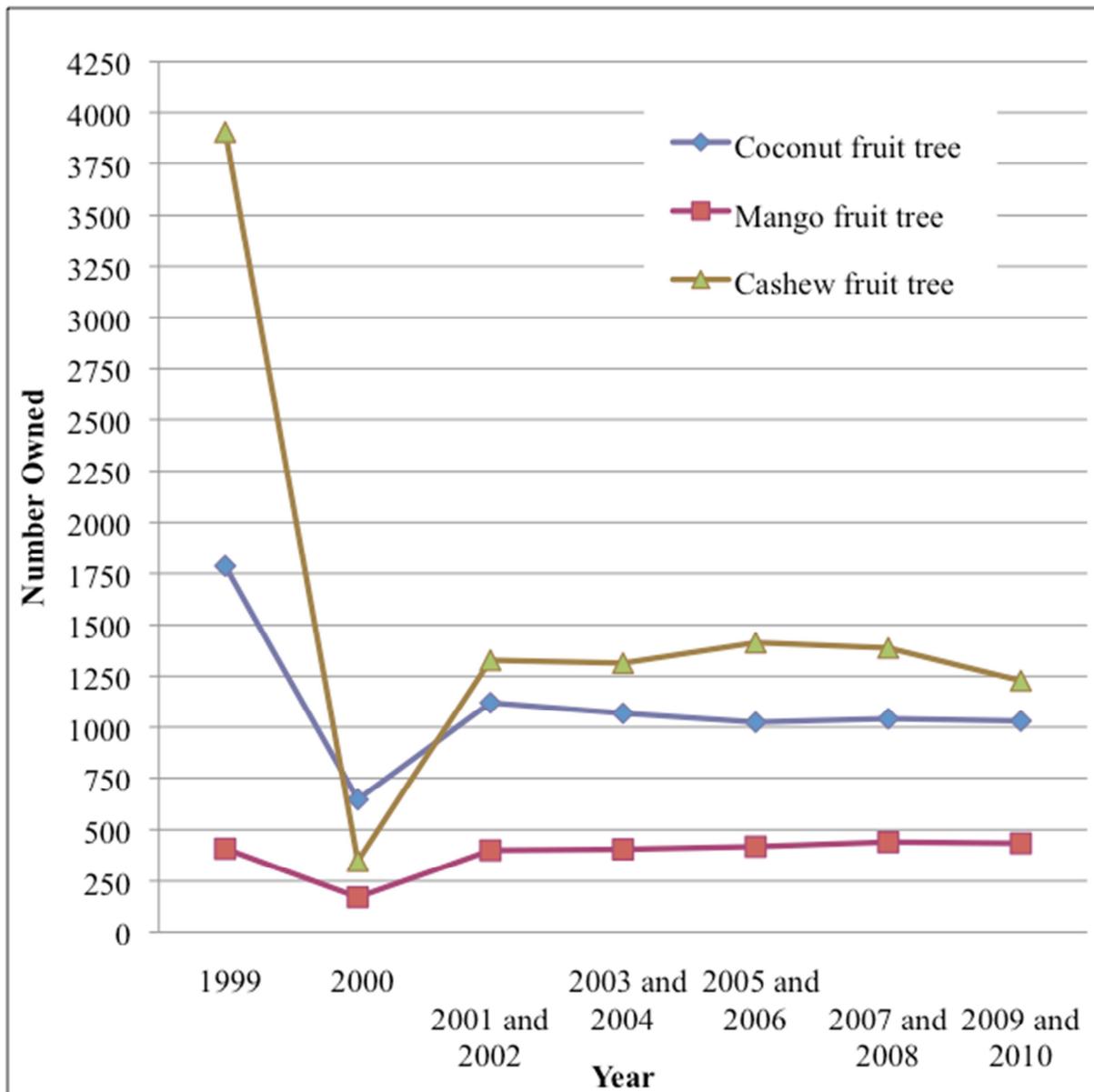


Chart 7.6: Total numbers of fruit trees in Erasama (n=120 households) over ten years

At the ward and site level in Erasama, cashew trees' numbers, like those of coconut trees, initially increased due to replanting, however from 2003-04 numbers began to decrease. Data for average number of cashew trees owned by households over the years is presented in Table 7.4. A Kalabedi widow said, 'there were many cashew trees before the super-cyclone and we used to sell cashew, but now there is disease and the trees bear little fruit' (respondent no. 120). Another lady from Kalabedi said that nowadays cashew trees are not growing; and neither are mango or coconut. One respondent suggested that higher soil salinity and reduced fertility of the land is to blame for this (no. 119).

Year(s)	Garia (n=30)	Shuakunda (n=30)	Sahadabedi (n=30)	Kalabedi (n=30)	Site total (n=120)
1999	17.2	8.9	41.7	62.4	32.5
2000	1.5	0.1	3.8	6.2	2.9
2001-02	1.7	11.5	20.2	10.9	11.1
2003-04	1.6	3.6	22.9	15.7	11.0
2005-06	1.6	1.7	29.6	14.2	11.8
2007-08	1.5	1.2	28.9	14.7	11.6
2009-10	1.5	1.0	25.7	12.7	10.2

Table 7.4: Erasama: Average numbers of cashew trees per household, over ten years

Comparison of impact of the super-cyclone on fruit trees in Erasama and Garadpur

In the Garadpur site, where cashew is not grown, fruit trees took a substantial blow in the super-cyclone (Chart 7.7). Comparing Charts 7.6 and 7.7, it is evident that the Garadpur site had fewer trees than the Erasama site before the super-cyclone, but that the proportion of trees lost and their recovery since, is of roughly the same proportion. Since 2000 there has been a slight increase in coconut and mango trees over the years, but there are still significantly fewer trees in 2010 as compared to before the super-cyclone. Total numbers of coconut tree were reduced to a third their previous number in the super-cyclone, from a total of 471 trees (for 120 sampled households) in 1999 to 178 trees in 2000. Over the decade, numbers have steadily risen to 276 trees in 2010 (still less than two-thirds their earlier numbers). Numbers of mango tree were reduced by nearly 50% from 181 to 101 trees in 2000, and have then steadily increased to 130 trees in 2010 (just over two-thirds of earlier numbers).

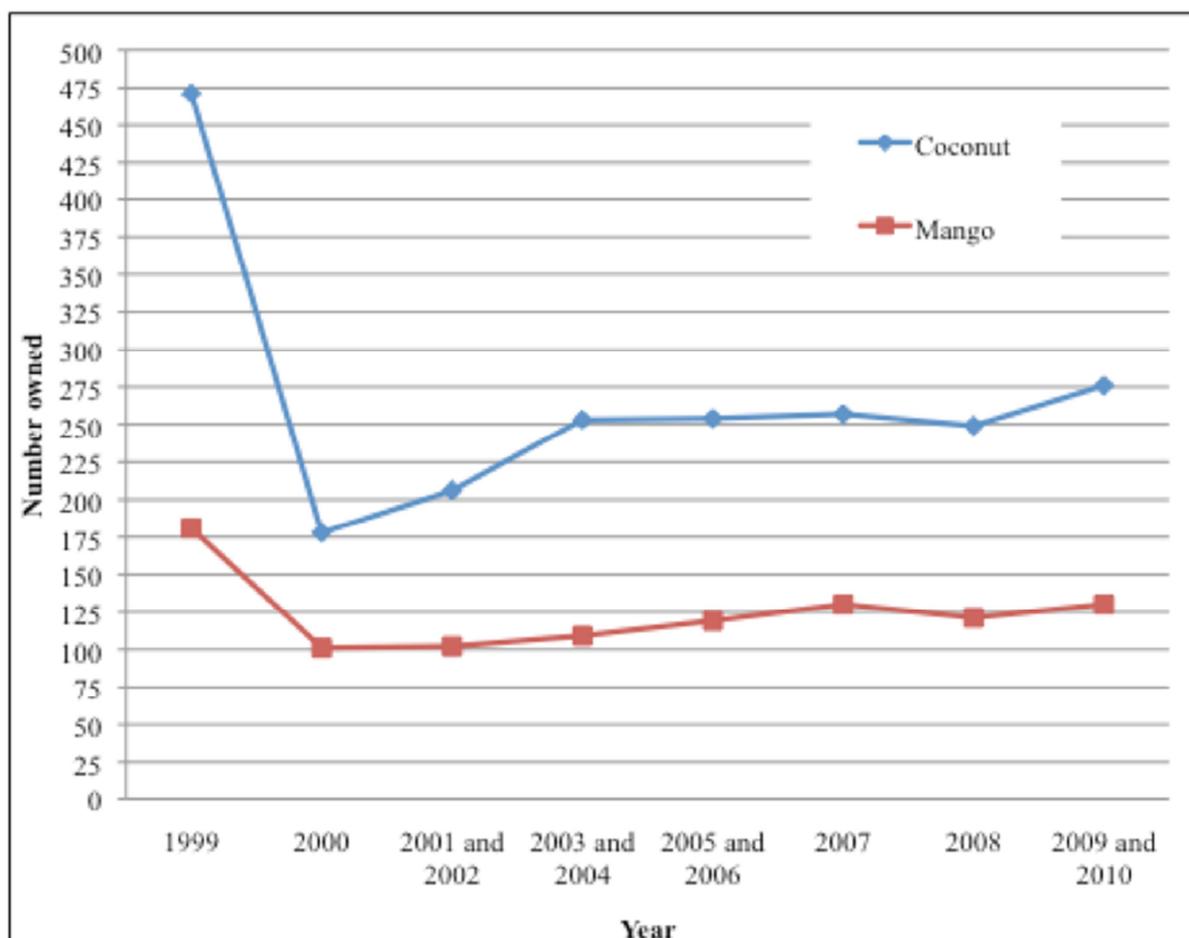


Chart 7.7: Total numbers of fruit trees in Garadpur over ten years

In Garadpur this translates to an average per household of nearly four coconut trees and 1.5 mango trees before the super-cyclone, to over two coconut trees and one mango tree in 2010. In Erasama there were an average of nearly 15 coconut trees and 3.5 mango trees per household in 1999, and nearly nine coconut trees and less than four mango trees in 2010. Progress has been made in both sites towards replanting fruit trees, though aside from mango in the Erasama site, there are still fewer trees in both sites in 2010 as there were in 1999.

Replanting initiatives over the decade

Table 7.5 shows the reasons for changes in numbers of tree over the decade, by number of household that experienced such change. The data shows that more households in Erasama lost fruit trees in the super-cyclone than did households in Garadpur. Floods, in Garadpur only, destroyed some households' trees. Deaths of trees by natural causes occurred in Erasama because of increased salinity in certain pockets caused by the tidal surge that accompanied the super-cyclone – in Shuakunda as mentioned above, many trees will no longer grow, and if they do, often provide little fruit (see later). Also disease is affecting coconut and cashew trees, maybe because new varieties have been introduced that do not suit the conditions? NGOs were very active in Erasama following the super-cyclone, providing coconut saplings/seeds to 85 of 120 sampled households (71% of households), cashew saplings/seeds to 32 households (27%), and mango saplings/seeds to 17 households (14%). NGOs hardly assisted Garadpur households in this regard, with just six households of the 120 sampled households saying they had received assistance from NGOs – though these six were from all four sampled wards. It is also apparent that many households have replanted trees themselves.

Nearly as many households as lost trees have replanted in Garadpur, whereas fewer households have done so for coconut and cashew in Erasama. The reason must relate to the salinity and disease factor in Erasama, due to the wider salinisation of the coastal belt. Mango trees have recovered to their former number because as many households as lost trees in each site have since replanted saplings. According to our respondents, the government has provided negligible support for replanting.

Tree type	Site	Destroyed in cyclone	Destroyed in flood	Died by natural causes	Planting with NGO help	Planting by self	Planting with state help
Coconut	Erasama (n=120)	105	NA (0)	67	85	47	0
	Garadpur (n=120)	64	9	6	6	56	1
Mango	Erasama (n=120)	61	NA (0)	20	17	58	0
	Garadpur (n=120)	24	3	1	0	24	0
Cashew	Erasama (n=120)	71	NA (0)	38	32	35	2

Table 7.5: Losses and replanting efforts for fruit trees in both sites (by number of households)

One Garia respondent, who lost 47 of his 50 or so cashew trees in the super-cyclone, told us his experience, starting from when he had invested 50 rupees to buy cashew seeds in the early 1990s. Aside from a few months of watering per year and upkeep of fencing to protect the cashew, he hardly

invested anything. When the trees started flowering, he spent approximately 1,500 rupees per year on pesticides to control the pests damaging the cashew fruits. Each year he would earn around 12,000 rupees in cash from the sale of cashew nuts. Aside from selling the seeds in the market, his household used to eat the highly nutritious cashew nuts. His wife used the dry leaves and branches as firewood. Therefore the cashew trees really contributed to the running of their household. Replantation efforts have been unsuccessful. In the past two years he has planted 30 trees out of which 15 have so far died, because of water shortage. The fruits of the 15 remaining trees and the three older trees fetched him just 1,700 rupees this year. Before he was successful and had never needed to work as a wage labourer. He even claims he used to profit more than farmers who own 5 acres of farmland.

Implications of less trees and fruits

To understand the implications of fewer numbers of fruit trees, households were asked whether they were able to use fruit from their trees for consumption or sale for the years of the past decade. The overall yield of fruits, it can be safely assumed, is less than it was before 1999 because numbers of trees are fewer and new trees bear fewer fruits. Table 7.6 presents site level numbers of households able to eat and sell fruits from their trees over the past decade (the percentage of the total sample is included in brackets for the years 1999 and 2009-10).

Year	Coconut fruit				Mango fruit				Cashew fruit	
	Erasama (n=120)		Garadpur (n=120)		Erasama (n=120)		Garadpur (n=120)		Erasama (n=120)	
	Eat	Sell	Eat	Sell	Eat	Sell	Eat	Sell	Eat	Sell
1999	100 (83%)	47 (39%)	68 (57%)	8 (7%)	65 (54%)	19 (16%)	33 (28%)	3 (3%)	54 (45%)	70 (58%)
2000	34	2	12	0	15	0	11	1	10	9
2001-02	51	2	24	0	23	1	19	2	14	11
2003-04	69	2	27	1	30	1	20	1	17	16
2005-06	81	4	29	1	34	1	22	1	22	25
2007-08	90	5	43	1	47	3	28	1	35	45
2009-10	90 (75%)	5 (4%)	46 (38%)	1 (1%)	52 (43%)	3 (3%)	34 (28%)	1 (1%)	38 (32%)	48 (40%)

Table 7.6: Fruit consumption (eat) and sale (sell), for different trees over the years

In Erasama;

- 75% of households are nowadays consuming coconut from their trees, compared to 83% before the super-cyclone. However sale of coconut has not recovered to its former level of 39%, and stands at just 4% of households in the present day.
- 43% of households nowadays consume their own mangoes, compared to 54% in 1999. Many of the new trees are yet to produce fruit. 16% of households in our sample sold mangoes before the super-cyclone whereas just 3% are doing so nowadays.
- 32% of households are nowadays consuming cashew compared to 45% in 1999, and 40% of households are presently selling cashew as compared to 58% pre-super-cyclone.

In Garadpur;

- 38% of households are nowadays consuming coconut from their trees, compared to 57% before the super-cyclone. Only one household nowadays sells coconut whereas eight households (7%) used to do so.
- Mango consumption has recovered to its former proportion, 28% of households, after ten years. Sale of mangoes remains insignificant, at 1% in 2009-10 compared with 3% in 1999.

The consumption figures suggest that fruit trees are gradually recovering in both Erasama and Garadpur, but that recovery is incomplete, in the sense that fewer trees exist and trees take time to grow and to produce fruit. Villagers' diets and general standard of living must be affected by this predicament. Mangoes are eaten raw or ripe, and made into chutneys to eat alongside rice and *daal* throughout the year. Coconut has multiple uses, besides simply eating. The leaves and branches are used as firewood, and from the leaves broom sticks and mats are made. The fruits are considered holy and are offered to Hindu Gods at all religious occasions.

The figures make clear that there is presently little or no excess of fruits that households are able to sell. Those who are selling fruits are selling less and earning less. A Sahadabedi scheduled caste couple said 'we used to have 20 cashew trees and could earn 1,000 or 2,000 rupees per year. Nowadays we get just 2 kg of cashew that we eat' (respondent no. 87). Other such cases exist.

Betel cultivation was a common livelihood for villagers, especially those from coastal villages such as Sahadabedi and Kalabedi. One Sahadabedi farmer said, 'seven or eight households in Sahadabedi used to cultivate betel but nowadays everybody has stopped. I had 60 betel plants before the super-cyclone from which I could harvest 30,000 betel leaves every three months, and earn 3,000 rupees with which I could feed my family. I had started ten years before the super-cyclone, and had taken a loan from the Goda Indian Bank of 7,000 rupees, however I had to bribe 3,000 rupees to get the loan. When the super-cyclone destroyed my vines I asked the bank to write off the loan, but they did not listen. I have only repaid 1,000 rupees so far. 15 to 20 days ago the new bank manager sent his peon to inform me that I now owe 12,000 rupees. I am worried they will seize my land' (respondent no. 72). The respondent had shown his land *patta* to the bank as collateral for the original bank loan.

Besides loss of cash earnings and negative implications for household diets, with far fewer trees on homestead lands there are serious implications for the impact that will be levied on coastal communities should another major cyclone occur. As Chapter 11 discusses, trees played a cardinal role in helping people survive in 1999, and the reduction of clusters of trees upon homestead land in coastal Orissa's villagers remains a major cause for concern.

7.3 Fishing

Fishing is an important livelihood for villagers faced with dwindling landholdings (Chapter 4), poorly paid and irregular work (Chapter 6), and diets devoid of supplements obtained from livestock and fruit trees in the years since the super-cyclone. Those residing close to the seashore in the Erasama research site catch fish and crabs using various techniques, for example, with nets or with baskets tied to rope that are submerged on the seabed for lengths of time. They do not use boats. Those with homestead land dig ponds to practise pisciculture. Those inland and without sufficient homestead land practise river fishing, though some households may practise two or all three types of fishing in

varying proportions. Fisherfolk use the fish for home consumption and/or for sale. In this section present day fishing patterns are established, and trends over the ten years for the different types of fishing examined.

Types of fishing in the research sites in 2009-10

In 2009-10 sea fishing is practised by 23% of the sampled households in Erasama, the majority from Kalabedi (16 households) but also by others from Sahadabedi (7 households), Shuakunda (4 households) as well as one Garia household (Chart 7.8). Just over 50% of Kalabedi's households are sea fishing because of convenience – the sea is at their doorstep. River fishing is practised by households from all wards in both sites, also due to convenience – there are rivers close to all eight sampled wards in this deltaic region. River fishing is pursued by half of the total number of sampled Erasama households (60 households) and one-quarter of Garadpur households (31 households).

In Erasama's wards, 80% of Shuakunda's households, 63% of Garia's, 33% of Sahadabedi's and just 23% of Kalabedi's fish in rivers. The rate of river fishing by the latter two wards has decreased following the super-cyclone, villagers said, because their local river, the 'Mota River' which lies parallel to the seashore just 50 metres or so inland, was filled with sand during the tidal surge. This process, however, was anyhow ongoing. In Garadpur, 37% of Behula's (traditionally fisherfolk caste), 30% of Samsara's, 27% of Jamunabad's and just 10% of Marilo's households fish in rivers.

Finally, pisciculture is practised by 30% of all Erasama households, especially by the Bengalis of Shuakunda (12 households) and Kalabedi (16 households) but also by Oriyas from Sahadabedi (12 households). Garia's folk cannot do pisciculture because they have too little homestead land upon which to dig ponds. Just one (Behula) household of the Garadpur sample pursues pisciculture.

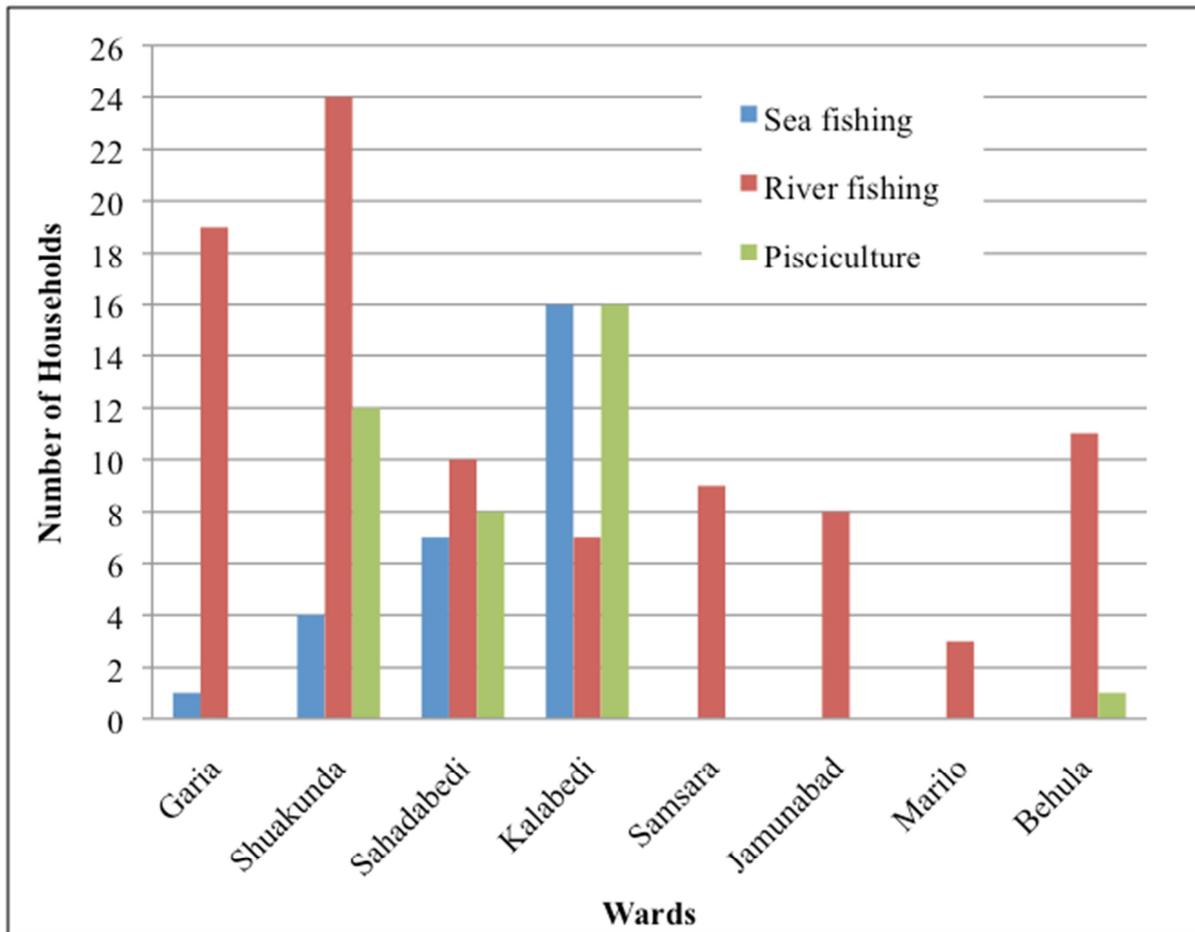


Chart 7.8: Both sites: Ward-wise (n=30) analysis of pursuit of different types of fishing in 2010

Significance of different types of fishing as a livelihood in 2009-10

Few households fish in the sea throughout the year (Chart 7.9). Only two households in the Erasama site fish in the sea throughout the year, whereas 17 households fish for up to three months and 9 households fish for between three and six months. Of those who fish in the river in Erasama, roughly one third fish for up to three months, one third for between three months and six, and one third for up to 12 months. Two-thirds of those who fish in the river in Garadpur do so for less than three months. The majority of Behula's folk, by caste fisherfolk, fish in the river for less than six months. Pisciculture is seasonal, with the fish seedlings normally thrown in towards the end of the summer season – thus the majority of Erasama households that do pisciculture do so for less than six months in a year. This data serves to show that fishing is a supplementary livelihood.

The majority of those fishing in the sea do so to sell their catch (Chart 7.10). Just three of 28 households stated they consume as well as sell their catch. This shows that though supplementary, sea fishing is a serious enterprise for them. Fishermen were seen at the seashore several times during field research. They said that they did not have boats to go out and instead relied on the tide. On a good day a person could catch 10-15kg of fish, but on a bad day he could go home empty handed (sea fishing is practised exclusively by men in the Erasama site, whereas river fishing is undertaken by women and men). Kalabedi's fisherfolk are unhappy that they receive no support from the fisheries department because they are not fisherfolk by caste, only by profession. One people's representative, the Zilla Parishad member, seemed ignorant of the type of fishing pursued by Padmapur's fishermen, assuming

they ‘simply use country boats’⁴⁵. He was critical of the state however, for not providing any support in the way of nets, boats, storage and transport for the catch.

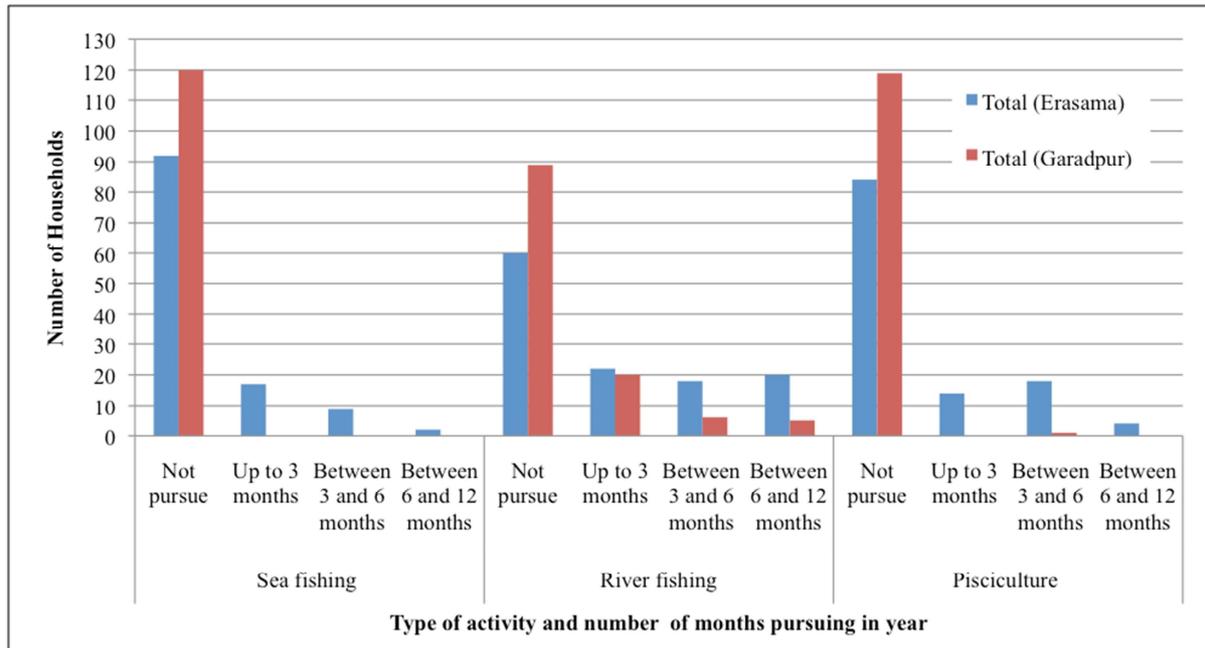


Chart 7.9: Site-wise (n=120 per site) analysis of number of months spent fishing

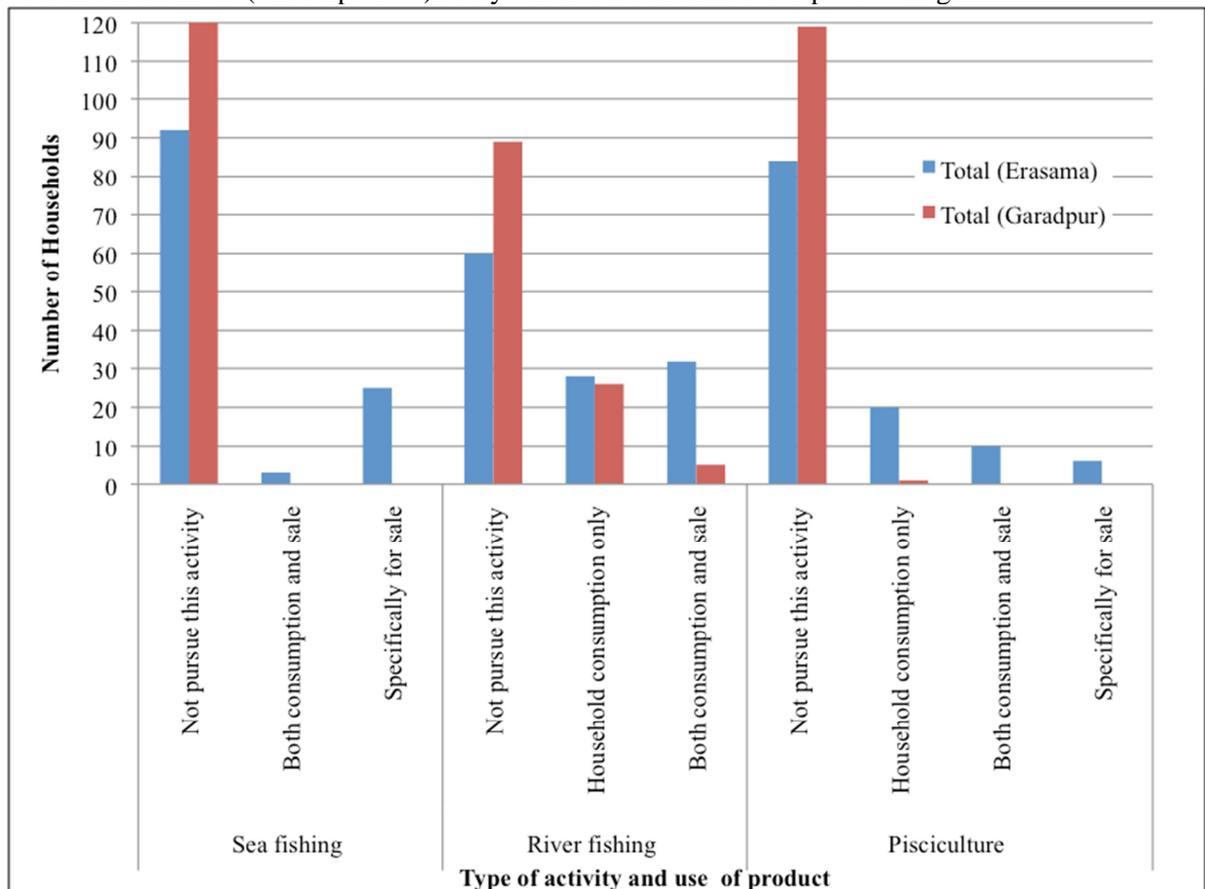


Chart 7.10: Site-wise (n=120 per site) analysis of use of fish once caught

⁴⁵ Interview conducted in Erasama on 21/4/10.

Nearly all those fishing in the river in Garadpur do so for home consumption (26 households out of 31), whereas the remainder do so for both sale and consumption (Chart 7.10). Half of Erasama's river fishers do so for home consumption (28 households), while the other half of households do so for both consumption and sale (32 households). The majority of Erasama's households practising pisciculture do so solely for household consumption (20 households) whereas 16 households do so for sale, with 10 of these also consuming a portion of their catch.

Trends in fishing over the ten years

The number of households pursuing sea fishing has steadily reduced over the ten years since the super-cyclone. Kalabedi's fishermen told us that nowadays they catch more dead fish than they do live fish, and they blame this upon chemical dumping by companies (if this is true, one assumes the pollution is coming via the Mahanadi River into the sea). They also suspect that 'industrial fishing' is to blame for the lack of fish at the seashore – they have watched a rise in large fishing boats far offshore. Whereas 55 households went for sea fishing in 1999 before the super-cyclone, nowadays 28 households fish in the sea; a 100% reduction from 46% of households in 1999 to 23% of households in 2010. The number fishing only for consumption has reduced from 10 households to three, and the number fishing only for sale has reduced from 45 to 25 households.

River fishing is also on the steady decline in our sample population, with 62% of Erasama households pursuing river fishing in 1999, down to 49% in 2010 (74 to 59 households), a 20% decrease in the total number of households river fishing. The majority of those discontinuing river fishing are from Kalabedi (12 to 7 households) and Sahadabedi (15 to 10 households). Kalabedi's women in a meeting cited decline in sea and river fishing as one contributing factor towards youth migrating for work – the other being the changes in agriculture over the past ten years (Chapter 4). Garadpur has seen a slight overall reduction in the number of households pursuing river fishing, down from 36 households in 1999 to 31 households in 2010: there has been little change in river fishing over the decade.

The trend in pisciculture in Erasama over the ten years is most striking (Chart 7.11). In both Bengali wards – Shuakunda and Kalabedi – there has been a marked rise in the number of households undertaking pisciculture: from 7 households in 1999 to 12 in 2009-10 in Shuakunda, and from 10 households in 1999 to 16 households in Kalabedi. These trends are unsurprising given the lack of employment opportunities for these villagers (Chapters 4 to 7). Shuakunda's men said that whoever has a little extra land dig ponds, and that fish cultivation is being practised for consumption only, because the pond area is not great enough to produce surplus fish for sale. Eight households from Sahadabedi have continued to practise pisciculture through the decade whereas none of Garia's sampled households do so (for lack of space).

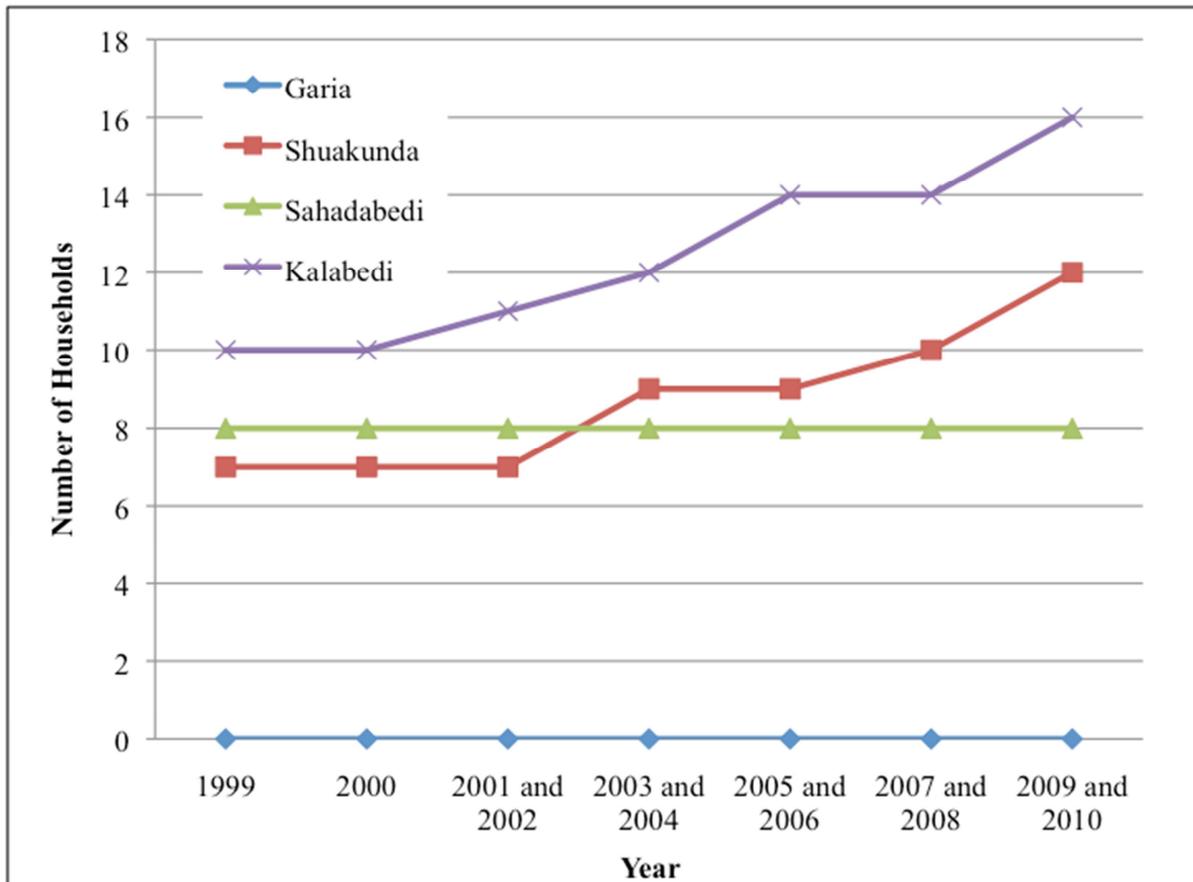


Chart 7.11: Erasama: Trends in pisciculture over the ten years (by number of households)

In summary, the trends in sea fishing are disturbing and this is an area for further research. Respondents are of the view that sea fish are dying due to pollution and are being over-fished by trawlers. Those fishing in the sea claim to have never received support from the fisheries department. River fishing is pursued by half of Erasama's households principally for consumption. Garia's women said they fish to run their families, because their men do not earn enough. There is a slight irony to the scenario regarding pisciculture in Erasama: while the gram panchayat uses heavy machinery to dig large ponds using NREGS funds, with the intention of raising revenue by leasing them out, villagers are themselves digging ponds to improve their nutrition.

7.4 Livestock, fruit trees and fishing: Summary and key recommendations

This chapter has investigated trends in livestock and fruit tree ownership over the ten years since the super-cyclone. It has sought to show the importance of livestock, fruit trees and their fruits, and fishing to villagers and village economies. These livelihoods support villagers' well-being and their general decline can only make villagers weaker and more vulnerable to future disasters.

In Erasama, livestock and poultry were decimated in the super-cyclone, and with little or no NGO and government support, animal ownership has not recovered to its former number. Villagers have slowly begun to restock animals by borrowing and caring for others' animals (– an institution that favours wealthier households that can afford animals in the first place). The Garadpur example shows the importance of having animals in the aftermath of disasters, for villagers were able to sell their livestock after the destruction reaped by the super-cyclone to help themselves during that tough

period. The lack of pasture for animals in the Erasama site highlights the lack of general land use planning and regulation in the coastal strip. As long as powerful people own and control land along the coastline without the government intervening, little opportunity for serious planning of land use will appear. No evidence was apparent of livestock registration in the Erasama site (new guidelines allow for compensation for livestock losses), so one wonders how households will be compensated should another cyclone kill their livestock.

Fruit tree numbers were seriously reduced in the Erasama site by the super-cyclone, and to a lesser extent in the Garadpur site. NGO support to villagers was widespread following the super-cyclone, and villagers themselves have shown great initiative to replant fruit trees. However ten years on the total number of trees remain fewer and harvest of fruit lower than before the super-cyclone, which is impacting upon cash earning opportunities and nutritional levels. There was no evidence that the government is assisting villagers in fruit tree management. Sea fisherfolk claim a decline in their catch and continue to receive no support from the government, directly with equipment or indirectly through infrastructure. Pisciculture is on the rise accompanying the increasing marginalisation of people and their livelihoods – most likely as a strategy to improve nutrition.

The chapter concludes with a few key recommendations:

- There is a need to assess and record numbers of livestock owned by villagers in the coastal regions, without which the distribution of compensation, should another disaster occur, will be difficult (Chapter 12 notes that the state could do more to aid livestock related compensation claims for victims after disasters).
- NGOs could be commended for supporting villagers to replant their fruit trees, but further support needs to be provided to tree owners whose trees are suffering disease.
- The fisheries department could actively support and promote local sea fishing in vogue along the coastline. Storage and transportation arrangements could be made to encourage the development of this healthy livelihood.
- Support could be offered to marginal households for the digging of ponds on homestead land. Registration of such ponds could facilitate compensation claims for losses when another disaster occurs.

Chapter 8: Larger livelihoods issues

In this final chapter of the livelihoods section, an overarching view of livelihoods in the research sites is taken to address three main points. Firstly, the chapter briefly explores the extent and coverage of self help groups (SHGs) in the sampled wards to try to understand the effect SHGs are having on people's lives and livelihoods. Second, it explores the general state of land use and management in the coastal Erasama site, including forest and firewood collection, prawn farming and land ownership, and saline and fresh water management (including the sluice gates). Thirdly, it examines how, why and to what end livelihoods diversification is taking place in the sample wards. In answering this question the livelihoods outlined in Chapters 4-7 are revisited to bring together evidence to show how livelihoods cannot be said to have recovered in the ten years since the super-cyclone. It concludes with some general comments on people's livelihoods and welfare.

8.1 Self help groups

Self help groups (SHGs) were mentioned in Chapter 4 where data was presented showing that just 10% and 15% of all cultivating households had taken loans from SHGs in 2009-10 for agricultural purposes. SHGs fall into two categories in Odisha: government and NGO initiated. Government SHGs are formed under the central programme Swarnjayanti Gram Swarozgar Yojana (SGSY)⁴⁶ that began in 1999 and intends to assist the country's rural poor to gain self-employment, and to provide poor households with income-generating assets through a mix of bank credit and governmental subsidy. Through the Panchayati Raj Department, the SGSY is supposed to organise groups of the poor into SHGs, give them capacity building, training, and build up infrastructure, technology and marketing support. This study explored cases of SHGs in the study villages, wherever they existed.

One ward in Garadpur has two government-initiated female SHGs⁴⁷. Several women of one of the groups told us their story, 'we formed in January 2005 after Naveen Patnaik instructed the blocks to form SHGs. To join one has to pay 30, 50 or 100 rupees, and we selected 50 rupees. At first we thought the scheme was for BPL only. All our 13 members are BPL. Three people have left and three have joined over the five years. Here [in our ward] we have two SHGs, one for scheduled castes and our one for Khandayats [higher caste]. At the start we received a 30,000 rupees loan from the block. We had to give our BPL numbers and homestead land *pattas* as collateral. We invested the loan in several ways, in farming and livestock, and repaid it after two years. We've generated 50,000 rupees so far, and have given out loans to villagers, but these loans are only given in a member's name. The loans have an interest rate of 3 rupees per 100 rupees per month, and people take loans for medical and emergency cases. We meet every 15 days or so to check our savings. We process *bari* [black gram] and make *papad* and sell it at functions'.

The women were asked to explain if they feel empowered from having formed the group, and what their plans for the future are. They spoke positively of their experience of applying for a subsidised loan of 330,000 rupees, of which they will need to repay only 200,000 rupees. They intend to open a grocery shop at one member's house involving all those in the group. The women were asked how the block interacts with them. Their responses were generally not so positive. They said that a field

⁴⁶ 75% of finance comes from the centre, 25% from the state, for SGSY. See www.rural.nic.in/anual0203/chap-5.pdf for more details (accessed November 2010).

⁴⁷ The ward and SHG is not named to protect the SHG members.

officer had come from the block once in five years. Also, they had to bribe a hefty sum of 10-15,000 rupees to obtain the loan from the block. They feel constrained at the lack of transparency and information available. They are also disappointed by the gram panchayat. The *sarpanch* invited them once, to help with a latrine programme in the village, but nothing materialised, and they note that there have been no *palli sabhas* in the last 1.5 years.

The case study is illustrative of several points. Firstly, the women appear honest and productive when organised into an SHG, and empowered to some extent. Secondly, loans are taken from their SHG for medical purposes, not for cultivation purposes, a common story. Thirdly, whatever the women have achieved has been done without the support of their elected representative or block level bureaucrats. Fourthly, the women expressed their irritation and disappointment at block officers for taking a large bribe from them but feel they cannot do anything about this.

In Samsara's selected ward two SHGs were formed, one after the super-cyclone and the other after the 2001 flood, by the NGO GITA. Both ceased to function due to internal problems: no member wanted to take responsibility and there were differences in opinion. In Jamunabad an SHG formed by GITA is functioning. This SHG faced difficulty when the women gave their entire fund to a villager from Beradi to buy chickens for a poultry farm. Instead the man proceeded to misappropriate the entire amount. He has repaid just 2,000 rupees so far. The women have complained to the police but he still has not repaid, and as a result they are becoming indebted for the original loan they had taken.

In the Erasama site there was no evidence in the villages of government-initiated SHGs. A social activist, working with Action Aid for the ten years since the super-cyclone, said about SHGs, 'there are federations of SHGs nowadays, formed by NGOs. Before the super-cyclone Red Cross had set up two SHGs per gram panchayat. After the super-cyclone many NGOs came and gave training such as book keeping. There are several SHGs in each and every ward nowadays. Before they were restricted to economic affairs but now they have become public, dealing with dowry and torture cases, and corruption cases. SHGs have taken control of the mid-day meals scheme at primary schools, and have even taken on the police when they fail to act.' We found that an Action Aid initiated SHG in Shuakunda lasted only for 2-3 years due to internal disagreement.

Kalabedi on the coastline has been flooded with NGOs wanting to form SHGs. Villagers said, 'AKSS formed a male SHG 'Bapuji Krushak Sangha' and a female SHG 'Naraini Shitala' and gave 2,000 rupees to each of the groups' 14-15 members. The coordinator of the female group hoarded the group's 34,000 rupees. Another SHG called 'Naraini' took a loan of 50,000 rupees from the cooperative society and repaid it within six months. They have applied for a 100,000 rupees loan. Another SHG called 'Ganga' was formed recently, and the members deposit money regularly, and give loans of up to 2,000 rupees to members and larger loans of up to 5,000 rupees for marriages or emergencies, but only after taking collateral. No monetary help is being provided by the government to any of these SHGs.'

They went on, 'another NGO CASA formed an SHG named 'Saraswati' and its members deposit 20 rupees per month, but the NGO has stopped coming and never provided monetary help. It had disagreed with the people on the interest rate for a loan, with the people wanting a decreasing interest

rate rather than a flat one. In 2005 Lutheran World Services formed a 72 member group called 'Village development committee' without giving any funds. We members deposit 10 rupees per month and currently have 50-60,000 rupees. The money is lent to members, with interest, for agricultural purposes. Only Action Aid through BGVS, after the super-cyclone formed SHGs and gave us money to buy cattle and other essentials. The government supported five landless households by forming a SHG and providing a loan of 5,000 rupees to each member; but the interest rate was 12% so the group will not take another [loan].'

In Gadaharishpur Gram Panchayat in 2000, just after the super-cyclone, under the guidance of Father Augustine and with funding from Caritas India (till 2003-04), the 'Jeevan Vikas Krushak Federation' was formed. It became registered in 2005, and from 2004-06 was supported by Father Augustine (who had managed to arrange funds from Caritas Swiss and Caritas Luxembourg). In 2008 at Asia (village) the federation was renamed 'Jeevan Vikas Krushak Self-Help Cooperative Limited'. Mr Prafulla Patra, former *sarpanch* of Gadaharishpur, is the president. In April he told us, 'the federation earlier had 1,000 members but nowadays has 587 members comprising 22 SHGs'⁴⁸. Our capital presently exceeds 400,000 rupees. The SHGs are unique because some are male and some female. The main aim is community development through focussing on education, health, cultural, economic and social aspects, even on political awareness like campaigning for *palli sabhas*. For example, earlier 30% of children went to school but now 90% go to school.'

Two of the federation's SHGs in Shuakunda, 'Radha Govinda' and 'Gouri Netai' were formed in 2002-03. The federation through its SHGs provide loans only for paddy cultivation at an interest rate of just 0.80 rupees per 100 rupees per month. The donation to the federation from the SHG is a monthly 20 rupees. Shuakunda's farmers are happy with the federation, but find the agricultural loans too small, because the federation provides the loan to the SHG and its members have to divide the loan amongst themselves after which the share becomes too small⁴⁹.

This section has explored coverage of SHGs in the research wards of both sites, finding mixed results from NGO initiated SHGs and little coverage by the SGSY central government scheme. Tentatively, for the sample is small and little time was dedicated to this subject during field research, the following comments can be made. For NGO formed SHGs the key to success appears to be long-term engagement with the people (and a strong moral philosophy). With government SHGs, where they have been formed, it is apparent that success is down to the members. The case presented at the start of this section shows that a bribe had to be paid for the SHG to access a loan. Studies on the SGSY, the highlights of which were published in a newspaper in 2010, confirm that the scheme is deeply troubled or even a total failure⁵⁰.

⁴⁸ Father Augustine told us, that as of 31/10/10 there are 28 SHGs and 389 members.

⁴⁹ Group meeting held in Shuakunda in November 2010.

⁵⁰ 'All is not well with SHGs', New Indian Express, Bhubaneswar, 26/08/10 and 'SGSY scheme ends up in total failure in Orissa', New Indian Express, Bhubaneswar 17/08/10.

8.2 Land use and management in the coastal Erasama site

This section examines the state of forest cover on Erasama's coastline, fuel use by villagers, the question of mangrove plantation along the coastline, registration and regulation of prawn gheris, and fresh/saline water management through sluice gates. The purpose of the section is to highlight how these five inter-related issues form part of the larger ecological context within which the livelihood changes outlined in Chapters 4-7 are situated, and which place constraints on recovery processes.

State of forest cover on the coastline, and fuel use by villagers

The Erasama research site falls within the Hawakhana Forest Beat (Map 8.1), which contains four forest blocks including Sahadabedi Forest Block. Since the super-cyclone the forest department has planted mangrove to the south side of the River Boitakulia, and Casuarina along the coastline in Sahadabedi Forest Block (Map 3.3). The forest department planted Casuarina because it can withstand cyclone-strength winds; however Casuarina is an invasive species and prevents undergrowth, besides providing excellent firewood. One forest officer, when interviewed at the Jagatsinghpur Divisional Forest Office, said, 'after 2003 we could no longer plant Casuarina because there was no space left, and water logging was destroying whatever saplings we planted'. The forest officers blamed Bengali settlers of the 1970s for cutting down mangroves. The forest office claims to have regenerated forest to pre-super-cyclone levels, but complains that gram panchayats have too much power, such that *sarpanches* consider themselves superior to forest officers. The forest officers blamed villagers for their lack of cooperation, and politicians for the current mismanagement of forest resources⁵¹.



Map 8.1: Erasama site: 'Protected forest' close to the research site

⁵¹ Interview with two forest officers at the Divisional Forest Office, Kujanga, 21/4/2010.

The *sarpanch* of Padmapur, on the matter of forest cover, claimed ‘we need mangrove, however the department planted Casuarina. People have switched to prawn cultivation that degrades mangrove. It is untrue that forest has been regenerated, thousands of acres are without forest cover’. Nevertheless one Kalabedi woman praised the Casuarina plantation standing between her house and the sea, the work of the forest department, and said it provides an excellent windbreak such that cultivation is again possible. Padmapur’s *sarpanch* also said, ‘NREGS is spending *crores* of rupees but the forest department spends *lakhs*. There is no coordination whatsoever between the forest department and panchayat’. Kalabedi’s villagers said that maybe half the area previously under forest has tree cover now, though the trees are small in size. They agreed that 30-40 years ago there was mangrove and that their forefathers had cut it down to cultivate. They said, ‘we have informed the forest officers that we want to plant mangrove, but the officers think it will not survive and will not provide saplings. Our elders think it will survive, but the department is unwilling to attempt it, even on a trial basis’.

Forest committees were formed in Kalabedi and Sahadabedi by the forest department in 2004. They functioned for three years but then fell apart. One of the stated reasons was that those excluded from the committee felt left out and reluctant to support it, and so cut trees. Nowadays the committees are lying dormant, people are not abiding by the rules, and the department is not assisting in this matter. Early on, when committee members caught people cutting trees and took them to the police no action was taken against them. Siyali’s villagers said they caught the police cutting trees, and took this case to the district forest officers three times, but nothing happened. Sahadabedi’s women asked ‘how can we stop people from other villages, like Garia, coming to cut wood?’, though some of the village’s men admitted that they themselves cut the trees. During field research, Oriya women from the scheduled caste *Bauri* community, from a village neighbouring Kalabedi, were seen cutting down trees on the beach in broad daylight. Kalabedi’s Bengali women revealed that the husbands of these Oriya women have physically threatened and intimidated their husbands at market places, telling them to allow their women to cut wood. The villagers of Kalabedi and Sahadabedi cannot protect the forest without support, and feel they need recognition if they are to do so.

One half of the Erasama site’s respondents said they collect firewood for consumption purposes (62 households). Similarly one-half of respondents said they collect and use cow dung for consumption purposes (57 households). Interestingly none of Kalabedi’s households claim to collect and use firewood as fuel, even though they live within the protected forest (Map 8.1). These rates have stayed constant over the ten years, according our questionnaire survey, even in the year after the super-cyclone. Many trees were destroyed and livestock killed, so consumption levels must have fallen following the super-cyclone, however households claim to have continued to collect and use their chosen fuel. Several of Garia’s households admitted to consuming and selling some of the firewood they collect (four households in 1999, three from 2000-06, and two from 2007-10), however the numbers are probably higher. All remaining respondents claimed to use firewood solely for their home consumption.

Prawn cultivation and mangroves

The link between prawn cultivation and mangrove and forest cover along the coastline is a clear one: forest and mangroves were cleared for paddy and prawn cultivation, because people need to subsist,

and forest continues to be cut for fuelwood in the absence of alternative fuel types. The fisheries department began to issue licenses for prawn gheris in April 2009, according to Erasama's Fishery Extension Officer (FEO). Up until 16th December 2010 (the date of the interview), they had registered just 126 prawn cultivators but estimate there are thousands that remain unlicensed. The cost is 500 rupees for a gheri of up to 5 acres, and the license is valid for five years. The central government announced the registration process ostensibly to prevent outsiders (from other states) coming to cultivate prawn. Currently there is no deadline to register, but there are incentives to do so: training is provided by the Coastal Aquaculture Authority of India, Madras, loans with subsidy can be obtained from any bank (commercial/cooperative), and compensation will be provided if a cyclone or flood is deemed a disaster by the government. In a recent panchayat committee review meeting in Erasama, the issue of demolition of 'illegal' prawn gheris was discussed, but according to the FEO no official paid interest⁵² (unlike in Kendrapara where interest is shown⁵³).

The reason little interest is paid in Erasama may stem from a collusion of powerful people with interests in prawn farming along the Jagatsinghpur coastline, and this is an area for further research. Sahadabedi residents said that 'before the super-cyclone outsiders used to cultivate prawn on the land between Sahadabedi and Kalabedi [see Map 3.3]. The outsiders, from Talcher, Bhubaneswar, Tirtol, Kujang and Jagatsinghpur have never lived here. They include a [prominent] politician and an industrialist'. These wealthy people bought the land as far back as 20-30 years ago from local Bengali landlords⁵⁴. Before the super-cyclone there were large gheris but since the super-cyclone they have leased out smaller gheris to locals'.

Padmapur's *sarpanch* believes there are many illegal prawn gheris under his gram panchayat, and that they exist on government land, there are no land records of them, and they were forcefully taken off the earlier Bengali landholders. He listed the names of seven people (or groups) controlling a total of about 700 acres of prawn gheri. These include four men who control 200-250 acres of gheri, an Ambiki-based man who controls 100 acres, a Jagatsinghpur-based man who controls 150 acres, and a Bhubaneswar-based man who controls 40 acres, besides others. Gadaharishpur's *sarpanch* listed eight people (or groups) who have land records and control about 250 acres of prawn gheri. These included three Bengali brothers whose sons live locally (150 acres), three men from Kujanga (20 acres, 15 acres and 10 acres), two men from Titera (30 acres, and 10 acres) and a man from Balikuda (8 acres).

Fresh and saline water management

The estuarine micro-environs of the Erasama site were introduced in Chapter 3.3 (and see Map 3.3). Two sluice gates, built at the mouths of the Rivers Sankha and Gaipadia in 1992 and 1982 respectively, are presently dysfunctional and are not serving their intended purpose. In late 2010 Cyclone Jaal caused a tidal surge that washed away the earthen embankment besides Gaipadia's

⁵² This paragraph draws on an interview with the FEO and a Fishery Demonstrator at their office in Erasama, 16/12/10.

⁵³ According to the divisional forest officer of Bhitarkanika National Park, 1252 hectares of prawn farms have been demolished in the past two years in Kendrapara District's coastal Mahakalapada Block, and mangrove saplings have been planted in the areas cleared of encroachment ('Illegal prawn farms to be demolished', New Indian Express, Bhubaneswar, 28/07/10). In the Erasama site no such action has been taken to demolish 'illegal' prawn farms.

⁵⁴ In the British colonial period, Oriya zamindaris (estates) were apparently auctioned by the British government in Calcutta in order to pay off revenue debts, resulting in Bengali zamindars buying Oriya estates, which led to absentee landlordism in Odisha (Das 2002, in Ray-Bennett 2009: 15). It is possible that subsequent land reforms have left significant tracts of land under absentee Bengali ownership, an area of investigation that could not be followed up during this research.

broken sluice gate. In Chapter 4 the condition of paddy cultivation by farmers of Shuakunda and Garia was presented. These farmers are suffering terribly because of this faulty water management that allows saline water to intrude up the Gaipadia and Sankha Rivers, occasionally over-spilling or causing breaches in embankments and flooding into farmland, destroying crops through water logging or excess salinity. The predicament of farmers leads them not to use high yielding varieties of rice that cannot withstand high salinity and water logging, and to instead continue to use traditional, low yielding varieties. Paddy farmers are clear in their demand for a new, larger sluice gate, which has been promised to them by successive politicians. At the time of the last election, according to villagers, the foundation stone of a new sluice gate was laid. However the cost of building the sluice gate, due to transportation costs, has so far deterred any contractor from taking the job, explained one local. Other factors may also be delaying its construction.

The question of creating a new larger sluice gate involves considerations beyond the immediate requirement of local paddy farmers, requiring greater levels of planning. From one perspective, the land in this estuarine environ should never have come under cultivation in the first place, and mangrove should be regenerated. If so, what will become of the population residing here? Consideration need not be given to prawn cultivators, for they can anyway cultivate prawn using fresh water due to high soil salinity levels. Consideration could be given to rock salt producers, whose livelihood would be unviable without saline water intruding (as it does naturally) up the Gaipadia. Oriya villagers from Ahuri and Goda continue to produce rock salt on some 50-60 acres of an area of 100 acres, mainly government land, which is leased to them. Producers have defied an order banning its production. Earnings are 400 rupees per quintal, with no input costs; though the work involves long periods exposed to the sun's rays. The rock salt is sold in Jagatsinghpur and Paradip for dried fish production. Producers will be able to grow paddy on the land if and when a proper sluice gate is built, as producers from Shuakunda who used the Sankha River's water for rock salt production did when the Sankha's sluice gate was built in 1992.

Time will tell if the proposed sluice gate will be built. Villagers in Shuakunda said they have been awaiting a scheme to supply them with fresh water for decades now. In late 2010, Erasama's assistant agricultural officer (AAO) said that the irrigation department have chalked out a plan to drain excess water, and have information on the upcoming Boitakulia River sluice gate⁵⁵.

8.3 Livelihoods diversification – is it happening and why?

In this section agriculture and aquaculture, migration, wage labour work, and livelihoods revolving around fishing, livestock and fruit trees are brought together, as well as other traditional livelihoods such as weaving and bamboo basket making, to ask the question, are livelihoods diversifying and if so, why? The patterns to changes that have taken place are unplanned and resemble the accumulative result of households pursuing strategies to subsist and survive. Women are working more in the present day, and some policy-makers celebrate this as a positive outcome, even suggesting that this change is due to women's experiences at the time of the super-cyclone. However along with their already full-time home-based duties, women who now have to go outside to work (to pay children's school fees, to provide food for their children) have ever increasing workloads and their health and

⁵⁵ Interview with the AAO in Erasama, 16/12/10.

well-being ought to be taken into account. Women have joined the workforce because of men being absent (due to migration), falling harvests/production, indebtedness caused by loans taken for unsuccessful ventures, rising food prices, combined with an absence of free, quality education and healthcare, amongst other reasons. This is certainly an area for substantial research. Besides government sector work, which is obtained by those from wealthier households who have been able to educate themselves, and sometimes pay bribes for their positions, other livelihoods beyond those focussed upon in Chapters 4-7 include small business, and traditional rural livelihoods such as bamboo basket making and weaving. The latter are on the decline with the introduction of modern cheap cloth and plastic products, and those still producing these traditional crafts find that nowadays they can break even but not profit.

Livelihoods in Erasama

Villagers of the wards slightly inland from the coast (4-5 km) tend to mono-crop paddy and although the agricultural department is trialling many techniques, seed types and other crops, there was no evidence of these trials or of innovations in the gram panchayats selected by this project. As a result, and without extension workers coming to villages to make recommendations to farmers, cultivators in this strip largely continue to mono-crop traditional varieties of paddy but with less land, less inputs than in the past (for example, livestock numbers were devastated in the super-cyclone), worse soil conditions (increased salinity) and with increasing threat of crop loss by saline water intrusion and water logging (relentless coastal erosion and damaged, unrepaired sluice gates which lead to sea water coming in, and fresh water unable to exit). Harvests are lower than before the super-cyclone, and with increased renting-in of land, the gains of arduous work are decreasing. Costs of cultivation are rising. It nowadays costs 150 rupees per day to hire labour for weeding or planting, and 180 rupees for half a day of plough *without* bullock, or 300 rupees for half a day of plough with bullock (compare these with potential earnings of 90 rupees for a day's work digging earth under the NREGS). Farmers said that cultivation is no longer profitable but they do it for survival; and this sole dependence on paddy farming – since the super-cyclone and loss of fruit trees etc – leaves such households increasingly vulnerable.

The result of these problems: men are seeking agricultural and non-agricultural work where possible, and women have begun migrating on a daily basis to inland villages such as Balikuda or Goda to earn 160 rupees per day (minus transport costs of 20-30 rupees). Such women wake before dawn to perform household duties, travel for 1-2 hours to work in fields for the day, then return home to cook dinner before sleeping. Earlier they used to work in fields close to home⁵⁶. So lack of attention to agriculture is causing the daily migration of women and men to inland areas, increasing their workloads but not necessarily their overall earnings. Summarily it can be said there is little improvement in agriculture, government policies and programmes are not functioning well, and there is no irrigation, water supply or sanitation. Aside from having mobile phones and cheap clothing, people's diets are nowadays less wholesome due to a reduction in diversity of production and ever-increasing food prices. One scheduled caste wage labourer from Garia, furious at his villagers'

⁵⁶ The Directorate of Research on Women in Agriculture (DRWA) has confirmed longer term trends in women joining the workforce, 'Women empowerment at panchayat level can boost agriculture output', New Indian Express, 09/03/2010. The trends discussed here, however, are more recent and caused by recent agricultural unfoldings.

inhumane living standards, publicly claimed that they are living like monkeys, being unable to clothe themselves, and men unable to afford to shave.

In the wards adjacent to the coast, farming households attempted to cultivate prawn following the super-cyclone, due to salinisation of land and the failure of paddy crops in the first few years. Without any support or guidance from the fisheries department, half of these households made huge losses, of up to 100,000 rupees per household, before switching back to paddy. On returning to paddy farming, many found they could no longer cultivate in the *khariif* season due to farm-level changes in water supply and drainage channels. Farmers have therefore begun to cultivate paddy in the *dalua* season, and for many this has proved a success: using high yielding varieties of rice seed sourced from the block they obtain improved harvests in the *dalua* season, whereas during the *khariif* season they cultivate fish in their farm plots⁵⁷. These success stories do not apply to all farming households, and are dependent upon various determinants, such as having land in the correct place, i.e. where water for irrigation is available, and the ability to afford and procure assets such as pump-sets where necessary.

Kalabedi and Sahadabedi's farmers are not all doing well, as evidenced by their women who nowadays wake at 4am to walk to Garia (4 km) to catch a bus to Borikina, to earn 100 rupees plus food twice for a day's labour, minus their bus fares of 30-40 rupees. This they do for their children, to be able to feed and educate them better. A further problem facing farmers on the strip of land along the coast is that they have no land *pattas* and hence cannot access formal loans. With a reduced number of livestock for all villagers in the coastal strip, pressure on the plantation forests for firewood has increased, leading to increasing deforestation, coastal erosion, and sea incursions. Kalabedi's very existence is now threatened: within 30-50 years, one can speculate, a great portion of the *bedi* upon which Kalabedi's villagers have settled may have been swallowed by the sea.

To summarise the scenario in Erasama's research site, agriculture has not diversified because of planning by the agricultural department. Rather, inland 5 km it has remained the same, whereas adjacent to the coast cropping schedules have altered due to the effects of prawn farms. The block simply provides paddy seeds, nothing more, to these farmers. The fisheries department have not supported prawn cultivation, sea fisherfolk, or marginal households that have dug ponds in their homestead land. It is unclear why this department is not pursuing registration of prawn farms with interest, but political pressure from powerful stakeholders may be an issue. The Panchayat Raj department has not formed self help groups under the SGSY, indeed there was no mention by any villagers of this scheme. NREGS is practically a total failure for wage labourers, though the unintended outcomes of channels and ponds dug with NREGS money may be of benefit to villagers in the longer term. Livestock and fruit tree ownership remains low and villagers have received no support from government departments in these regards. Banks are extorting villagers, with likely tie-ups with government functionaries (in the case of NREGS); and villagers have no agency to whom

⁵⁷ Interestingly a study by the Indian Council of Agricultural Research (ICAR) and International Rice Research Institute (IRRI) conducted for the period 2003 to 2009 produced results that led to an article being published in the New Indian Express, titled 'Erasama farmers now grow enough rice', which starts by saying that 'For farmers in Erasama...good times are coming back', New Indian Express, 24/04/10. The article highlights an increase in area under dry season paddy, and an increase in farmers' renting-in land, which this present study also points to. However there is no mention in the article of the cause of increase in area of dry season paddy, aside from a claim that 'education of farmers' was the reason. This needs to be explored further, because this present study points to a failure in prawn cultivation as being a cause.

they can complain. For many, migration is literally the only way out, or rather, the only survival strategy.

Livelihoods in Garadpur

In three of the sampled wards in Garadpur there have been no changes to cropping schedules in the ten years since the super-cyclone. In the well-connected wards of Behula and Tikanpur some 96-97% of land is under paddy and pulse production, with HYVs of paddy and largely local varieties of gram sown. In Jamunabad over two-thirds of land is sown with paddy and gram. Villagers complain of a lack of irrigation, and *pani panchayats* (constitutionally a right) are entirely defunct⁵⁸. In our Garadpur sample of 120 households, over ten years there has been a 33% decrease in area of land owned and used, and a 13% decrease in cultivators. The proportion of land being sharecropped has increased greatly, from 14% of all land 'owned and/or operated' to 25%, while the proportion of land owned and used has dropped from 72% to 55%. This reflects increasing inequality: many are moving out of agriculture, making large earnings elsewhere and renting-out their land, whereas those stuck in farming are facing decreasing landholdings and through necessity rent-in land. In the absence of land reform⁵⁹, concerted attention from policy makers is required to improve the lot of sharecroppers, for as things stand, investment into sharecropped land is minimal (the owner does not invest, and the tiller has little if anything to invest).

Samsara's villagers have faced severe flooding in both 2001 and 2008 (due to breaches in the embankment besides their village), and were harshly affected by the 1999 super-cyclone. They have suffered more than their fair share of loss of assets. In 2008, positively, Samsara's bamboo basket making community each received 2000 rupees as assistance to purchase replacement implements for their livelihood. Nevertheless bamboo basket making is already becoming an unviable occupation, for the workers currently do not profit from this craft (bamboo has become a scarce material, and its cost has correspondingly increased). In a group meeting, representatives of Samsara's 50 strong weaving community, most of whom no longer weave, said that following the 2008 flood, a cooperative society came to assess their condition, asked them to undress to take photos, and told them they would receive compensation – though this never came. One weaver told us how his father could not compete with modern cloth factories, so had taken to wage labour, and that he had never learned the trade. Landlessness is already high in Samsara (at 40%), but has been exacerbated by increased variability in water levels of the Chitrotpala River, such that much of the land on the floodplain is no longer cultivated. Cultivation patterns have changed due to sand casting of land nearby the village, towards paddy and groundnut and away from paddy and pulse (unplanned diversification). In a village like Samsara the people are seriously in need of livelihoods support. In 2010, NREGS job cards were received by some of Samsara's households, but within days they found there was no work on offer, and instead their cards were demanded from them by contractors. Youngsters from Samsara are migrating, and the parents remaining in the village feel at loss, because it is those same young

⁵⁸ When the research team visited an irrigation officer at Kendrapara they were coldly turned away. Irrigation facilities are non-existent in the research villages, save some tube-wells provided by an NGO in Jamunabad. The irrigation department also takes charge of embankment repair works, but the Samsara case shows that this work is not done to a high standard.

⁵⁹ Land reform is not a politically viable option in contemporary India. Reddy and Mishra (2008: 40-41) discuss the subversion of land reforms in the 1960s and 1970s, the neglect of agriculture in the 1980s, and the rapid decline of institutional support to agriculture in the 1990s.

migrants who are the first generation with some schooling, who are most able to stand up for the rights of villagers and demand entitlements.

In Garadpur, to summarise, a lesser proportion of livestock died during the super-cyclone than in Erasama, which allowed households to sell their remaining livestock for cash when they needed it most. This illustrates that livestock ownership in disaster prone areas is helpful for recovery. However, in Garadpur there appears to be a declining trend in livestock ownership due to farm mechanisation (there were far fewer livestock owned in Garadpur in 1999 as compared to in Erasama). Fruit trees were decimated in Garadpur only a little less than they were in Erasama, however Garadpur's households have never been as reliant on the sale of fruit as Erasama's, hence the livelihood impact has been less. Households from the sample wards fish in rivers and drainage channels to supplement their diets. NREGS, as mentioned in the case of Samsara, has generally been a failure, and villagers appear to have been convinced to tow the favoured line that the scheme is not suitable to coastal Odisha; even though, as this research has clearly shown, many households would benefit from and participate in wage labour work close to their homes.

8.4 Summary of section

This section (Chapter 4-8) sought to answer the key research questions; how have livelihoods changed in the past ten years, how have livelihoods been affected by the super-cyclone and floods, and what pressures are affecting these livelihoods and how are these being addressed in the present day? We have seen that livelihoods were affected by the super-cyclone in many ways, and that villagers have generally attempted to re-establish their previous livelihoods over the past ten years. In Garadpur floods have set back progress however the area's economy is stronger in comparison to that of Erasama's, and has provided more opportunities for locals. Generally speaking, livelihood opportunities in both sites have not recovered in the sense of being better than they were in 1999. Pressures have increased from many sides, and little positive work can be said to be underway in support of the most vulnerable in society.

Without support and with no agency to turn to, villagers have resorted to pursuing whatever work is readily available, such as farming and earthen labour work, but have also chosen migration as a livelihood (or survival) strategy. Migration (and its increase) is the one major change in livelihoods that stands out. Other livelihood opportunities have not arisen. However migration can be arduous and risky, with remittances highly variable. Summaries and recommendations can be found at the end of Chapters 4-8, and will not be repeated here. In the next section housing and cyclone/flood shelters are discussed.

Section 3: Housing and cyclone/flood shelters

Chapter 9: Housing since 1999

This chapter considers vulnerability and recovery with respect to housing in the two study sites at critical points since the 1999 super-cyclone until the present day. Housing, or shelter, predominantly constitutes the ‘physical assets’ that are a part of our multifaceted investigation into recovery from the super-cyclone, and in Garadpur, also recurrent episodes of flooding. In the spirit of the definition of recovery that is central to this study (Wisner, Blaikie et al, 2004) the analysis is linked to the question of resilience to withstanding the next extreme event. In both sites therefore, the investigation is geared towards examining whether the state of housing in the present day will make households less vulnerable to another cyclone/super-cyclone or floods, if relevant, than in 1999.

There are critical issues to do with the resources that households are able to draw upon for reconstruction, both in the immediate aftermath of disaster, and in ensuing months. Through the experiences of housing reconstruction observed in these areas, the section also reflects on wider challenges faced by NGOs and the government with respect to post-disaster housing reconstruction.

9.1 Major issues in post-disaster housing reconstruction

Providing assistance for reconstruction of housing after a disaster is extremely challenging both for the government as well as NGOs. There is a need to find approaches that are locally acceptable, compatible with the topography and both durable and cost effective. An initial distinction can be drawn between the assistance that relief agencies (both from the state and NGOs) provide for the setting up of strictly temporary structures like tents and *pallas* (tarpaulin stretched over bamboo) and that given for the reconstruction of the damaged house itself (either for the building of a fortified *kutch* house, or a *pucca* house). Some agencies have also adopted an approach of giving people ‘transitional’ or ‘semi-permanent structures’ that typically have a life of 2-4 years, as a place to stay while permanent homes are being constructed. Semi-permanent houses were constructed at low cost with locally procured materials in some tsunami affected areas, and in earthquake affected Gujarat and Kashmir. This was done because decisions regarding the allocation of land by the government were taking time, and some NGOs decided to go for the semi-permanent approach to respond to the immediate needs of people⁶⁰. But in wider thinking, the merits of this approach have been challenged. It is thought that donor funding is typically available for limited time periods, and would not usually cover the costs of both transitional and permanent housing. Therefore agencies are advised to concentrate from the start on providing core permanent structures, which may be expanded by households later⁶¹.

Then there is the issue of the actual approach that should be adopted for the building of the permanent dwelling. Barenstein (2006) has identified five typical approaches in an extremely useful review of housing reconstruction in post earthquake Gujarat. These are the owner-driven approach (communities to undertake building work themselves, with financial, material and technical assistance from external sources); subsidiary approach (agencies adopt a facilitatory role providing material and technical help within a framework of government assistance); participatory housing approach (agencies assume a leading role in housing reconstruction, while involving home owners in the planning, design and reconstruction of the house, including contributing free labour); contractor

⁶⁰ Interview with Lukose PJ and Sunil Mammen, Caritas, New Delhi, December 2010

⁶¹ Email correspondence with Viren Falcao, SPHERE India, December 2010

driven approach in-situ (a professional contractor designs and builds the houses on the same sites occupied before the disaster); and finally, a contractor-driven approach ex-nihilo (where contractors rebuild an entire village on a new site).

Whichever the approach that is adopted, housing reconstruction necessitates a high level of coordination between the government and NGOs, and also amongst NGOs, their local partners and above all, understanding with the people they are seeking to assist.

9.2 State of housing before 1999 and the immediate impact of the super-cyclone

According to government sources, the houses of 19 *lakh* families were devastatingly damaged by this killer super-cyclone, and of these nearly 7.75 *lakh* houses were either washed away or collapsed fully (Samal et al, 2005: 82). This wide ranging destruction was experienced in the study sites, but with some important local variations.

Back in 1999, households predominantly had *kutcha* houses in both places. In many cases, these were large spacious houses, with thick walls, and resilient to more usual intensity cyclones. But these were thoroughly decimated when the super-cyclone struck. The super-cyclone was unprecedented, and people had quite simply not conceived that a hazard of such a scale could strike, which had led them to ignore warnings to leave (discussed further in Chapter 14). The damage was comprehensive in Erasama, and only marginally less so in Garadpur, which is further away from the sea in comparison. Much of Erasama suffered a massive tidal surge, 7 metres high, which explains the scale of impact here. Also, comparatively more households in our sample in Garadpur had *pucca* houses before 1999 than that in Erasama: 19 compared with 7. Chart 9.1 shows the damage to *pucca* and *kutcha* houses in 1999. A few *pucca* and *kutcha* houses in Garadpur suffered relatively less damage at this time, unlike Erasama, where nearly 95% the *kutcha* houses were destroyed completely.

The might of the disaster was particularly stark in Erasama. People were swept away, and took shelter on tree branches and floating roof tops. Trees played an extremely significant role in saving lives, in places making the crucial difference to mortality (for example, in Kalabedi, less than 500 metres from the sea, where the tree line existed behind the row of houses, and away from the sea, some people were swept into or climbed up these trees, helping them survive being washed away). Wherever possible, people huddled in extremely cramped conditions inside single *pucca* rooms. While this was extremely uncomfortable, lives were saved, and many more could have been saved with more *pucca* houses. In Garadpur, the presence of greater number of *pucca* constructions at the time, together with its relative distance from the coast and lack of tidal surge, combined to ensure that there were few deaths in the area on account of the super-cyclone.

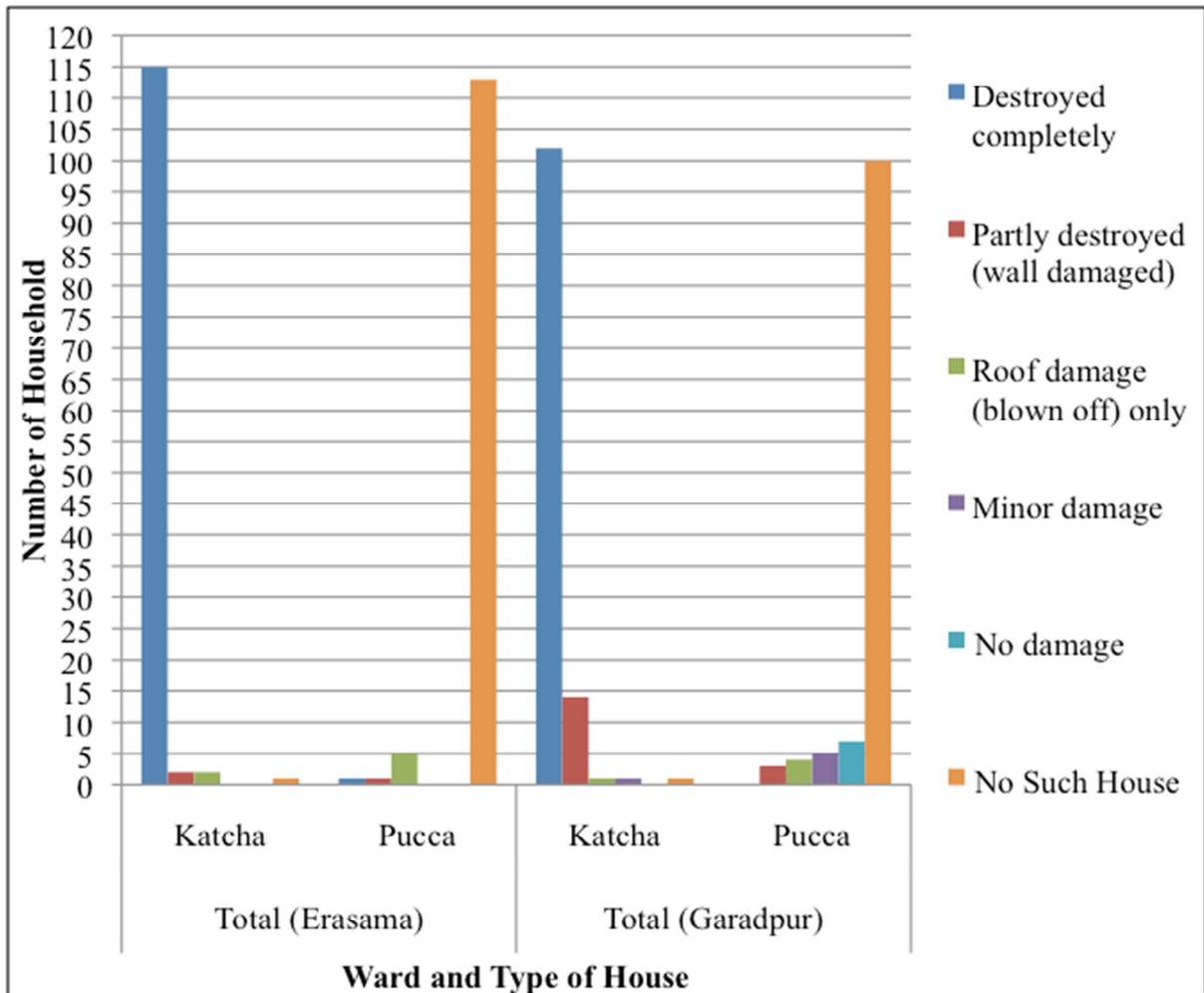


Chart 9.1: Damage to *kutch*a and *pucc*a houses in 1999, both sites (n=120 per site)

People also continued to suffer in the immediate months after the disaster. This was starker in Erasama mainly because the scale of impact was comparatively greater. Two simple indicators were devised to gauge the extent of suffering in terms of dislocation out of their usual abode: the first is the place of temporary shelter, and the second is the time spent in the temporary shelter. Chart 9.2 shows the various options available to people in the immediate period after the subsiding of the super-cyclone: own house even if damaged, *palla* (temporary shelter) on their own lands, house of kin, or that of neighbour, community building and so on. In Erasama, more than 2/3rds of the households surveyed reported living in a *palla*. This number was a little smaller in Garadpur, at under a half of the households. More households (25) in Garadpur were able to live in their house, even if it was damaged, or with their neighbours (23) compared to a tiny 5 and 6 respectively in Erasama. But access was not always uniform. In Samsara ward, some members of the scheduled caste Jena community bitterly recalled that they were denied access to the *pucc*a houses of higher castes in the village, thus suffering disproportionately.

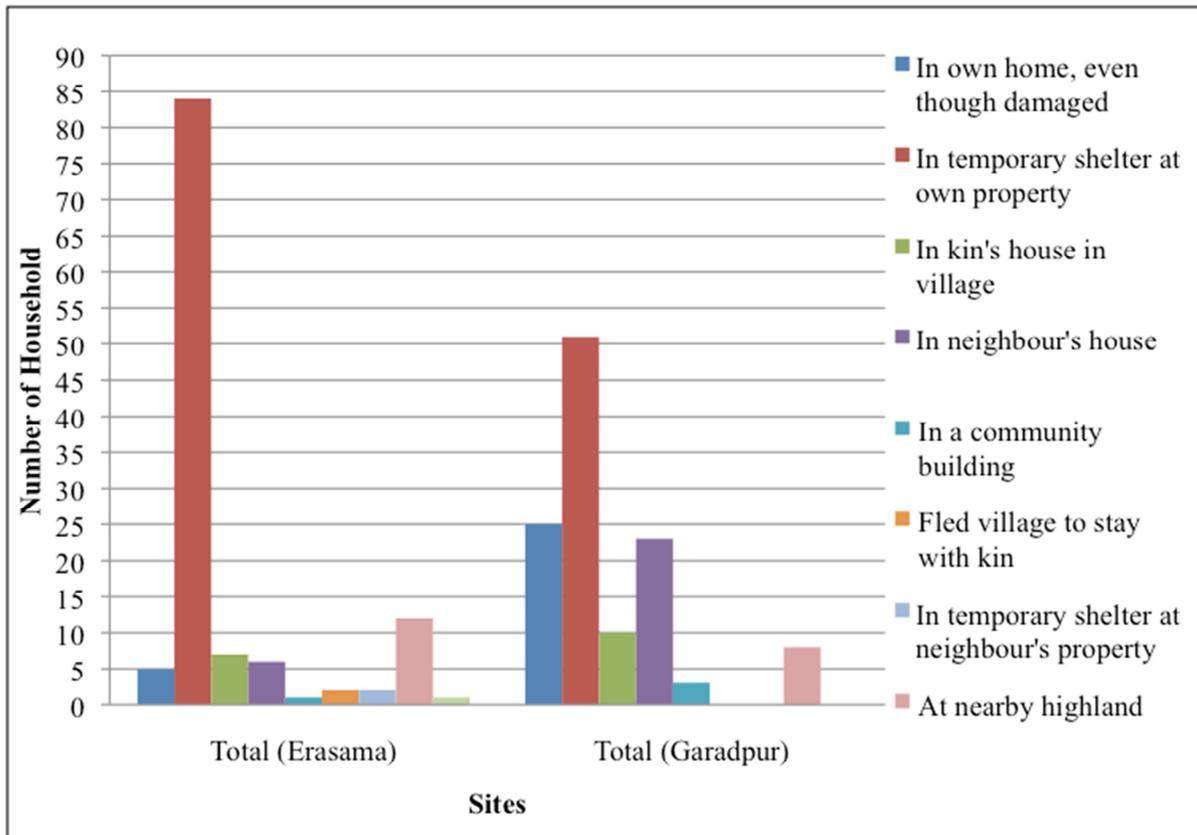


Chart 9.2: Temporary shelters used immediately after the super-cyclone, both sites (n=120 per site)

The time spent by households in these temporary shelters is an indication of the resources that households are able to access at this difficult time to reconstruct their houses. These resources are necessarily financial, but also social, in terms of the help they are able to draw upon from their wider family networks or neighbours. Chart 9.3 shows that nearly double the number of households in Erasama spent between 6 and 12 months in a temporary shelter than in Garadpur (28 compared with 15 households). Even worse, while 19 households in Erasama continued to live in these temporary shelters beyond 12 months, this number was only 4 in Garadpur. In all, 39% of Erasama households stayed for over 6 months in a temporary shelter, compared to just 16% of Garadpur's households.

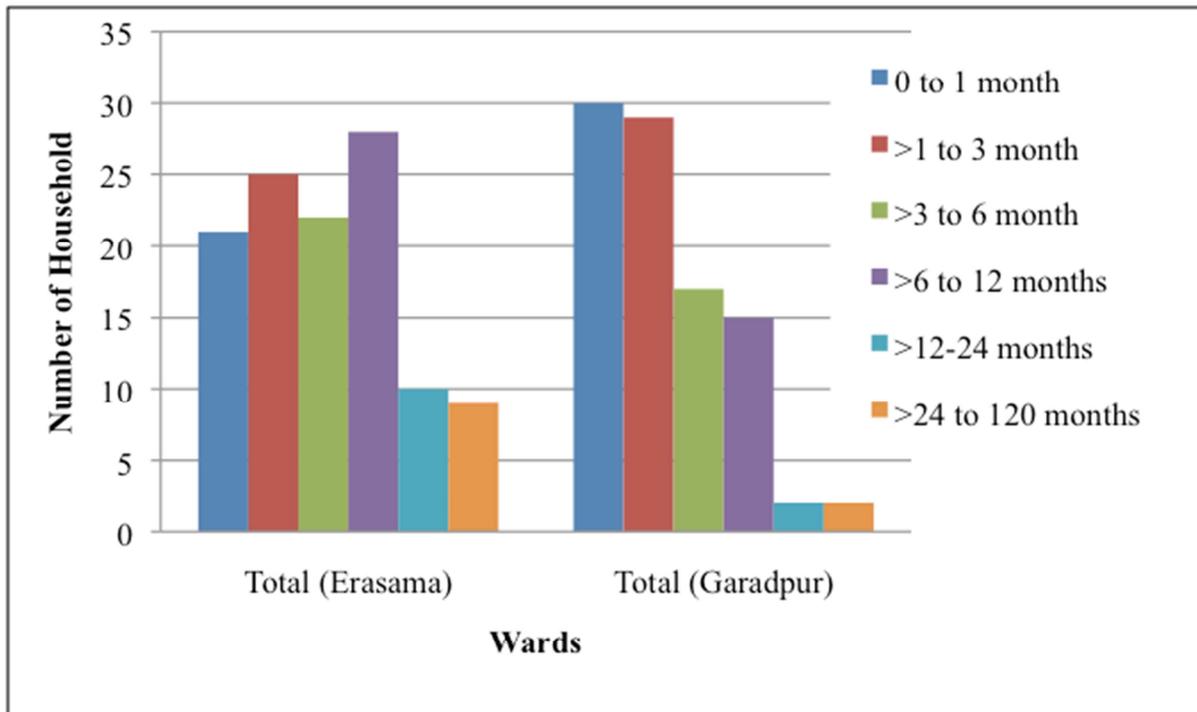


Chart 9.3: Time spent in temporary shelters immediately after the super-cyclone in both sites

This state is echoed in the difficulties reported by respondents in finding the resources for reconstruction. An overwhelming 92% of all sampled households in Erasama reported that they were able to finance reconstruction over a long period of time ‘by earning money and with great difficulty’. 77% of households in Garadpur said the same (92 households). More households in Garadpur in comparison were able to use personal savings for reconstruction (31% compared to only 14% in Erasama), or borrow money from extended relatives/neighbours (43% compared to 24% in Erasama). Access to bank credit and money from SHGs was at the same level (around 7% each for both). And whereas 9% of households in Garadpur were able to finance their houses by selling their livestock, only about 2% of households in Erasama could do the same, for Erasama suffered a much higher extent of loss of livestock in comparison (Chapter 7).

Since 1999, both sites have witnessed changes in the housing scenario as more households have *pucca* houses now. Table 9.1 shows that nearly half of all sampled households now have *pucca* and *kutcha* houses, given by NGOs or built through IAY money. It also shows that in Garadpur over half of all households (68) have *pucca* houses, but many more households here have *pucca* houses only (30 as opposed to 3 in Erasama). These have been mainly built through IAY grants and personal resources, or personal resources alone, as just one NGO (Satya Sai Trust) has assisted only the small community of scheduled castes in one of the study wards, Samsara. While the increase in *pucca* housing is a positive development from the point of view of resilience to facing another extreme event, like a super-cyclone or a severe flood, there are nagging concerns regarding quality in both sites, especially in Erasama. These also raise broader issues regarding approaches to post-disaster housing reconstruction, as discussed previously.

Year	Erasama				Garadpur			
	<i>Kutcha</i>	<i>Kutcha + Pucca</i>	<i>Pucca</i>	Total	<i>Kutcha</i>	<i>Kutcha + Pucca</i>	<i>Pucca</i>	Total
1999	113	6	1	120	100	18	1	119*
2010	60	57	3	120	52	38	30	120

Table 9.1: *Kutcha* and *pucca* houses in both sites in 1999 and 2010 (* 1 household moved to site later)

9.3 Housing, vulnerability and recovery in Erasama

This section will discuss key points in the attempted recovery process with respect to housing after the super-cyclone in Erasama till the current day. It will highlight the dimensions that have most contributed to vulnerability with respect to peoples' housing over this period, and discuss the problems associated with NGO and IAY-provided housing assistance.

Housing assistance by NGOs

Erasama Block in Jagatsinghpur District was amongst the worst affected by the super-cyclone. A lot of NGOs rushed here to provide timely help to people through the provision of materials for temporary shelters like tarpaulin and bamboo, as also other materials for reconstruction of damaged *kutcha* houses like asphalt. World Vision played a key role in the research site; nearly all the sampled households in Garia and about 50% of households in Shuakunda and Sahadabedi reported receiving materials from this organisation. Other NGOs helping at this time include Lutheran World Service (LWS), Utkal Sewak Samaj, Action Aid, Catholic Relief Services (CRS), Caritas, Awareness, TATA, EFICOR and a few others. Many of these also provided ready houses in different parts of Erasama Block (Samal et al, 2005).

In addition to providing materials, LWS and Caritas offered more substantive housing assistance to people in the study wards, but they used different approaches. LWS offered basic frames including 8 cement pillars and a bamboo frame for a *kutcha* house to the people of Kalabedi and Sahadabedi. The reason for giving a *kutcha* house frame, and not a *pucca* house, was precisely that the former can be constructed quickly with low-cost contributions from the beneficiaries. *Pucca* houses on the other hand would be more costly and time consuming to construct, and would not meet the immediate needs of people⁶². LWS distributed 1000 such houses in Erasama Block at a unit cost of approximately 6,000 rupees per house. Each unit included 8 cement pillars and a bamboo frame of a *kutcha* house. However, while the people of Kalabedi accepted these frames, those of Sahadabedi rejected LWS's offer because they wanted *pucca* houses and feared if they accepted the frames they would miss the chance to get *pucca* houses.

Caritas provided assistance in the form of *pucca* rooms/houses for people in Garia and Shuakunda from Gadaharishpur Gram Panchayat. People from Sahadabedi in particular still feel bitter about being left out by this organisation, but there are limits to what any single NGO can do at times of widespread devastation. Caritas adopted a long process of involvement with places that it worked in right since the distribution of relief after October 1999⁶³. While Phase I dedicated to relief lasted from 10th November till 22nd December 1999, Phase II was a preparatory phase for 'community

⁶² Interview with Sucharita Pattanaik, Senior Communications Officer, LWS, Bhubaneswar, December 2010

⁶³ Interview with Father Augustine Karinkuttiyil, Director of Cuttack Diocese of the Catholic Bishop Conference of India (CBCI), local partner to Caritas after super-cyclone, Bhubaneswar, December 2010

organisation and livelihoods restoration' and ran from January till June of 2000. During this time, Caritas interacted intensively with local communities to assess damage and understand their livelihoods choices. It also selected local animators/enumerators from amongst the locals and imparted training in social awareness, community organisation, and formation of SHGs and so on. In Jagatsinghpur alone, Caritas initiated the formation of 178 SHGs with 3807 members in four gram panchayats within Erasama (Gadahareshpur and Ambiki) and Balikuda (Kusupur and Anantapur) Blocks. These members were generally small and marginal cultivators, and Caritas provided a range of agricultural support to them.

When the question of providing housing support arose, then making a decision regarding where to work proved to be extremely difficult for Caritas, since everyone in the area wanted a new house. Caritas works through the Catholic Bishop Conference of India (CBCI). Its local partners in the Cuttack diocese of CBCI contacted the Collector of Jagatsinghpur to seek suggestions regarding any one gram panchayat where Caritas should concentrate its efforts. The Collector suggested Gadahareshpur, as it was amongst the worst affected, with a large Bengali population and where the majority of people were very poor. An interview with the *ex-sarpanch* of Gadahareshpur Gram Panchayat also revealed that he had personally lobbied with the Collector for more assistance to his gram panchayat. This is how Caritas ended up working in the wards of Gadahareshpur Gram Panchayat, including the study wards Garia and Shuakunda, and not in Padmapur Gram Panchayat or the study wards there. The Collector asked Caritas to work with the local Revenue Inspector to identify beneficiaries, and this, according to Caritas, was the source of a number of problems. Many relatively better-off people were included for assistance, which led to some comparatively poorer people being excluded (the cake was only so big, whereas the numbers needing assistance were vast).

The state of many of these Caritas-built houses in 2010 prompted further questions regarding the efficacy of the approach that was used. People report extremely high levels of dissatisfaction with the houses' present condition and usability, as verified both through survey as well as qualitative accounts. Of the 47 households with Caritas-built *pucca* houses amongst the sampled households in Garia and Shuakunda, 38 reported living in them. But only 3 said that these were 'fine'. 22 said these were in a 'moderate' condition, and 13 reported these to be in a 'poor state'. Peoples' complaints fell into three categories: a) houses given by Caritas were 'incomplete', b) the overseeing of work by the Contractor was unsatisfactory, and c) materials had been dumped as far as Garia, so households spent their own money to collect and bring back construction materials from there.

We investigated these matters further with Caritas, which produced valuable general insights regarding the challenges confronting agencies seeking to work in post-disaster housing reconstruction. Caritas had decided to adopt a participatory approach to housing reconstruction following its experiences after the Latur earthquake in Maharashtra. At that time, Caritas had financed 50% of the costs, and the remaining was financed by the Government of Maharashtra, and a fully constructed house had been handed over to beneficiaries. Then in 2000, Caritas officials received an application from people in Latur, which referred to the houses as '*your* houses are leaking, please come and repair

it'. This signalled a deep lack of ownership by people of their new houses, and Caritas resolved to follow a participatory approach in Odisha, an idea that was welcomed by the Government of Odisha⁶⁴.

Further, Caritas proposed giving over a 'core house' with six pillars and a roof to beneficiaries, with the idea that people would contribute their own resources and labour to completing construction. The unit cost of each house was set at 55,000 rupees, considerably higher than an average Indira Awas Yojana grant of 22,000 (at the old rates). This design was devised after a meeting with architects in Odisha at a meeting facilitated by the state government, who took care to propose the approach should suit cyclone conditions. The idea was essentially that a concrete structure with *pucca* cement pillars would remain safe in high speed winds and heavy rain. This was the background to allegations of incompleteness of villagers, most of whom did not (or could not) add their own resources of money and labour to build the walls to complete even one full room of this new structure.

As for the contractor, Caritas clarified that BMK & Co. had been brought in from Andhra Pradesh in 2001 following reports of 'good work'. This contractor built 501 structures in all (out of the planned 700), but in 2002, left suddenly before finishing his work and went to Gujarat to work there following the earthquake of 2001. This left many beneficiaries extremely angry, and also explains the dumping of materials near Garia, since the contractor left in a hurry. The precise reasons motivating the contractor's hasty departure are unclear, but Caritas officials also described that the contractor had been routinely harassed by beneficiaries in recipient villages to construct temples, as a public gesture of goodwill from his own funds, and therefore left out of frustration⁶⁵. A second contractor, ACE Nirman, was brought in by Caritas to complete work on the remaining 197 houses. When Father Augustine from CBCI revisited the area, he found that people had not really built any rooms, and mobilised resources from Caritas to actually build one complete room in all the houses. This work was then done around 2005, by the second contractor. Father Augustine has recorded the details of its work meticulously, and confirms that only in two selected households work could not be completed for very specific reasons⁶⁶. Finally, the involvement of locals as labourers in construction is favoured by Caritas. But the shortage of technical expertise in the area necessitated the bringing in of skilled workers from Andhra Pradesh to perform certain tasks like centring.

This episode reveals that creating a sense of ownership for their own houses amongst beneficiaries is a serious challenge, especially given unrealistically high levels of expectations after a disaster. There were some exceptional cases of enterprise, as in this accompanying photo (9.1 and 9.2), of a household in Shuakunda that used its own resources to create stronger *kutchha* extensions around the *pucca* frame. But people generally did not, or could not, supplement resources of their own. There is an inevitable clash of perspectives: while NGOs and other agencies view this as another instance of the mindset of 'dependency' after a disaster, people consider themselves to be financially constrained and simply not in a position to make this extra investment. In this context, it is difficult to be certain

⁶⁴ Interview with Lukose PJ, Caritas, New Delhi, December 2010.

⁶⁵ Apparently, he even built 8 such 'temples' in Puri and/or Jagatsinghpur, according to Caritas officials interviewed in Delhi, but this could not be verified by the study.

⁶⁶ In one such case in Shuakunda, there was dispute over land for core houses between two brothers, and a court settlement favoured the better off brother, so Caritas decided to leave it incomplete. In another case, the house itself was cancelled because the identified beneficiary had no land on which a core house could be built, and he lived in a hut on the beach.

which perspective is the correct one. But what is clear is that the lack of ownership and further investment by people in these constructions has contributed to their significant wear and tear over the years. In 2010, people are simply not confident that these will shield them from another cyclone. One man from Shuakunda said, albeit somewhat exaggeratedly, ‘People are avoiding sleeping in such houses fearing their death if another cyclone happens’ (respondent no. 46).



Photos 9.1 and 9.2: Caritas-funded *pucca* house, with *kutcha* extensions (outside and inside)

State of Indira Awas Yojana housing

People have also received money from Indira Awas Yojana (IAY) for the purpose of constructing *pucca* houses. IAY is a government funded housing programme ‘to help the construction of dwelling units for members of the SC/STs, freed bonded labourers, also non SC/ST rural poor below the poverty line by providing them grant-in-aid’ (<http://zpraichur.kar.nic.in/iay.htm>). In Erasama, 14,124 ‘special IAY’ houses were sanctioned after the super-cyclone in all 24 gram panchayats except Jireilo. In the study wards, 44 households have received IAY grants since 2000 (7 households in Garia received IAY since before 1999). This amounts to 37% of all sampled households receiving since the cyclone, and 43% receiving in total. The wards in Padmapur Gram Panchayat (Sahadabedi and Kalabedi) have received many more IAY grants (19 and 17 respectively) than those in Gadaharishpur Gram Panchayat (Garia has received none after the cyclone, and Shuakunda has received just 8), although Garia received some before unlike the other three.

Following a decision to this effect by the Odisha state government, many households in Garia and Shuakunda did not qualify for IAY houses as they had already received housing assistance from Caritas. Some households in these wards also revealed their strong belief that political differences or revenge-taking at the ward level have impaired their chances of getting an IAY house. One man in Shuakunda testified that the ward member took revenge on him because he had complained about relief mismanagement to the block officials. There were others who reported similar experiences. Irregularities with IAY releases in Odisha have been widely documented (see Samal et al, 2005: 83). They echo a well documented governance problem, as decentralisation to the lowest level without actual democratic participation allows local political functionaries, bureaucrats and panchayat officials to wield arbitrary influence.

But more than half the households with IAY funding in Erasama have not been able to complete construction till date. 44 households (37% of total surveyed in this site) received IAY money since 2000 (7 others already had IAY houses since before 1999). 24 out of 44 households reported incomplete houses, and 3 have not been able to start building. Only 9 households (less than a fourth of the total households with IAY funding) reported living in these, and only 3 of these reported them to be fine. A further 7 do not use their IAY houses for living for a variety of reasons (storage of goods, gift to son, use as shop etc.). There are three main factors for this state of affairs:

- Inadequacy of resources: 22,000 rupees is simply not enough to build a one-room *pucca* house. The *sarpanch* of Gadaharishpur Gram Panchayat said that at least 70-80,000 rupees would be required for this. Households have no way of investing this extra amount.
- High transportation costs: People in these areas need to spend considerable amounts transporting materials (asphalt, cement, rods and bricks) as this is a 'tail-end' area, and materials need to be brought by lorry from Cuttack/Jagatsinghpur. These costs range from from 1,000-5,000 rupees.
- Reimbursements require local contacts: The IAY guidelines are emphatic that instalments should be released in a phased manner upon inspection of stages of construction in ways devised by state or district authorities. We obtained frank admissions of lobbying to have instalments released even without construction. One woman said, '...unless we show the construction done by the first amount we cannot get the second instalment but we managed to get both the instalments by lobbying with influential persons and showing our brother-in-laws house as ours' (respondent no. 63). Poorer households without the social/political resources to lobby are in a catch 22 situation- they cannot complete construction without cash, and cannot get cash released without completing construction. Some, particularly female headed ones, found it difficult to even start construction as they ended up using the cash for daily needs. Besides these problems, there are also routine delays in reimbursements.

State of housing preparedness

As a result of these factors, neither NGO built nor IAY funded houses are in a particularly good condition at present, and will not protect people in the event of another super-cyclone. Even though few actually live in their *pucca* houses, generally choosing to live in the *kutcha* house besides it, even fewer believe that their house would withstand another super-cyclone. Only 10% of our sampled households feel their house (either *kutcha* or *pucca*) will withstand another *super-cyclone*. As far as regular cyclones are concerned, it is likely that people will seek shelter in their *pucca* houses. But many recipients of NGO built houses hold these in great contempt, and have said they would fall down in strong winds.

There is also another dimension to the current state of housing in Erasama, which bodes ill for their preparedness for the next extreme event. This is to do with the lack of investment by people in *kutcha* houses, which are predominantly used for living today, even by households who own *pucca* houses. The difficulty is that the *kutcha* houses destroyed by the super-cyclone had thick walls, were spacious, with large verandas. But people have not been able to recreate the same size and quality of these erstwhile designs, and some also do not consider it a good investment anymore. There are three major reasons impacting upon their decisions.

First, the cost of materials (bamboo, straw) and also labour has risen considerably in recent years. People in Garia also recalled that earlier (at an unspecified time), there was plenty of bamboo and wood available in the forest, which is no longer the case. Second, procuring soil for construction is difficult. People in Kalabedi reported that soil is now saline and unsuitable for use in house construction. They blamed it on the tidal surge of 1999, which has no doubt contributed to this, but salinisation is a more drawn out process, as discussed in the livelihoods section. One respondent said that if they tried to get even a small quantity of soil from other villages, then people do not allow them to do so. And finally, people are plainly apprehensive about investing large amounts of money building a strong *kutcha* house should another super-cyclone destroy these. As a result, even the restored *kutcha* houses in Erasama are generally much smaller with thinner walls, which may actually heighten the vulnerability of residents even to regular cyclones, let alone another super-cyclone.

9.4 Housing, vulnerability and recovery in Garadpur

This section will discuss the trajectory of recovery with respect to housing in Garadpur since the super-cyclone. While issues similar to those in Erasama will be considered in this very different context, special attention will be given to the more recent 2008 floods. Nearly nine years after the super-cyclone, were people less vulnerable to suffering during the 2008 floods? Answering this question will be critical in assessing the larger question of recovery since 1999, and preparedness for facing the next extreme event.

The 2008 floods in Garadpur

The chapter has previously noted that there has been a gradual, but steady increase in *pucca* houses in Garadpur, both through IAY funding and other private resources. NGO assisted *pucca* housing has been rather limited, restricted only to the scheduled caste Jena community in one study ward, Samsara. Chart 9.4 shows a very pronounced decline in the number of *kutcha* houses amongst the sampled households from 1999 down to 2010, and a clear increase in *pucca* houses, especially after 2008. In the period from 2008-2010, there is a decline in the number of households owning both *pucca* and *kutcha* houses, because more people have *pucca* houses only. By 2010, at the site level, 52 households have only *kutcha* houses, 30 have only *pucca* houses, while 38 households have both *pucca* and *kutcha* houses (chart 9.4).

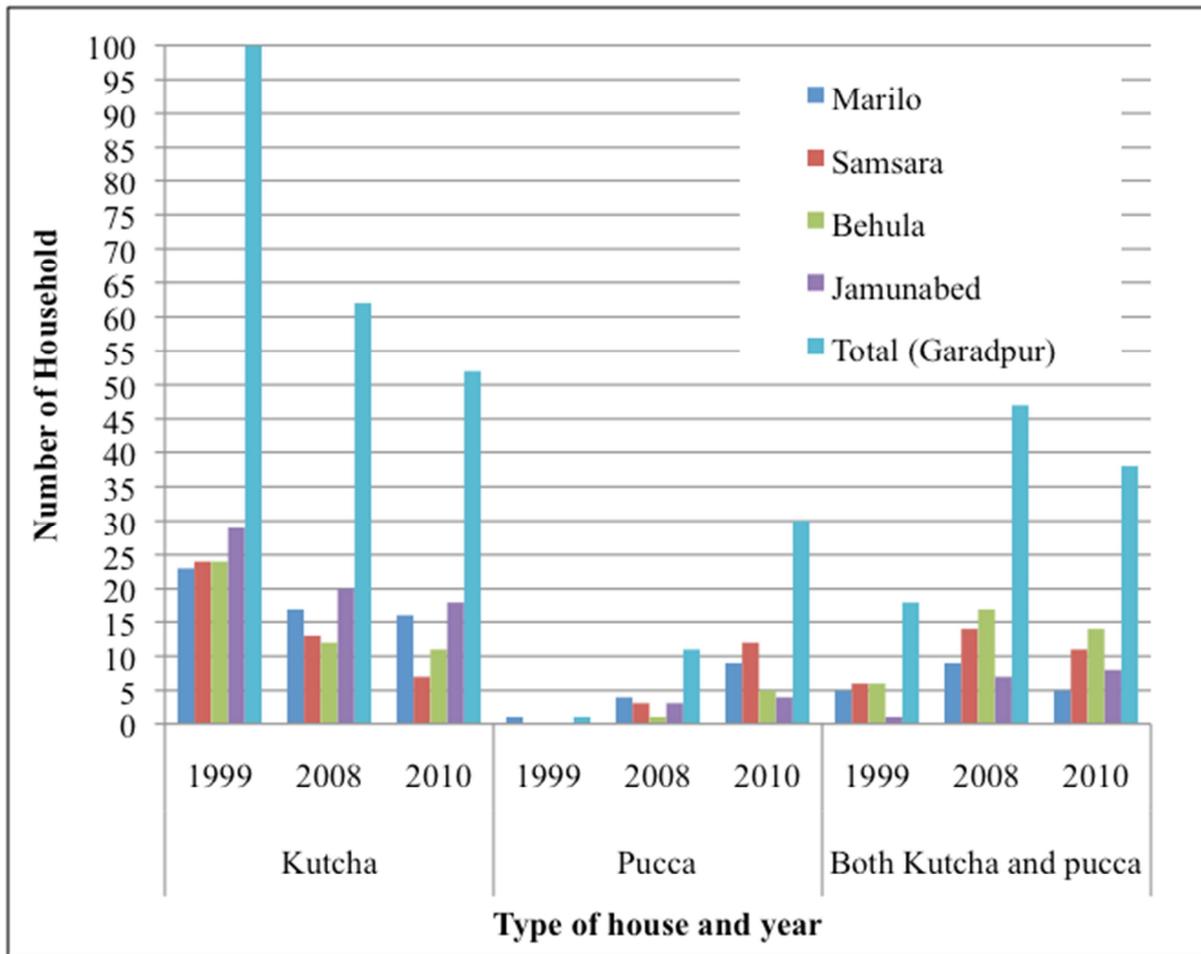


Chart 9.4: Comparison of house type in 1999, 2008, 2010 in Garadpur (n=30 for ward, n=120 for site)

The 2008 floods constituted a massive disaster for the state, and were unprecedented in severity in recent years, comparable only to the devastating floods of 1982. Chart 9.5 considers house damage caused by the floods⁶⁷. On the positive side, many *pucca* houses did not suffer damage, but on the negative side, more than 50 households with *kutcha* houses lost these completely.

⁶⁷ 'Not applicable' in the chart is used to show households that do not have the said type of house.

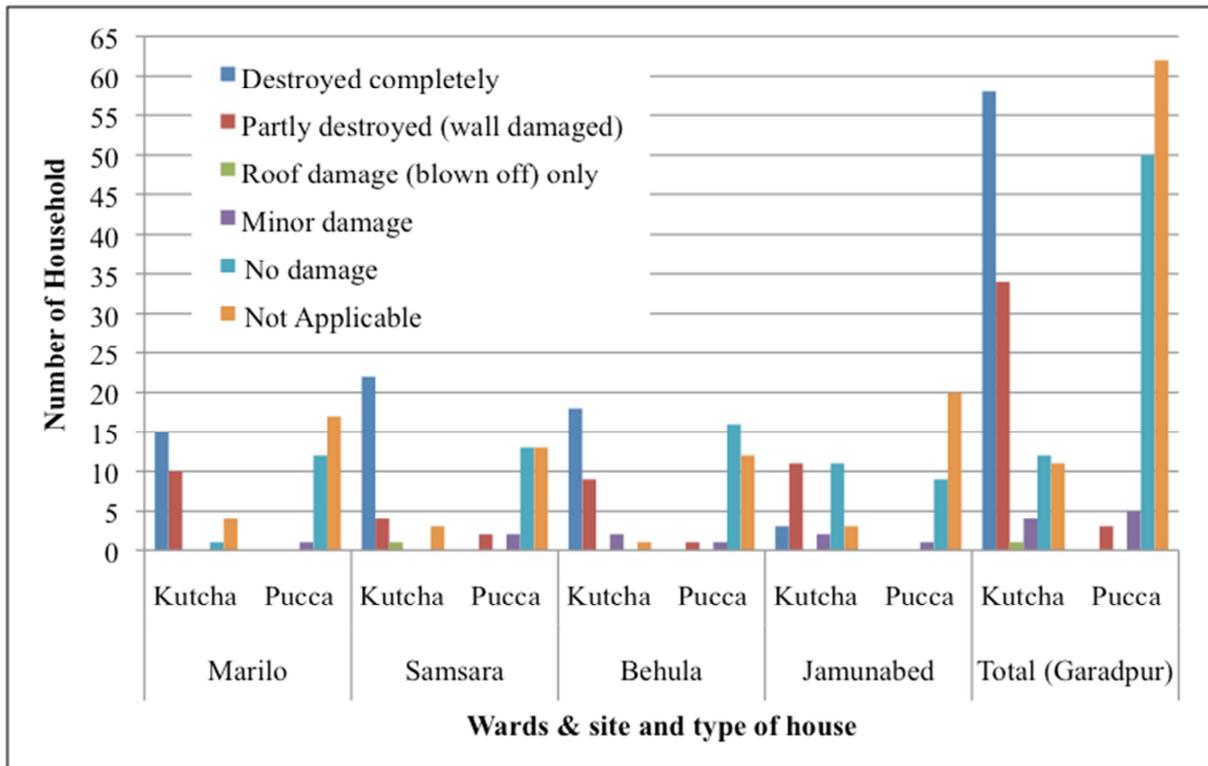


Chart 9.5: House damage in the 2008 flood, Garadpur

In order to assess the extent of dislocation caused by housing damage after 2008 as compared with after the super-cyclone, four indicators were relied upon. The first two are the same as used earlier in the chapter to assess suffering in Erasama after the super-cyclone: place where households lived immediately after and the time spent in these temporary conditions. Two further indicators were included: the time taken by households to actually reconstruct their damaged houses, and finally, the resources used for reconstruction. Taken together, these indicators present a reasonably well-informed picture of improvements or otherwise in the vulnerability experienced to a disaster in the first place. They also reveal the ability of households to cope in terms of effective access to physical, social and financial resources needed not just to tide over temporary dislocation, but also for reconstruction of the damaged house itself. These are considered in turn.

Place of temporary shelters: Table 9.2 shows that more than twice the number of households were able to stay in their own home (69 as opposed to 25), and only about a fourth of the number that stayed in a temporary shelter in 1999 did so in 2008. This is a clear sign of improvement that can be attributed to more households with *pucca* houses by 2008. But there is little room for complacency as many households continued to seek shelter in others' homes or go to highlands. Twice as many households fled to higher lands in 2008 because of the nature of the disaster (flood not cyclone).

Year	1999	2008
Own home (even if damaged)	25	69
Temporary shelter at own property	51	13
Family home in village	10	11
Neighbour's home in village	23	10
Fled village to kin's	0	1
Community building	3	0
Nearby higher lands	8	16
Total	120	120

Table 9.2: Place of temporary shelter in Garadpur, in 1999 and 2008

Time spent in temporary shelters: Table 9.3 confirms that in 2008 69 households were able to stay in their damaged houses and did not need a temporary shelter. For those who did, there were reductions in the time spent in all categories when comparing 2008 with 1999. These are positive signs.

Year	0-1 months	1-3 months	3-6 months	6-12 months	12-24 months	24-120 months	N.A*	Total no. of hhs
1999	30	29	17	15	2	2	25	120
2008	25	15	9	1	1	0	69	120

Table 9.3: Time spent in temporary shelters in months in Garadpur, in 1999 and 2008

*Did not stay in temporary shelter; Units in households

Time taken to reconstruct damaged house: This is a concrete indicator of the resources and assistance available to households in the aftermath of a disaster, as well as of the severity of damage suffered. As Table 9.4 shows, there are improvements for many with a near doubling of households (43 to 83) that needed to spend only 1 month reconstructing their damaged house.

Year	0-1 months	1-3 months	3-6 months	6-12 months	12-24 months	24-120 months	Total number of households
1999	43	29	24	19	2	3	120
2008	83	14	14	4	5	0	120

Table 9.4: Time taken to reconstruct damaged house in Garadpur, in 1999 and 2008

Resources used for reconstruction: As Table 9.5 shows, compared with 1999, fewer people needed to borrow from others, sell their livestock or struggle with earnings to finance reconstruction, and more were able to rely on personal savings. This suggests an improvement in overall financial condition.

Year	Personal savings	Loans from family	Bank loans	Loans from SHGs	Loans from others (inc. moneylenders)	Sale of assets (e.g. livestock)	Earning money with difficulty
1999	16	14	8	7	37	11	92
2008	36	11	4	6	12	9	57

Table 9.5: Resources used for reconstruction in Garadpur in 1999 and 2008

Note: Units in households; each household may have resorted to more than one type of resource for reconstruction, so year totals do not add up to 120.

Many of these present a positive picture of change for a large number of households in Garadpur. What also emerges is that the increase in *pucca* houses benefits not their owners alone, but also others in the local community, simply as there are more *pucca* constructions for people to seek shelter in during floods. Yet, concerns should be raised for the nearly 60 households that suffered comprehensive damage to their *kutcha* houses during the floods of 2008. Even in 2010, there were approximately 18 households amongst the sample with *kutcha* houses alone. Garadpur presents a growing inequality between better-off households, many of whom are able to build adequate *pucca* houses, and poorer households, who remain trapped within difficult conditions and are unable to move to satisfactory *pucca* houses. In this context, access to IAY raises particular concern because it is the only source of external assistance that poor households can count on. Such persons are unable to manipulate locally powerful persons for release of instalments.

Problems with access to IAY in Garadpur

66 households of 118 sampled households have received IAY-funding, 4 of these receiving it before 1999). This amounts to 52% of all surveyed households receiving funding since 1999 (more than Erasama, which is 37%). Chart 9.6 shows that Behula from Tikanpur Gram Panchayat has the most IAY recipients (23, with only 7 households not receiving grants), but there is no significant pattern to be drawn at the gram panchayat level, since Marilo from the same gram panchayat has 14 recipients. Most IAY receipts were concentrated between 2000 and 2003.

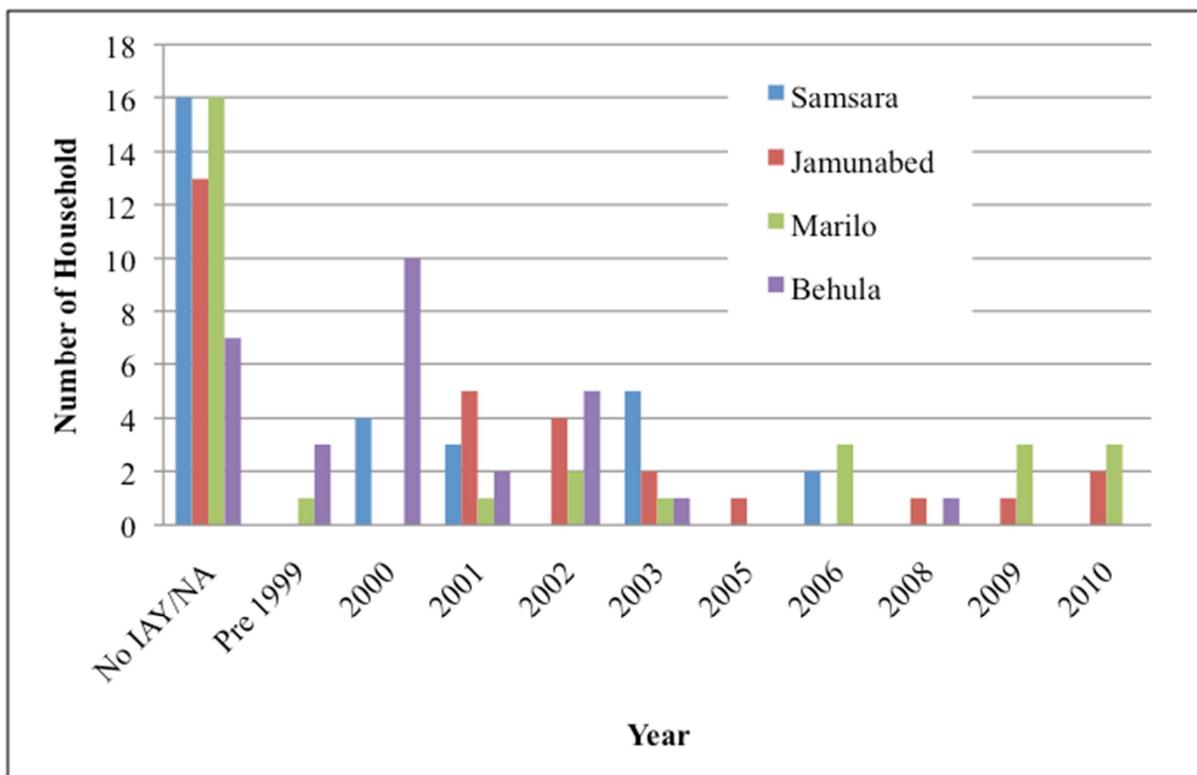


Chart 9.6: Receipt of Indira Awas Yojana by households in Garadpur since 1999 (n=30 per ward)

There have been systematic difficulties and irregularities with access to IAY in Garadpur. Special IAY houses were sanctioned after the cyclone through a lottery to determine those BPL households that had lost their *kutcha* houses completely. But there were problems. Results were not strictly

adhered to, many households openly admitted to paying a bribe. Households with *pucca* houses were ineligible. But this also meant that BPL households with a simple asbestos roof on their *kutchra* houses were excluded, which created disgruntlement. Those who lacked capacity to pay bribes also suffered.

There were also serious lapses in coordination between the district and block administrations, which impacted some households adversely. A senior block official interviewed also said that after the 2001 floods, the district administration issued more work orders to the block than the target provided for, and this created problems, which were then communicated to the district⁶⁸. For example, a man in Samsara said he had received a work order for making an IAY house, upon which he purchased bricks and laid the brickwork, and then did not get any instalments. The official also said that more IAY had been distributed than the numbers of households on the BPL list; but many genuine BPL beneficiaries had failed to get these because influential politicians in the area had put pressure in awarding these to their supporters, even if not eligible.

None of these findings are remarkable, and there are resonances elsewhere in the country too. Standard economic criteria for beneficiary identification are often not followed in a systematic manner. For instance, a recent evaluation study of IAY in Jammu and Kashmir found out that many households with an annual income of 30,000 rupees or more were included, while others with an annual income of less than 10,000 were not (GOI, 2009a). Like in Erasama, as in other parts of Odisha and India, beneficiaries in Garadpur have had difficulties in getting subsequent amounts released. Bribery to block level officials is often required.

At a group meeting held in Samsara, one man poignantly revealed that most IAY beneficiaries are wage labourers, and lack not just the money, but also the time to chase up officials. There is a general lack of transparency regarding the disbursement of IAY instalments. We obtained no accounts of potentially 'good practice' measures such as the distribution of IAY cheques in public gatherings by MLAs/MPs, as observed by the evaluation study in J&K (GOI, 2009). To make matters worse, beneficiaries have received little or no positive support from the DRDA/ZP which, according to IAY guidelines, is expected to provide assistance such as through the provision of locally procured materials and cost effective technologies. Many respondents also complained about the inferior quality of cement obtained from the block office. Non-BPL/IAY persons also collected cement by bribing officials at the block.

As a result of such difficulties, 25 out of 66 households with IAY grants in our sample in Garadpur have not been able to complete construction, and another 18 have not been able to build IAY houses at all (though some may have chosen not to). Only 23 households have been able to actually use their houses for living, of which two-thirds (15) reported their condition as fine. Marilo fares the worst as not one of 14 households receiving IAY has reported living in their IAY house (8 are unbuilt, 6 incomplete). It also emerged that some of the households who have completed their IAY houses, are actually in a fairly prosperous condition, raising doubts about their eligibility in the first place. A good case in point is Ram Mahali (not his real name) from Behula, who received an IAY grant even though his name had been deleted from the BPL list in 1992. He has three sons that are well educated, and

⁶⁸ Interview with Garadpur BDO, Garadpur, December 2010.

settled, and is regarded as an influential householder in Behula. By his own admission, he added 4 *lakh* rupees from his own savings plus those of his sons to make a large *pucca* construction. While it is quite common that all IAY beneficiaries have had to spend some money of their own to supplement IAY funds, a few like this man have been able to spend much more. Similarly, in Marilo, Samsara and Jamunabad there are households that reported adding more than 2.5 *lakh* rupees to their IAY houses. But the median amount spent was a lot lower, at around 4,000 rupees per IAY.

While several of the issues raised here are not unique to the study wards, the implications of poor governance and corruption in a disaster prone area are extremely serious. For a BPL household not to have a good quality *pucca* house through IAY funding in a cyclone/flood affected region is an entirely different proposition compared to a similar BPL household anywhere else. These issues come up repeatedly with respect to an array of other state schemes (NREGS, PDS subsidies, pensions etc.) and will be drawn together in Chapter 13.

Housing assistance by NGOs in Garadpur

There are few new points to add beyond the discussion of NGO provided housing help in Erasama, though Garadpur does offer a different context for the treatment of comparable issues. After the cyclone, with many seaside areas being worse affected, fewer NGOs came to an inland region like Garadpur to provide relief than in Erasama. Even so, CASA and LWS came to assist people here and reportedly helped more than half of our sample households through the provision of temporary relief materials like tarpaulin and bamboo. But during the floods of 2008, Garadpur in Kendrapada was amongst the worst and became the focus of NGO attention. Many more NGOs came to offer relief materials. CASA distributed polythene in all sampled wards, and TATA and Satya Sai Trust are reported to have done so to some households in one ward each. Other smaller organisations from Cuttack and Bhubaneswar also came to the aid of flood-affected peoples.

Also compared with Erasama, very few households in the study wards have actually received substantive assistance for housing reconstruction. The exception is the Satya Sai Central Trust that built 24 *pucca* houses for the Jena (SC) community of Samsara in 2009 (the entire ward has 150 households approximately). Samsara is located right on the banks of the Chitrotpala River, and the Jenas live closest to the breach point. They suffered excessively in the (2001 and) 2008 floods, and made a special petition to the Collector's office, which resulted in help being offered through the Trust. Unlike Caritas, this NGO adopted a contractor in-situ approach, handing over fully constructed houses to beneficiaries, and locals were not consulted regarding design. The reactions amongst beneficiaries reflect wider experiences with such an approach. While the houses are very much usable, and people are happy with the quality of construction, not all aspects of their design are appreciated. Without gas the kitchens are unusable and households cook in a hut outside, using the kitchen room for a shrine to Satya Sai. The separate toilets are not used, because people are not habituated to toilets, and are instead used to store things, sometimes poultry! Perhaps more significantly, the houses lack a staircase to go to the roof, which could have helped people seek shelter on rooftops during a flood. When the Jenas asked for staircases to be built, they were refused by the contractor, who said that he was not authorised to construct staircases.

State of housing preparedness

On the whole, many households in Garadpur are in a better position to cope with the next extreme event, than they were in 1999. The floods of 2008 provide the evidence for this, and there have been further increases in the numbers of *pucca* houses even since. The benefits of more *pucca* houses are also shared more generally in the community, as proved by qualitative responses to the question of where people would seek shelter if another flood came. The large majority said they would be able to seek shelter in a *pucca* house in their own village, at a neighbour's or relative's house even if not at their own. More people want to build *pucca* houses, as opposed to *kutcha* houses, because traditional *kutcha* houses require a lot of space, and households increasingly have less space. Many people also feel that with *pucca*, another level can always be built later to accommodate increases in family size, which is not possible with the *kutcha* houses. And finally, asbestos is more affordable than straw, which also involves the additional hassle of requiring replacement every year⁶⁹.

In this respect, Garadpur presents a real picture of contrast to Erasama. Unlike Erasama, where there are just two households in our sample that have been able to construct *pucca* houses without IAY funding or NGO support, 19 households in Garadpur have been able to construct *pucca* houses entirely from their own resources. Several of these households have members in government/private sector employment. As the discussion in Section 9.3 has shown, the sea-flung wards of Erasama are in the remote hinterland of Odisha's economically dominant coastal region, whose main cities of Bhubaneswar and Cuttack lie inland. The Garadpur site is inland and correspondingly, has a stronger economy, with more opportunities for self-employment and education leading to government work. It also has a more productive and remunerative agrarian economy. These have played a significant part in the ability of households to recover from the devastation of 1999 and 2008. But with growing opportunities and advancement for some, there are also persistent issues around the governance of IAY that are hitting the poorest households.

9.5 Housing recovery: Summary and key recommendations

This chapter has addressed two key questions. First, in what ways has the state of housing changed in Erasama and Garadpur since 1999? And second, will the state of housing in the present day make households any less vulnerable to cyclones (and floods) than in 1999? It has also systematically highlighted the major issues constraining effective assistance with respect to housing reconstruction both by NGOs (by discussing the challenges of a truly participatory approach) and the state (through the challenges of mal-governance of IAY).

The chapter has shown that in 2010, there are more *pucca* houses in both places than there were in 1999. But there is a critical difference. There are more households in Garadpur that are in a better state to face the next extreme event than there are in Erasama. The evidence of improvement in Garadpur came in the latest 2008 floods, when nearly half of our sample (50 households out of 120 surveyed in this site) reported no damage to their *pucca* house, although, an almost equal number reported significant damage to their *kutcha* house. However, nearly all of the latter group were able to seek shelter in a *pucca* house, including those of neighbours or kin in the village. There were a few exceptions nevertheless, and their circumstances embody a call for further action. For Erasama, the

⁶⁹ The dangers of the use of asbestos as a construction material are not yet understood by villagers in much of India.

housing situation remains particularly grave, and in some senses worse than in 1999. People are generally left with either poor quality *pucca* houses that in their perception will not withstand even an ordinary cyclone, let alone a super-cyclone. They have also not reinvested in building strong *kutchha* houses, which before 1999 had shielded them effectively during regular intensity cyclones. Materials are expensive, soil is saline and there is an abiding fear that another super-cyclone would destroy their *kutchha* house. The poor state of NGO assisted housing in Erasama, and the alarming state of incompleteness and hence, lack of usability, of IAY funded houses in both sites (though more acutely in Erasama) has raised a question mark over recovery and continued vulnerability especially of poorer households in the study sites.

While many of these challenges are systemic and widespread, their implications in a disaster prone area need to be taken seriously. The chapter concludes with some recommendations for tackling these challenges. With respect to NGO assisted housing, it is clear that beneficiaries expect to be given a ready-made house⁷⁰, but when this does happen (as in Samsara), also there are minor dissatisfactions. A few points for consideration by NGOs and government include:

- NGOs should assess the suitability of a house design in a particular location and consult with locals to finalise design.
- NGOs should attempt to transfer expertise to beneficiaries regarding construction, especially in participatory approaches, though understandably constraints may prevent this.
- There should be much better coordination between the government administrations at all levels and NGOs to identify especially severely affected villages/gram panchayats for reconstruction.
- NGO actions have been reactive so far. There should be more emphasis by the government for forward planning for housing in disaster prone areas by dovetailing systematically with IAY, with better consideration to the implications of making NGO assistance mutually exclusive from IAY (as was done in the Caritas example). The unit cost of a Caritas house in the early 2000s was 55,000 rupees, and an IAY house grant at the same time was 22,000 rupees, making them not strictly the same. Moreover, going by the experience of the unfinished NGO provided houses in Erasama, it might have helped beneficiaries of Caritas to have received IAY back-up funding to help them invest in the completion of the house.

As for IAY, there is a clear need to pay special attention to tackling mal-governance in disaster-prone locations.

- There is a need for stricter monitoring of block and gram panchayat level allocations in disaster prone areas, especially remote tail end areas like Erasama (who will monitor this? Only local people can monitor this, because only they know who has what locally).
- The lack of positive assistance from block and gram panchayat officials needs to be urgently tackled, and is especially important for poorer/more vulnerable households (who will do this? Block officials go on to be district officials...)
- There also needs to be much more awareness building amongst people regarding their rights. Joint campaigns regarding relief, NREGS and PDS could be very useful, as local panchayat

⁷⁰ Occasionally, people are able to go beyond 'individualistic behaviour' in favour of the collective interest. We heard about how World Vision had wanted to make 83 houses for 83 households in one village, but the people there said they would rather have a cyclone shelter for the whole village (A.P.Nanda, Project induction workshop, Bhubaneswar, November 2009).

functionaries sometimes seek to take revenge upon those who dare to complain about malpractices in one arena, by withdrawing another entitlement. Relief, compensation, NREGS and PDS are administered by different departments at the top, but at the local level, it is the same set of block officials and *sarpanches* that control various disbursements. Beneficiaries need to be treated as citizens with clear rights.

- IAY implementation in coastal Odisha could also benefit through a more proactive strategy on the part of the state government to draw from innovative accountability experiments being trialled elsewhere. The recent Accountability Initiative at the Centre for Policy Research, New Delhi, could provide a useful resource forum for necessary linkages to be carved (<http://www.accountabilityindia.in/>).

Several of these issues are reconsidered in Chapter 14.

Chapter 10: Cyclone and flood shelters

Constructing accessible and well-equipped cyclone shelters has been a key priority for the Odisha state government since the super-cyclone. This chapter appraises these initiatives by addressing a fundamental question: will the presence of cyclone shelters reduce the vulnerability of coastal communities to future cyclones? It discusses the factors that do or are likely to impact upon the actual usage of proximate cyclone shelters in the study wards. These factors are mainly demographic and physical in nature, but also social to an extent. The current state, capacity and preparedness of some of the major facilities around the study sites are explored. The chapter draws upon developments both in Erasama and Garadpur, but is more intensively focused on the former as it is closer to the sea and, as discussed in Chapter 9, has fewer *pucca* houses where people can take shelter during a cyclone.

10.1 Background

There were 23 shelters constructed by the Indian Red Cross Society (IRCS)⁷¹ at the time of the super-cyclone, and these played an important role in saving lives. Many more ‘multipurpose cyclone shelters’ have come up in the intervening years. So far, 203 multipurpose cyclone shelters (MPCSs), including 65 by Indian Red Cross Society have been constructed in coastal districts of Odisha and have been handed over to the community based Cyclone Shelter Management and Maintenance Committees (CSMMC)⁷². MPCSs are also being built under the Chief Minister’s Relief Fund and the World Bank (60 and 38 respectively according to Samal et al, 2005: 84). All MPCSs are supposed to have functioning cyclone shelter and management committees comprising members from the block, PRIs and local community members, and it is proposed that these committees be registered as societies. Such venues can be used for village meetings, SHG work, health camps, in addition to being used as schools. These should also have 32 different types of equipment in the shelter. The World Bank has recently announced a \$225 million programme to mitigate cyclone impact along the coast of Andhra Pradesh and Odisha. As a part of this initiative, 155 cyclone shelters are proposed to be built and early warning systems are planned to be installed in 980 villages in Odisha. In October 2012, the government announced that it would construct 160 additional cyclone shelters in the state⁷³.

There are two other types of shelters in coastal Odisha besides MPCSs. The first type comprises school-cum-cyclone shelters on the understanding that numerous existing and new school buildings can be effectively utilised as cyclone shelters as well. Nearly 10,000 buildings have been reconstructed since 1999, both under the Government’s Operation Blackboard (a national scheme launched in 1987 to provide minimum essential infrastructure in all primary schools), but also funded by other agencies like IRCS and state governments like Maharashtra and Karnataka. The second type refers to shelters built by a number of well-intentioned agencies (and other state governments) in the worst affected areas in the immediate aftermath of the cyclone. The Jagatsinghpur and Kendrapara District Disaster Management Plans also state that any *pucca* construction in the vicinity ought to serve as a cyclone shelter. While there may be quality issues with each of these, shelters in the last category are particularly likely to be of inferior quality because these buildings were not ‘cured’ properly after construction⁷⁴. At the same time, the assistance provided by other governments like the

⁷¹ IRCS will be referred to interchangeably as Red Cross throughout the text.

⁷² Information obtained from OSDMA, Bhubaneswar, November 2010

⁷³ <http://www.orissadiary.com/CurrentNews.asp?id=37393> (accessed February 2013).

⁷⁴ Observation by MD OSDMA at project dissemination workshop, Bhubaneswar, November 2010

Government of Maharashtra (which adopted Jagatsinghpur District) after the super-cyclone, has been much appreciated by the Odisha state government⁷⁵.

10.2 Cyclone shelters in Erasama Block, Jagatsinghpur District

This section will discuss the coverage of cyclone shelters in Erasama Block, Jagatsinghpur, as well as the key factors impacting upon actual access to proximate shelters in the study wards. The reactions of people to warnings received in the intervening years since the cyclone will also be considered briefly. Here particular attention will be paid to the issues raised by the very recent sea incursion at Kalabedi and adjacent Siali wards, along the Erasama coastline. Finally the section will consider the current state of many of these cyclone shelters and raise some critical issues concerning their effective functioning.

Coverage and access

According to the Jagatsinghpur District Disaster Management Plan (2010-11), there are 10 OSDMA constructed multipurpose cyclone shelters in Jagatsinghpur, and 2 are in Erasama. There are also 3 multipurpose Red Cross constructed cyclone shelters in the district, 2 of which are in Erasama. There are a number of primary and high school buildings in Erasama that also serve as cyclone shelters, some constructed by Red Cross, some by other NGOs but many built by the Maharashtra government. Cyclone shelters have also been built under the PMNRF and CMRF (Prime Minister's National, and Chief Minister's Relief Funds respectively).

Like other places along the coastline, there are a number of shelters in and around the study wards in Erasama. But like elsewhere, these are not at a ward level, so access despite relative proximity (most are within a radius of 2-3 km) is an issue. Respondents were asked about whether they would use these cyclone shelters in the event of a warning, both in the survey as well as in qualitative interviews. They were also asked where they would go if another cyclone struck. The results of the survey are presented below. Chart 10.1 shows that more than 80 (of 120) households answered that they 'would not' go to a cyclone shelter in case of another cyclone. Chart 10.2 shows that 60 households, half of the sample, would simply end up staying at their home, even though their homes were not strong enough to seek shelter in (a further 11 whose houses are strong enough to stay in stated that they would stay at home).

⁷⁵ See 'Report on Relief and Rehabilitation Works in Odisha vis-a-vis Odisha super-cyclone: 1999', by Government of Maharashtra, undated.

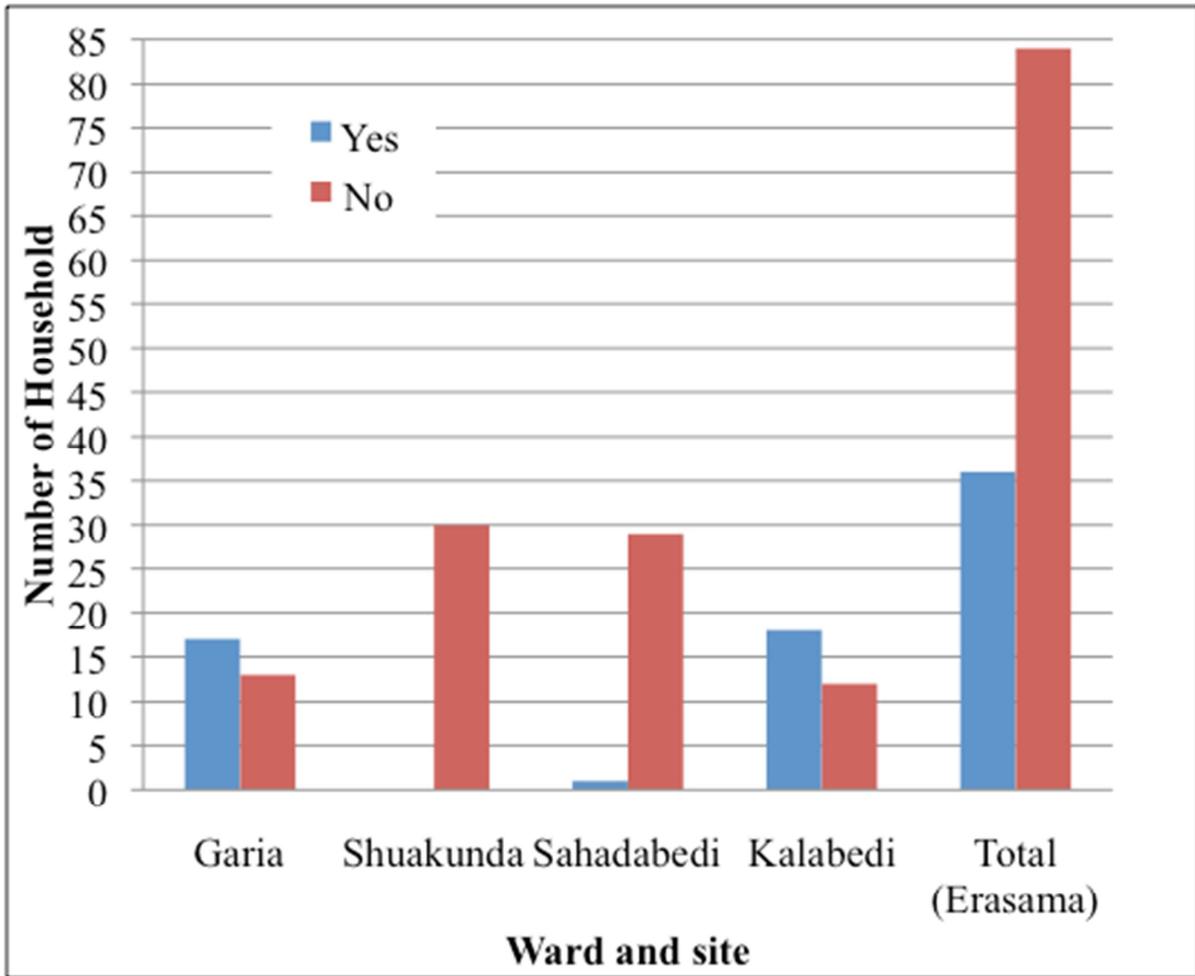


Chart 10.1: No. of households in Erasama that would go to a cyclone shelter in the event of a cyclone

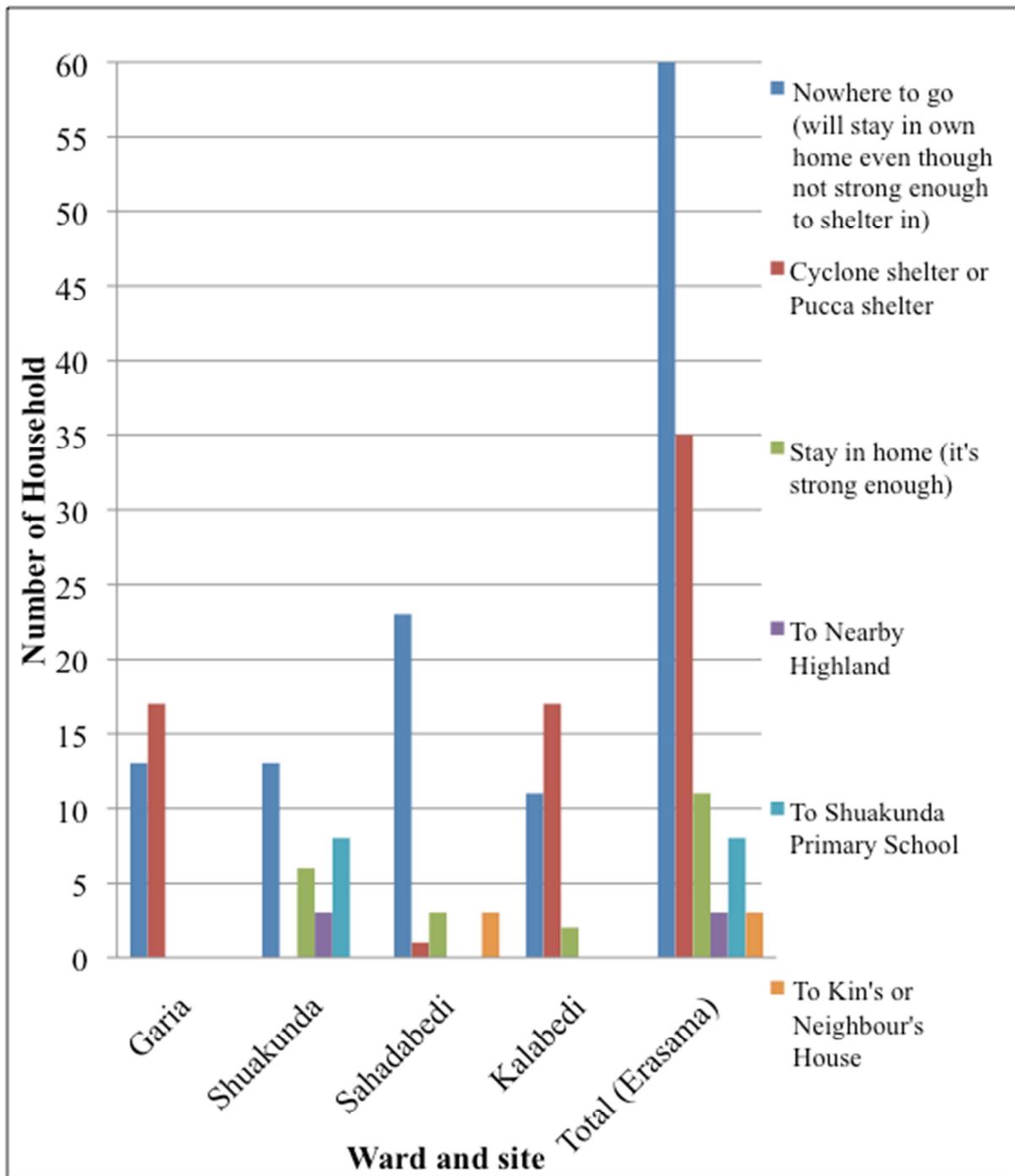
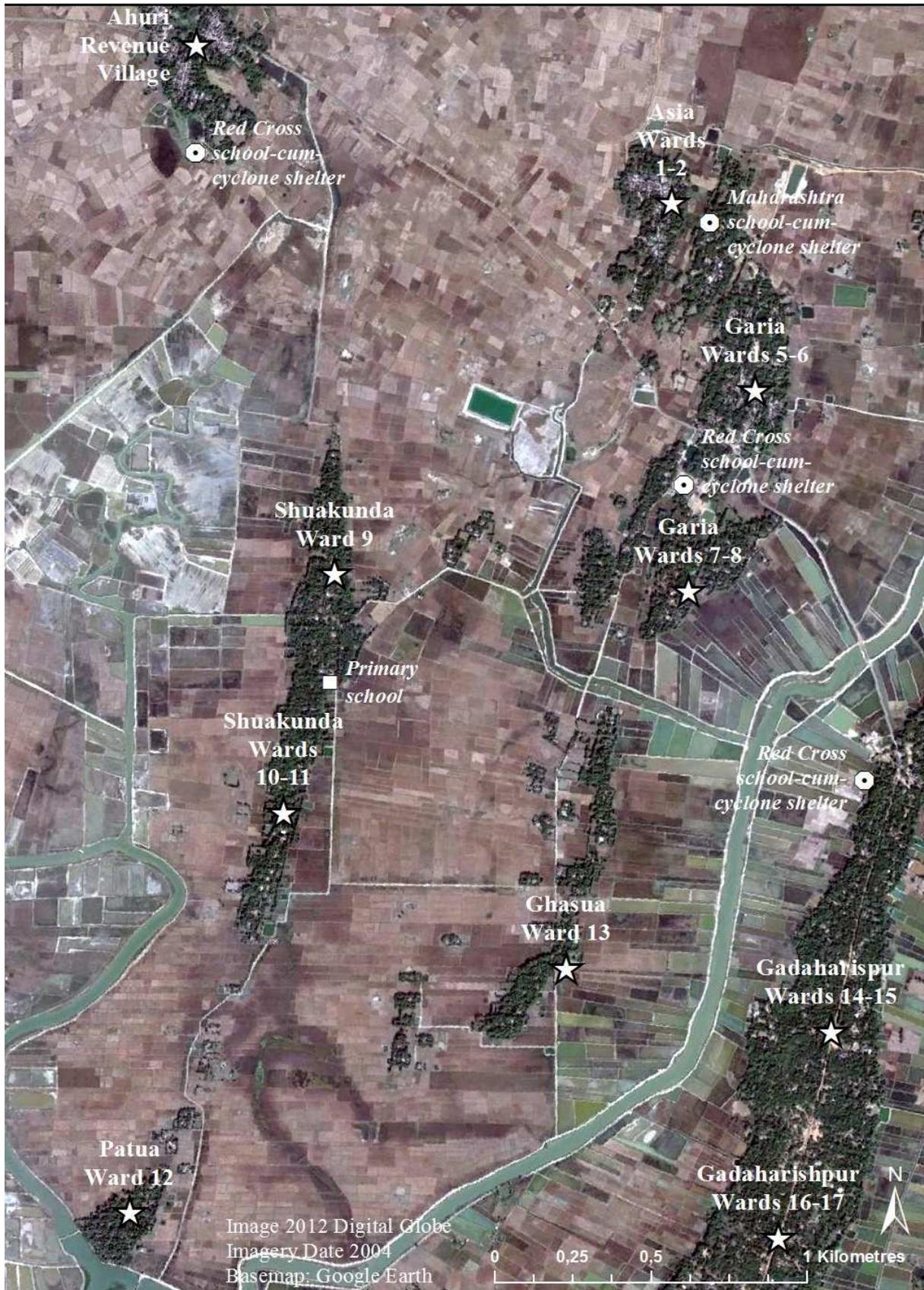


Chart 10.2: Erasama: Where households would go in the event of a cyclone

These findings are stark and led the investigation to look for explanations through qualitative household level interviews and group meetings. Map 10.1 shows there is a Red Cross school-cum-cyclone shelter in Garia ward 7 that was built in 2000, at an approximate distance of about 0.6 km from **Garia ward 5**, the study ward. It has a capacity of 300-400 persons, and a maximum of 1000 if overcrowded. It is meant to serve people from Garia wards 5-8. Garia revenue village has 9 wards (wards 5-13), which in the 2001 census had a population of 2181. With population growth, this facility would not be adequate for its targeted population. Residents fear as much, and ward 5's

residents (especially older persons) are rightly apprehensive that the shelter would be filled with ward 7 and 8's people even before they would get there.



Map 10.1: Cyclone shelters close to the sample wards of Garia and Shuakunda

Map 10.1 also shows there is no dedicated cyclone shelter for the population of **Shuakunda** (also in Garia revenue village, wards 9-11), or of Patua and Ghasua (wards 12 and 13). The closest one is the Garia Red Cross shelter, which is approximately 2 km away. There are space worries here too, plus worries about empty homes being looted, as allegedly happened in 1999 (by some of Ahuri's Oriya population), and some isolated cases of anxiety amongst its Bengali population about rough treatment by the local Oriya *bauris*. Some residents here were also angry at 3 NGOs (LWS, Caritas India and Action Aid) for their 'failed' promise to build a cyclone shelter despite villagers selecting land at the crossroads of Ghasua, Patua and Shuakunda⁷⁶.



Map 10.2: Cyclone shelters close to the sample wards of Kalabedi and Sahadabedi

Till date, **Sahadabedi** has not had a dedicated cyclone shelter on its premises, and its people have suffered on this account (Map 10.2). But a new multipurpose cyclone shelter that will also serve neighbouring wards like Balipatna and Kalabedi will be constructed next to its school, with a planned capacity of 3,000-5,000 persons. A resolution has been passed to this effect at three gram panchayat *palli sabhas* held recently. Residents here are hesitant about walking 1.5-2 kms to access the nearest shelter at Sarbanta in Gadaharishpur Gram Panchayat (ward 22)⁷⁷, for fear of not being given a place by lower caste *bauris* from the Sarbanta area, or robbed en route. The Padmapur multipurpose Red Cross cyclone shelter, at least 4 km away, presents similar concerns of distance and space. There is a

⁷⁶ This 'promise' was not separately verified with the organisations being named here, and this is entirely reported from the perceptions of locals in Shuakunda.

⁷⁷ This shelter was reportedly constructed with funds from an unnamed political leader.

primary school in Sahadabedi, which had a first floor constructed after the super-cyclone, but residents regard this as a 'death trap' on account of its flimsy construction.

In **Kalabedi**, an anganwadi-cum-cyclone shelter has been under construction since 2002, and was completed with a lick of bright paint in late 2010. Villagers refer to it as a cyclone shelter, but there are also widespread concerns that the structure is incomplete and weak⁷⁸. At a focus group discussion held in the ward, people said 'it has taken a long time to build. It has got a partial base only. Without cover, it has stood in the salty wind for many years. So now we feel it may not be that strong. The welding may be rusted'. Residents informed us that this cyclone shelter would withstand winds of up to 150-200 km/hour, not more, since the tall trees that may have broken the force of the wind during the super-cyclone are now few and far between. Some people in Kalabedi have in the past gone across open fields to the Maharashtra school-cum-cyclone shelter in neighbouring Siali (map 10.2) but they do rightly feel that the trip is a difficult one to make at the time of a cyclone. They are happy at the prospect of the new multipurpose cyclone shelter at Sahadabedi.

Warnings in recent years

An in-depth consideration of the micro-realities of access to cyclone shelters reveals that attention needs to be paid to the demographic, physical and social factors impacting upon access. However, it is understandable that a question about likely actions in the future may prompt dissatisfied answers that may be somewhat exaggerated given the circumstances. And in fact, what people actually did upon receiving warnings of cyclones in the past ten years since the super-cyclone is an equally important indicator of whether they might use cyclone shelters or not. Depressions over the Bay of Bengal are a usual occurrence which can and do create cyclonic conditions. There have been a number of warnings in the intermittent years since 1999. People place these at 4-5 but there is a recall issue here.

In Garia (ward 5), a few people said they went to the Red Cross school-cum-cyclone shelter in ward 7, but the majority reported either staying in their homes or going to higher lands. In Shuakunda and Sahadabedi, both having no cyclone shelter, people reported staying in their homes or going to higher lands nearby. The case of Kalabedi however is an interesting one, as the recent sea incursion along the coast near Siali and Kalabedi (both wards of Sahadabedi revenue village) in October 2010 provides a real insight into the reactions of the local community to a disaster warning, and their decisions regarding use of a cyclone shelter. While depressions are common, sea water incursions at this magnitude are not, and the last time this happened was in 1999. The tidal waves damaged the boundary walls of the Siali watch tower situated on the seashore, causing concern amongst officials. According to the district panchayat committee chairperson, Erasama has not been included in the state government's 'Integrated Coastal Zone Management Programme'⁷⁹. People in Kalabedi reported receiving early warnings of the depression on the radio and also from the *sarpanch* of Padmapur. But they left for the cyclone shelter only after the water had entered their village, not before, taking their livestock and some food with them. Some people suffered losses in their prawn and fish cultivation, but no assessment for compensation was carried out despite pleas to the revenue inspector (RI) and the Fishery and Agriculture departments, as Kalabedi's farmers ostensibly do not have land *pattas*.

⁷⁸ An OSDMA official at the project dissemination workshop in Bhubaneswar, November 2010, was of the view that this construction is not a cyclone shelter; however on the shelter's wall it is written that it is an anganwadi-cum-cyclone shelter.

⁷⁹ New Indian Express 29th October 2010.

Yet the government did promptly sanctioned 4 *lakh* rupees through NREGS to make some temporary barriers immediately in front of the watch tower⁸⁰. The total estimation for this work is 11 *lakh* rupees.

It is clear that the two wards where people did use cyclone shelters were Garia (ward 5) and Kalabedi: the first is just about 0.5km away from the closest school-cum-cyclone shelter, and the second has an anganwadi-cum-cyclone shelter in situ. The two wards where most people stayed home or went elsewhere were Shuakunda and Sahadabedi, both of which had the maximum difficulties of access. The discussion confirms that peoples' access to shelters depends vitally on distance as well as shelter capacity, and some recommendations for improvement will be made at the end of this chapter.

State of cyclone shelters

Access is vital, but the current state and capacity of the cyclone shelters is equally significant. The study team followed up on two in particular: the Garia Red Cross school-cum-cyclone shelter and the MPCs in Padmapur. Some important points emerged.

The school-cum-cyclone shelter at Garia, originally built by the Red Cross, is facing a deficit of funds for regular maintenance. Red Cross has visited the shelter each year in the past ten years to check on maintenance issues, but is not in a position to provide funds for maintenance. Upon detection of any pressing issues for repair/improvement, it typically asks the school management committee (which includes the *sarpanch*) to get money for repairs from the block. A recent block assessment estimated that the cost of repairs would be 20,000 rupees, but the block could only contribute 10,000 rupees. As the school is under private management, it is recognised by the government, but not funded by it. There have also been some possible errors of judgement by the management committee, as far as additions to the school have been concerned. A good example is this spiked gate (see Photo 10.1) fitted by the committee on the stairwell, with a sharp pipe protruding from the wall used to keep the gate shut and locked. The committee has been issued a government order to keep the gate open at the time of a warning, and this was reportedly done at the time of a warning in 2008. However, a field inspection by our researchers raised concerns of people cutting themselves even with an open gate, besides the possibility of people falling from the stairwell in overcrowded conditions and becoming impaled on the gate's spikes. There have been no training or drills for local people organised in the past ten years at this school-cum-cyclone shelter.

⁸⁰ The diversion of NREGS funds for other uses, as this, has seen the state government being criticised by the Supreme Court, see Times of India December 16, 2010 <http://timesofindia.indiatimes.com/india/Probe-NREGA-fund-diversion-SC-tells-Odisha-govt/articleshow/7110806.cms>.



Photos 10.1 and 10.2: Dangerous gate attached to stairwell in Red Cross school-cum-cyclone shelter

Things are considerably better at the MPCS in Padmapur. According to two members of the committee interviewed by the study team in November 2010, this shelter has a capacity of 2,500-3,000 persons and has a 30 member management committee which meets every 3-4 months to discuss essential matters and review finances. Four secretaries have been appointed over the last 10 years. Maintenance is also better organised, as repairs are reportedly carried out each year like mending windows and filling holes. The shelter is stocked with equipment including a generator, wood cutting machine, solar panel, big ropes, emergency tube light, siren, 8 life jackets, and so on. More items have kept coming in recent years.

Committee members reported that nearly 6,000-7,000 rupees are spent each year on maintenance. It is inferred that this money comes from the state government, since there is a provision for the funding of MPCSSs, and a joint account is held by the BDO and the committee secretary. What is also remarkable is the initiative shown by the residents of Padmapur village, who have raised money 4-5 times for the maintenance of this shelter, even collecting up to 10,000 rupees at a time. The committee has also rented out the building to raise money. Finally, the situation is better than the Garia school-cum-shelter with respect to the holding of drills too. Drills are held each year on the 29th of October, to mark the anniversary of the super-cyclone. However, we were told that no members of the village public actually attend these drills, which are attended solely by committee members. Locals in these parts are predominantly wage labourers and find it difficult to make the time to attend, but no significant mobilisation efforts appear to have been made either. The district disaster management plan (DMP) places considerable emphasis on mock drills, but for officials and rescue groups mainly, and no clear mention is made of mobilisation of the local community to also participate in a mock drill once a year.

10.3 Cyclone and flood shelters in Garadpur block, Kendrapara district

This section will discuss the prevailing situation with respect to the coverage of and access to cyclone and flood shelters in inland Garadpur.

Coverage and access

According to the latest Kendrapada District Disaster Management Plan 2010-11, the district has a variety of school-cum-shelters provisioned under Operation Blackboard (OBB), PMNRF, CMRF and other agencies. There are 20 multipurpose cyclone shelters (MPCSs) constructed by Red Cross and 23 MPCSs constructed by OSDMA (with WB and CMRF funds) in coastal Rajnagar and Mahakalapada Districts. Garadpur has no MPCSs because it is an inland block and is envisaged to be served by a range of school-cum-cyclone shelters.

While the Kendrapada district DMP lists many schools as cyclone shelters in and around the study wards, interviews with the two *sarpanches* of Tikanpur and Patkura Gram Panchayats revealed problems with the classification. Both *sarpanches* questioned the presence of several of the shelters listed either on the basis of their facilities or because they were located in other gram panchayats. This meant that in effective terms, very few shelters served either gram panchayat. In **Patkura** Gram Panchayat, there is a Karnataka government-built high school-cum-shelter at Patkura, and the *sarpanch* concluded that it is extremely insufficient for the needs of his GP. Seeing its location on Map 12.2, it would probably only be adequate for the people of Patkura itself, and inadequate for other neighbouring places like Samsara and Jamunabad. In **Tikanpur** Gram Panchayat, the only effective school-cum-cyclone shelter is a high school at Behula built by LWS, but while the people of Behula could go to the LWS shelter there, the people of Marilo have no such option.

There are six floods shelters in Kendrapada District, two of which are in Garadpur Block. These are under construction, one at Bedari and one at Korua (see Map 12.2). Once complete these will be used for storage and distribution of relief materials mainly. The situation is particularly grave for the people of Samsara and Jamunabad, positioned on the right bank of the Chitrotpala river, as the embankments at both these places are at highly vulnerable points according to a map of the Kendrapada Irrigation Division⁸¹, sourced from the District Emergency Office in Kendrapada. Along the river banks of its jurisdiction, the Kendrapada Irrigation Division has a recorded 22 points vulnerable for flood discharges of 10 *lakh* cusecs and above at Munduli (upstream of Cuttack, shown in Map 3.2), and a recorded 61 points vulnerable for flood discharges of 12 *lakh* cusecs and above at Mundali. The 22 most vulnerable embankments fall in 7 clusters, one of which is centred at the meandering part of the Chitrotpala. Parts of the embankments at Jagannathpur, Samsara, and Bedari (see Map 12.2) are each classified as vulnerable in the above 10 *lakh* cusecs category, while just downstream of Bedari is another stretch of embankment classified in this category, and just upstream of Jagannathpur are three consecutive points on the embankment classified in the above 12 *lakh* cusecs category.

Earth from the narrow floodplain which lies between the Chitrotpala River and the embankment/road at Samsara and Jagannathpur was removed to repair the breached embankments following the 2008 flood. These embankments had up till 2010 suffered erosion from rainfall during the monsoon season. We enquired at the Irrigation sub-divisional office (SDO) at Patkura as to why soil from the adjacent floodplain/riverbank was removed to repair the embankment, because villagers and the research team felt this would lead to the undermining of the very embankment it was taken for to repair. We were

⁸¹ The four wards of our research site fall under two different irrigation divisions: Marilo and Behula on the left bank of the Chitrotpala come under the Mahanadi North Irrigation Division.

told that private farmers who owned that land sold it to the irrigation department for this purpose, and there was no other soil available anyway⁸². The breach at Bedari was being repaired by a contractor (apparently a Cuttack-based gangster) but had remained unfinished up till late 2010 due to this contractor's recent murder. The assistants at Patkura's SDO said that the embankment was checked every month. But this still begs the question of why the embankments were not remade to a stronger level, given that the same breach points continue to be regarded as weak.⁸³

According to our gathered information, of the four study wards, only Behula has a school-cum-cyclone shelter in situ. The shelters located in Patkura and Tikanpur are not realistic options for the other study wards given the distance and issues of local capacity. While Behula's residents may choose to go to the LWS school-cum-cyclone shelter, the people of Behula's two wards will anyhow benefit from the increased numbers of *pucca* houses within their village. In the qualitative interviews, people overwhelmingly reported that they would choose to seek shelter in a *pucca* house in the village, should there be another flood or cyclone (it is a lucky coincidence for Behula that they have had the most IAY funding and have a cyclone shelter in their compact village). However, an exceptional case might be Samsara, whose residents would most likely choose to go up to the embankment at the first signs of a flood event, given their proximity to the (previous) breach point. People in all four wards (Jagannathpur, Bedari, and two wards in Samsara) near the breach points do patrol these at the sign of waters rising to try and stop a breach from occurring.

Comparisons with Erasama

On balance, thinner coverage of cyclone shelters in Garadpur than Erasama reflects Erasama's higher risk of experiencing cyclonic events. It is also true that the people of Garadpur have more *pucca* houses. While *pucca* houses may be adequate for sheltering from cyclones, should another super-cyclone occur people ought to have a practicable option of going to a safe cyclone shelter, or at least a strong building like a school that can serve the same purpose. This is especially true for vulnerable households with *kutchha* houses. As for floods, the increase in *pucca* housing is a positive sign that will certainly reduce the vulnerability of people to flood related suffering (as evidenced by the 2008 floods). In 2008, people stayed in *pucca* houses (where these were strong enough) to suffer less dislocation and be close to their belongings. However, more needs to be done for wards closer to the breach points, at Samsara and Jamunabad. There are also, as evidenced by the case of the seemingly irresponsible repair work at the embankments at Samsara and Jagannathpur, structural issues to do with the maintenance of embankments that need simultaneous attention from the government.

10.4 Cyclone shelters: Summary and key recommendations

This chapter has taken a micro-level look at the realities of access to cyclone shelters in the study wards in Erasama and Garadpur. While impressive strides have been taken by the state government supported by other agencies to dramatically increase the numbers of cyclone shelters of different types (MPCSs and school-cum-cyclone shelters), this research shows that there are several

⁸² The engineer was absent, but two assistants (one of whom has worked for the department for 24 years) provided this information at the interview.

⁸³ In comparison, the embankment near to Marilo and Behula is stronger, and the chance of a breach next to them is relatively low (geographical location in relation to any river's meanders is of course a major determinant).

outstanding issues that may negatively shape actual access should another cyclone or flood occur, as happened in Garadpur in 2008 (and more recently in 2011⁸⁴).

These issues are intensively considered in the case of Erasama, which stands precariously exposed to cyclones along the coastline, and where the quality of *pucca* housing in the study wards has been below peoples' expectations. Demographic, physical and sometimes social factors all combine to produce apprehensions about going to a cyclone shelter. An examination of what people actually did at a real cyclone warning since 1999, also confirmed that in the wards furthest away from cyclone shelters (Shuakunda, Sahadabedi), people remained in their homes. This could be extremely risky if another super-cyclone were to occur. More positively though, as for example in Kalabedi in the recent sea incursion of October 2010, peoples' reactions showed that they did pay heed to the warning and seek refuge in the local school-cum-shelter, even taking some food, livestock and other essentials with them. In Garadpur, coverage of cyclone shelters is thin, but the problem is comparatively less acute than Erasama, given the greater presence of *pucca* houses in the study wards. There is no room for complacency however, given the dangerous proximity of some of the wards to breach points.

Given that the establishment of safe, high-quality and accessible cyclone shelters is a key priority for the state government, it is hoped that action can be taken through attention to a few recommendations suggested below.

- There is the need to assess the ratio of cyclone shelters to the target population. A thorough feasibility study of cyclone shelters' capacity is urgently needed. For example, this could easily be done with the next round of (2011) census results and imagery from Google Earth.
- Special attention to the needs of frail and vulnerable persons (older people, children, pregnant women) in using these shelters needs to be paid. One view is that cyclone shelters save lives, and the focus needs to remain on getting people in general into these. However this is not enough as the needs of frail/vulnerable persons also merit due consideration, for they suffer unduly in cramped conditions, and sustain injuries incurred as such for months afterwards. In fact many such persons state they will not go to a cyclone shelter for this reason.
- MPCs are better equipped than school-cum-cyclone shelters, but the latter far outnumber the former, and are in urgent need for better facilities and maintenance. More attention needs to be paid to school-cum-cyclone shelters, as these are more numerous, and often closest to communities, both in Erasama and Garadpur. Community drills should be initiated. It is not enough to train people again and again at MPCs when their number is so few and the population they serve such a small proportion of the total populace.
- There is a need for OSDMA to extend positive support for maintenance to cyclone shelters constructed by private and non-governmental agencies (such as the Red Cross school-cum-cyclone shelters), as protection from disaster impacts is ultimately a state responsibility.

⁸⁴ Garadpur again suffered from multiple breaches of its embankments in the floods of 2011.

Section 4: Access to assistance

Chapter 11: Community level relationships and assistance from NGOs

One of the key motivating factors in adopting a ten years retrospective approach for this research was to go beyond a superficial understanding of the types of relationships that really matter for communities trying to recover from a disaster. This focus stems from the stated aim of the research study to understand the ‘socio-political’ dimensions of vulnerability and recovery. In a practical sense, this phrase is taken to refer to the social and political factors that impact upon the resources that households are able to count on for recovery. It is also taken to mean relationships within society, and with key social and political actors, such as richer persons in the community, village elites, local powerbrokers, *sarpanches* and ward members, and also MLAs, BDOs, RIs and other state officials. Through the oral histories of respondents, of the time right after the cyclone, and through interviews with key informants from the community, NGOs and other state officials, as well as from survey data, it has been possible to gauge key patterns in effective access to assistance over the ten year period.

The rich material obtained is presented in three chapters. In this chapter, the discussion centres on the critical role played by relationships internal to the affected communities in the households’ attempts at recovery. It also includes a briefer discussion on the role played by NGOs in the study wards. This chapter does not repeat the analysis of issues relating to NGO assistance in housing recovery, already covered in Chapter 9. In Chapters 12 and 13, the discussion turns to the question of access to assistance offered by the state, and the role played by key state interventions since the super-cyclone.

11.1 Community relationships during and immediately after the super-cyclone

The investigation produced overwhelming evidence of the significance of community (intra- as well as inter-household relationships) at the time of the super-cyclone, and immediately after. This discussion will draw principally upon the testimonies received in Erasama, given the extraordinariness of impact here, much more than in Garadpur. Some examples from Garadpur, which bring additional insight, will also be presented.

During the super-cyclone

When the cyclone gathered strength in the early hours of Friday 29th October, 2010, people were generally in their homes as they either had had no warning, or had not heeded to such warning. Not a few persons, especially from Kalabedi, were outside their houses on Thursday in prawn *gheris*, returning to their homes in the evening when the winds grew stronger. The 50 plus in-depth interviews contain detailed accounts of what people did from Friday morning onwards in the different wards. We heard about the sheer incredulity experienced by people when the sea waters came in (at different times in the different wards), as nobody could really believe what was happening.

People did what they could under the circumstances, and each household shared its own unique story of movement from one place to another in its attempts to seek protection. People climbed on to their roof tops, or up trees, and if at all possible, they tried to make their way to *kudas* (small slightly elevated lands), or to the closest *pucca* construction if such an option existed. There were anguished accounts of people being separated from their loved ones in the unfolding chaos, and of the cramped and distressingly uncomfortable conditions in which everyone including the old, infirm, women, and children found themselves through Friday and Saturday. There were stories of some household members who were away from Erasama at that time, either visiting relatives or gone for work, and

they provided emotional accounts of the difficulties they encountered in trying to find their way back amidst the apprehension that they would not find their family members alive. There were fallen trees along the way and the roads had been thoroughly destroyed, and no transport available, and many described walking back from Jagatsinghpur, and in some cases, from as far away as Cuttack, over several days.

This research obtained extraordinary accounts of generosity at this time, on the part of the few households in these communities that did own a *pucca* room or two. They opened their doors to whoever came for shelter, until such a point when it was physically impossible for another human being to stand, given the absolute lack of space. While there were a few isolated examples of Bengalis and Oriyas showing mistrust for one another even during the super-cyclone, the overwhelming truth was that people relied on their neighbours and kin that lived in and around their villages during this critical time. Usual barriers around caste and marital relationships broke down, and for a few days, people stood next to one another, not really as high or low caste, or as male or female, but simply as common victims of a super-cyclone. People shared their shelter (even if it was a small *pucca* house, or a house on a higher land), and where possible food. Keepers of small shops did their bit to help by distributing their stocks of biscuits and other ready food items (which were anyway ruined by the saline sea water). In and around Garia, there were also cases of people breaking the shutters of shops and removing food from those.

Our interviews and group discussions reveal some bitter memories of unkindness at the time the super-cyclone struck, but also more encouraging recollections of support. A general caste (Khandayat) widow from Garia remembered that she had left her village to stay with some relatives at Asia but they did not give her any food, not even for her one-year old daughter. The scheduled caste Jenas of Samsara that live in a mixed caste ward gave varied accounts of their experiences during the super-cyclone¹. A few sought shelter in a newly constructed temple¹. They begged for food in the 'mahajan sahi' (upper caste locality, in the same ward), and recalled being given some cooked rice and boiled plaintain flowers to eat. They also recall having gone to other hamlets in the village where there were *pucca* houses, and where they were turned away by people. They said that even at times of disaster, the higher caste people retain their negative feeling and attitude to them as scheduled castes. Yet individual testimonies showed that such discrimination was the exception rather than the rule, and that intermediary castes did not turn away scheduled castes during their time of need. One man told us that he and his family went to stay in the 10 room *pucca* house of an other backward caste (Teli) villager, where 60 people of mixed caste took shelter for 3 days, with cooked rice being served to all (respondent no. 124). One other respondent (no.125) and her family went to this same house, taking their cattle with them. The Jenas are now better provided for after the Satya Sai Trust gave them *pucca* houses. Repeated incidents of flooding in Garadpur have reiterated the significance of internal community relationships during times of disaster, with people generally seeking shelter in the houses of their relatives or neighbours wherever possible.

Limitedness of community assistance in the months and years after

This research also shows that community assistance, while critical during the super-cyclone, and in the initial few days after, does not extend deep into the reconstruction process. This quite simply is because of the resumption of normal life and of more usual relationships amongst households. The

discussion on housing in Chapter 9 has shown that in both sites, the large majority of people stayed in temporary shelters (*pallas*) on their own lands, and only a handful could really stay with neighbours while reconstructing their damaged house. We investigated further, asking people directly about the extent of assistance given and received between households, for reconstruction activities. We specified that this should be assistance without payment, given only on principles of reciprocity. But as Chart 11.1 shows, such assistance was negligible in both Erasama and Garadpur, with a large proportion of households reporting in the negative ('no') for free labour, construction material or cash assistance from others. The sameness of economic condition surely limited the ways in which households were able to help one another. In the years since, people remember the generosity displayed in 1999, but uniformly say that life has gone back to what it used to be (though a few did remark about 'new friendships' made with strangers at the time, or a deepening of bonds with relatives that stood by them). If they need to borrow, they take money from other villagers at a rate of interest, or SHGs/cooperative societies where possible.

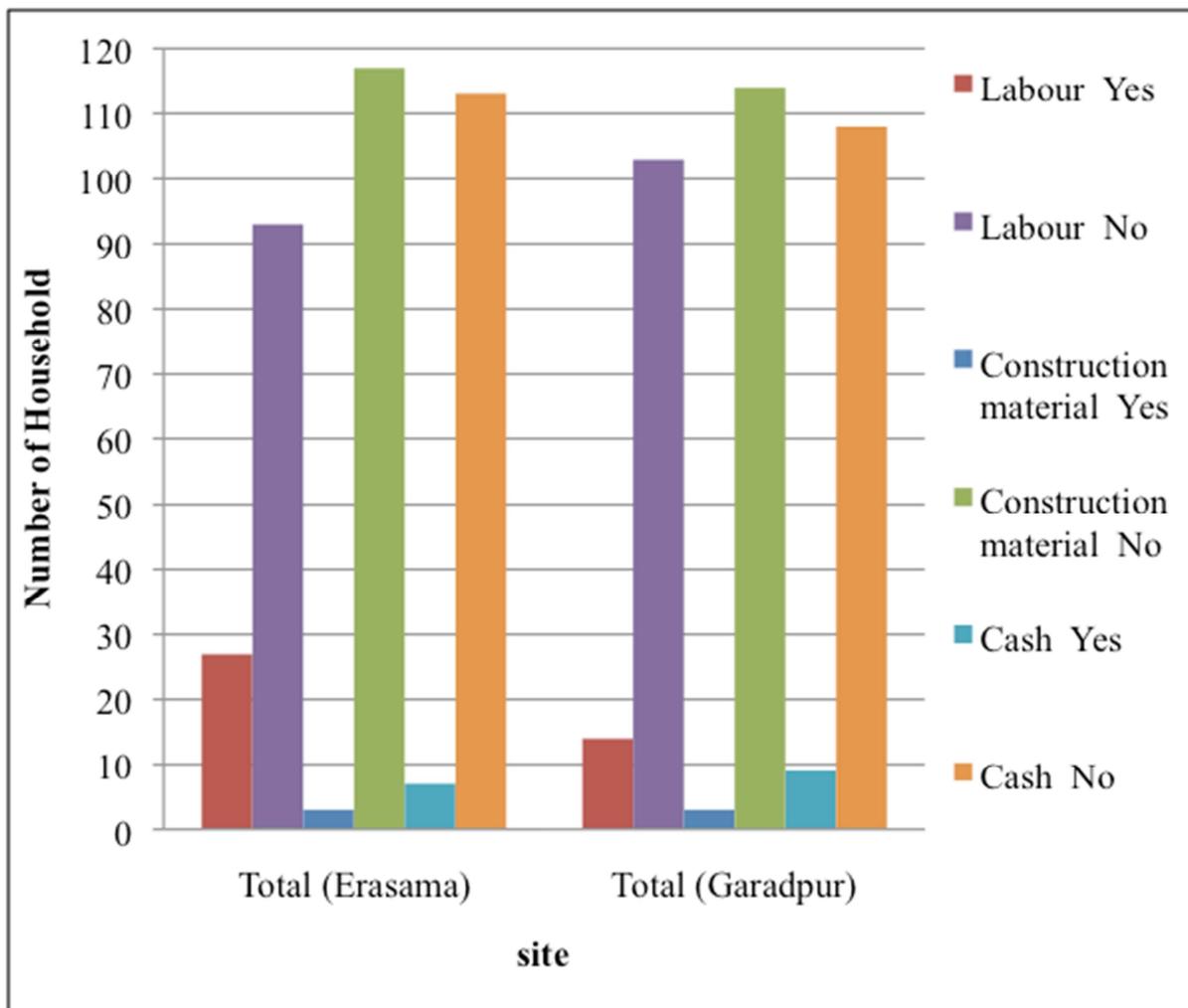


Chart 11.1: Type of 'free' assistance received from family/community for reconstruction after the super-cyclone, Erasama and Garadpur

11.2 NGO assistance after 1999

The active role played by a large number of NGOs in Odisha after the super-cyclone has been well documented (Samal et al, 2005; Ray-Benett, 2009). After the super-cyclone there was an

overwhelming relief response, especially from international quarters, and much of the coordination with a range of local NGOs that helped with relief was done by the government through the UNICEF offices in Bhubaneswar. NGOs helped with relief, but also provided food-for-work, psycho-social counselling, rehabilitative temporary shelters for women, orphans and destitute, and livelihoods and housing assistance. Action Aid, Red Cross, CARE, CASA, LWS, Caritas, CRS and EFICOR were amongst these. There were numerous smaller local organisations that helped.

Food for work programmes implemented both by the state government and NGOs, were targeted at cleaning activities (of roads and ponds), repair work of own houses, brick making and the reconstruction of village common properties among other tasks. The NGOs that most actively undertook food-for-work programmes in coastal Odisha were EFICOR, LWS, BGVS, Action Aid, CASA and VHAI amongst others (Samal et al, 2005). In the study wards in Erasama, Action Aid was most active in providing food for work after the cyclone, and people generally recalled their experience with this in favourable terms⁸⁵. Most households interviewed acknowledged the provision of food-for-work (FFW), confirmed that work was available for at least one member of the family, and also that generally 5 kg of rice and *daal* was given for work done. We obtained interesting accounts of how intra-household decisions were taken regarding who would go to work, and it was not uncommon for households to not be able to send anyone, either given illness or caring duties after the cyclone. Samal et al (2005) report that the participation of women in FFW programmes was higher in comparison to men, as in many cases they were the sole bread earners after the cyclone. We could not obtain any fixed dates regarding how long these programmes continued for or when they started, with respondents' recalling varying lengths of times. Some said food-for-work programmes lasted for a few weeks; others remembered this to be much longer, for several months.

The wider literature contains some serious criticisms regarding food-for-work programmes. Samal et al (2005) summarise the major points. They report wide gaps between implementation and the actual need of affected villages, duplication of FFW works due to the lack of coordination amongst NGOs and also between NGOs and villagers, and general inadequacy in terms of what these could provide for households in need (Samal et al, 2005: 217). They also report that some NGOs like World Vision, Oxfam India and others implemented restoration and building activities, but note that many did not do enough to generate employment opportunities through such works. They give the example of CASA that built a cyclone shelter in a village in Kendrapara (Tentulikanda), but the contractor brought in outside labour and did not engage locals for the work (though in some cases, NGOs justify this on the grounds that skilled labour was needed and not available locally, as with the Caritas example discussed in Chapter 9).

There were also serious lapses in coordination between NGOs and the government in the interests of greater effectiveness. The examples covered in Chapter 9 show this problem to some extent. Caritas' experience in Erasama revealed that it was not possible for a single NGO to work in all affected districts, yet some of the worst affected wards (like Kalabedi) could have definitely benefited from more concerted NGO assistance. Samal et al (2005) give the telling example of Bharat Seva Sangha (BSS), a charitable organisation that adopted two villages in Japa Gram Panchayat in Erasama, and

⁸⁵ One respondent from Garia ward 5 noted that funds and materials from a food-for-work programme were misappropriated by a local teacher who assumed authority of the scheme at that time (respondent no. 15).

decided to construct 88 and 113 houses in the two villages respectively. Then the Gujarat earthquake took place, and BSS (which is headquartered in Gujarat) diverted its funds there and decided to stop its work in these villages half-way. It is apparently not uncommon for non-governmental agencies as well governments that are funding reconstruction to shift resources elsewhere, if more compelling episodes of disaster occur. Yet, these acts produce profound disenchantment. Villagers here felt 'desperate' and approached various agencies for assistance but to no avail, and finally, they met senior state officials including the Relief Commissioner and the Collector. The officials expressed 'their inability to bring back BSS, or to take any action against BSS...they also expressed that the government has no control over NGOs who deliver services in the cyclone affected areas' (Samal et al, 2005: 205). While the constraints that NGOs face are real, and also understandable, these examples raise concerns over the direction of their accountability.

While NGOs have been criticised, one area where they have been commended is for their work on psycho-social counselling and rehabilitation of orphans and widows in particular. The super-cyclone rendered many women destitute, many of whom were targeted by miscreants. There were news reports of large scale 'migration' of small children and adolescent girls from Odisha to other places (Samal et al, 2005). In order to address this serious problem, UNICEF, together with the Odisha Disaster Mitigation Mission (ODMM), a body of local NGOs, adopted an approach of creating local shelters for such vulnerable persons. These shelters came to be popularly referred to as '*mamata gruhas*' (houses of affection). Action Aid took the lead in providing support to all 53 shelters that were established. In Erasama Block alone, Action Aid (AA) provided shelter to 838 widows, 209 old people and 801 orphans (Samal et al, 2005: 234). It also undertook various measures to foster solidarity amongst these residents, and providing them financial help, initiated the formation of SHGs and ultimately helped with their reintegration into the local communities.

Of the 4 study wards in Erasama, Action Aid worked in Garia mainly, with women and children. It created a shelter where nearly 35 persons were housed for several months. In Shuakunda also, AA built a community shelter, but had relatively less of a protracted engagement. According to AA's community mobiliser, the organisation could not work at first in Kalabedi and Sahadabedi because these were remote and cut off, and the organisation did not even know that these villages existed. It later delegated responsibility to a smaller NGO called BGVS to run food-for-work programmes in Padmapur Gram Panchayat, and initiate SHG activities, as AA was focusing on establishing *mamata gruhas*.

In Garadpur, NGO assistance has been limited to relief right after the super-cyclone, and more visibly perhaps, after the recent 2008 floods. According to local accounts, much more help was received from NGOs in 2008 than in 1999. This follows the relatively lower impacts it suffered in 1999 compared to worse hit places like Erasama, where most NGOs rushed to help. In contrast, in 2008, Garadpur was amongst the worst affected places during the floods, thus drawing attention from NGOs. When it comes to disasters, NGOs generally seem to work in a responsive mode, rushing to places that are widely reported as being in crisis. This means that how disaster affected places are reported in the popular media has a key bearing on NGOs' decisions regarding where their resources ought to be concentrated.

At the induction workshop held for this project in November 2009 in Bhubaneswar, the issue of what drives NGOs to work in particular places and not in others was discussed. Several NGO representatives agreed that indeed, when viewed from a macro perspective, NGOs did not actually have a coordinated mechanism for deciding where to work after a disaster. Moreover, the usual considerations of avoiding duplication in course of regular development work often disappear during a disaster, especially as many NGOs need to appear visible in the ‘worst-affected’ areas, if only to satisfy international funders⁸⁶. This can explain much of the duplication that goes on, as well as the lack of attention to other places altogether. It raises the issue of which direction NGO accountability works in times such as these. The BSS example previously cited clearly showed that the government cannot really direct NGOs, and the people NGOs wish to serve are also helpless to affect decisions regarding involvement.

The research also observed the relative scarcity of sustained longer-term involvement by NGOs in particular places. In this context, CBCI’s (through Father Augustine’s) efforts to initiate somewhat more extended social mobilisation, livelihoods and SHG support, and then housing assistance, as also Action Aid’s longer, engaged work around psycho-social counselling and community rehabilitation are extremely commendable⁸⁷. The research recognises the very real constraints of funding and organisational mandates, within which NGOs must operate. But there is a serious need for better, more grounded and honest coordination amongst NGOs and the state government for their work relating to disasters. And this must take place not just with respect to immediate relief work, but importantly, longer-term recovery work and assistance.

11.3 Community-based and NGO assistance: Summary and key recommendations

This chapter has critically discussed the significance of community-based assistance and also help received from NGOs during and immediately after the super-cyclone. But it has also provided evidence to show that there are limits to what people can expect of one another, at an inter-household and community level, in the ensuing months and years following a disaster. There are constraints to the giving and receiving of reciprocal help deeper into the reconstruction process. The chapter has also provided a brief review of the scope of NGO interventions after the super-cyclone. While noting the tremendous usefulness of the work that NGOs did, it has also raised some questions regarding the need for better coordination amongst NGOs and the state in responding to disaster affected places and peoples.

A few major recommendations arising from this discussion include:

- The state and the NGO community should recognise that much better coordination is needed to enable NGOs to assume a more effective role in longer-term processes of reconstruction and recovery.
- Steps have been taken to coordinate the relief work of NGOs, even as early as immediately after the super-cyclone, but surprisingly little has been done to take the discussion further about what NGOs can do to support communities living in disaster-prone areas on a more sustained basis. The Inter-Agency Group (IAG), a forum of international NGOs established in

⁸⁶ These are views expressed by NGO representatives at the induction workshop, Bhubaneswar, November 2009.

⁸⁷ Action Aid continued to work in Erasama Block in 2010, but according to the local community mobiliser, may stop operations in 2011.

2003, could play a more active part in working with the government to create and actually see through a macro level plan for NGOs working in disaster relief and reconstruction. It is possible that some of these processes are underway already, in which case evidence is needed of the results of improved coordination. An evidence-based study by the IAG should be commissioned to further understanding.

- To reiterate the lessons emerging from the discussion of NGO provided housing assistance in Chapter 9, there is a clear need for proactive forward planning between NGOs and the state, on all aspects of disaster reconstruction.

Chapter 12: Disaster related assistance from the state

This chapter turns to the assistance that the victims of a disaster receive from the state. It covers two major issues: the provision of ‘pure’ or ‘emergent’ relief supplies of essentials like food, clothing and so on, in the first few days and weeks after the super-cyclone, and also, later floods in Garadpur; and then the giving of cash assistance for assessed losses from the Calamity Relief Fund. It considers the major social and political factors that mediate relief delivery and access, and also the access to cash assistance for losses. It discusses the actors and relationships that play a vital role in these processes, and the kind of issues that continue to challenge the state despite major improvements since 1999. Lastly, it also considers the social implications of assessment and awarding of ‘compensation’ for losses, of both small and large amounts, and what this actually means for the victims of the disaster.

12.1 Relief delivery and access

This section will discuss the key issues pertaining to the delivery of and access to state relief supplies after the super-cyclone. It focuses on the experiences observed in Erasama, which was the scene of widespread devastation and also of troubled efforts to reach relief to people who had been cut-off for days. For an understanding of how key state interventions concerning relief delivery have changed, the discussion turns to Garadpur, the site of more frequent disasters since 1999, and then in 2008, the last flood before fieldwork for this research was conducted⁸⁸.

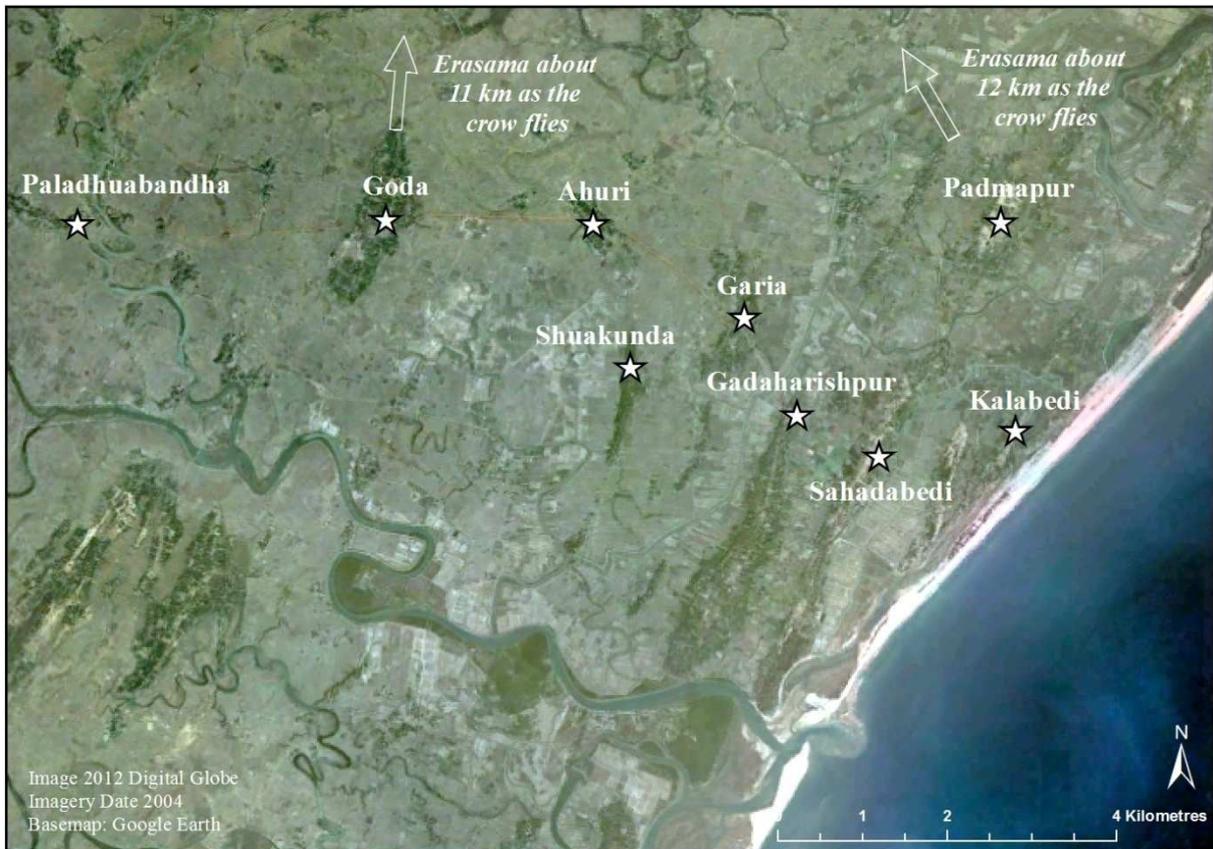
Delivery of relief in Erasama after the super-cyclone

From the early hours of Sunday 31st October 1999, when the winds had died down and seawater began to recede, people started making the painful journey back to where their homes had once stood. They were dazed, distressed, tired and hungry, and lacked all of life’s basic essentials. At this difficult time, neighbours and kin could actually do little to help one another beyond offering shelter wherever possible, and relief supplies from the government, as also NGOs, made the critical difference to survival. But provision and access were two different things, and not exactly uniform for the four wards studied. The following sections discuss in some detail the type of factors that accounted for variations: especially distance from where the relief was being distributed, the time elapsed since the super-cyclone before relief could be delivered, the significant role played by *sarpanches* and ward members in ensuring fair distribution and finally, individual level characteristics that accounted for peoples’ ability to quite literally get their hands on relief.

The road from Cuttack and Jagatsinghpur to Erasama block was utterly destroyed and littered with fallen trees, and removing these proved to be the first significant challenge for the district administration. The *ex-sarpanch* of Gadaharishpur Gram Panchayat recalled that even when relief arrived at Ersama Block office, several days passed before any contact could be made with *sarpanches*. Not surprisingly, the *sarpanch* of Padmapur Gram Panchayat took longer (nearly 12-15 days after the super-cyclone) than the *sarpanch* of Gadaharishpur Gram Panchayat (about 8 days) to physically get to the block to collect relief supplies. During this initial period, before relief had come to their respective gram panchayats and also wards, households in Garia reported going to Paladhuabandha (see Map 12.1) about 8km from Garia, where the relief trucks had already arrived, to bring back provisions. Many people from Garia could walk up to this point to bring back things,

⁸⁸ Another major flood event occurred in September 2011 in the Mahanadi Basin, with breaches and other damage in Garadpur Block.

because of the remains of the direct road linking Garia to Paladhuabandha via Ahuri and Goda, but people from Shuakunda, and even more so, Sahadabedi and Kalabedi in Padmapur Gram Panchayat were at a disadvantage because of poor quality minor roads, and also distance in the latter two wards' cases.



Map 12.1: Distances and key places during relief distribution after the super-cyclone in Erasama

The idea was that relief would be brought to the gram panchayat office, and stocked in a suitable location such as a school building, and then distributed to households by ward members either from their own house, or from a public location within the ward. Even before the relief reached the gram panchayat offices however, there were widely reported incidents of looting and ransacking of materials first at the Goda *chaka*, and later at Garia *chaka* when relief had got that far. Ward members had to work hard to bring back relief supplies to their ward. Besides, it was a challenging task to distribute these fairly to households. Our respondents generally refrained from blaming ward members for any discrepancies, and several also commended them for managing the process sincerely and fairly. Yet, there were various problems of disorder and theft. In Garia, people said that the relief materials stocked at the school building had been stolen overnight. In both Garia and Shuakunda, people recalled terrible fights at the *chaka* about the criteria that should be adopted for distribution (for example should persons with families living outside the village get less relief than others?). 'For this reason, a lot of arguments were exchanged and some even hit each others' heads', said one man in Shuakunda. Out of frustration, many also accused the local *sarpanch*.

Some respondents also referred to air droppings from a helicopter, and described a massive scramble afterwards. Many people in Shuakunda complained bitterly that relief was scanty in the end, and would have been sufficient had it not been looted at Goda and Garia or destroyed en route to Shuakunda. Such feelings of anger were even more pronounced in Sahadabedi and Kalabedi, where people are livid still at the actions of residents from Goda, Borikina and other 'upper' areas that had robbed them of what they considered to be their fair share. People here had to wait considerably longer, up to a fortnight after the super-cyclone, to receive something. They were careful to maintain however that despite the actions of people from Goda and nearby areas, *they* had acted in an orderly manner once the relief supplies reached their wards.

Ward level differences apart, at a household and an individual level, collecting relief was an absolutely arduous process that generally put men ahead of women. Inevitably as well, the physically able were in a better position to do what was needed to get access to food, clothes, blankets etc. than those who were sick, old or too young. For many this was a bewildering process, leaving some women with few options but to go and negotiate a chaotic and male-dominated situation. A widow, whose husband suffered ill-health during the cyclone said, 'somebody came and told us relief has come for everybody, so you should come and get your stuff...we did not even have any idea about what their criteria were' (respondent no. 4).

Delivery of relief in Garadpur in 1999 and 2008

Spatial issues mattered terribly for the delivery of relief in Garadpur too, where intersecting rivers only made communication harder. Map 12.2 shows the key places used to serve the population with relief supplies during the super-cyclone and subsequent floods, including the 2008 flood. Patkura Gram Panchayat served as a relief depot for its people during the super-cyclone, while relief material was also collected from the block at Garadpur. In the 2008 floods, Patkura GP served as the relief depot for three GPs, including adjacent Bedari and Padmapur⁸⁹. At the time of the super-cyclone, Tikanpur GP and other GPs across the river (which had no bridge at that time) from Garadpur Block, first received relief by airdrop, second by villagers themselves crossing the river by boat or raft to collect relief from Garadpur, and third from college (Korua) chaka, which became the relief depot once the government machinery had organised itself sufficiently. In the 2008 flood, relief material was sent to LN College (at Korua chaka) in advance of the flood, and some rice was available in the Tikanpur GP before the flood struck. The flood waters damaged some of the relief at the chaka, and also half (200 quintals) of the rice in the GP godown, because of their positions adjacent to the river.

⁸⁹ Interview with Patkura's *sarpanch* and her husband, 22/8/10.



Map 12.2: Distances and key places during relief distribution after the super-cyclone in Garadpur (note that the bridges over the Chitrotpala which are now visible were at this time unconstructed)

On a positive note it is clear that there have been concrete advancements in the delivery of relief since the super-cyclone. There are three clear reasons for this: first, the construction of the bridge at Korua allows better coordination between the block office at Garadpur and the Gram Panchayats on the north side of the Chitrotpala. Second, with improvement in infrastructure and communications systems since 1999, there was also much better coordination between the block office and gram panchayats. Third, there were fewer incidents of looting because of more secure relief delivery and better coordination.

Despite these improvements however, there were of course some ward-level differences in the provision of relief during the 2008 flood. Samsara, situated between three breach points in 2008, received government relief more than eight days after the flood. People were first helped by residents of neighbouring Jagannathpur Village, and later by people from Patkura. The first government relief supplies were brought back by a group of 10-15 men from Samsara who half-swam to the block office, some 5-6 km away, to bring back provisions on their heads. We were also informed that relief packages were delivered after having been half-emptied beforehand. A local teacher confirmed these reports and stated the government should deliver the relief to the villagers, not leave them to collect it themselves⁹⁰. The *sarpanch* of Patkura informed us that during the 2008 flood, and without informing the BDO, they had distributed cooked food by boat to the villagers of Samsara. She noted however,

⁹⁰ These testimonies are captured in public interviews recorded in the documentary, *The Wind and the Water*, referred to in the preface.

that in the GP godown only 500 quintals of rice was available (for three GPs), even though it has the capacity to store 3,000 quintals⁹¹. By contrast, and as mentioned above, Marilo in Tikanpur GP fared well in the 2008 floods. Residents confirmed that relief was received a day in advance of the flood, and the ward member could therefore distribute it when the flood occurred.

While relief delivery has come a long way since 1999 with perceptible signs of improvement, there remained a few areas of concern. The *first* concerned the use of traditional boatmen in Garadpur during the 2008 floods. Many such boatmen from Bedari supported state relief officials to deliver supplies to cut off places like Jamunabad. According to Jamunabad residents, the boatmen have complained that they were not paid their dues on time and were treated with contempt by officials. They claim they are unwilling to help with the next relief effort. The *second* is to do with risk borne by helicopter air drops, an integral part of relief operations. Some residents complained that helicopters dropped materials at far off places that were difficult to reach, and into water damaging the relief material. One resident of Jamunabad reported that a helicopter airdrop fell on a person's head killing him (respondent no. 155). After that, helicopters stopped delivering relief. The government could devise a practicable strategy to ensure that airdropping is an entirely beneficial strategy with zero risk to the recipient population. The *third* is to do with access for especially vulnerable households, like female-headed households, or households with disabled persons. A high caste (Khandayat) widow in Jamunabad told us that in 2008 relief was distributed per head, regardless of whether or not the household had earning members. Though they did not face problems getting their share – for it was their family members distributing the relief – she did make the point that households having their houses full of sacks of grain received an equal share of relief to her household (respondent no. 167). Research in both Erasama and Garadpur has revealed that the most vulnerable households can be the most disadvantaged group during relief disbursement, though this is dependent upon social relationships and networks within the ward, village and gram panchayat.

12.2 Assistance from the government's Calamity Relief Fund

In addition to the provision of essential supplies through relief immediately after a disaster, the Indian state also provides assistance for losses suffered in a number of different categories. These are financed by the Calamity Relief Fund (CRF), which is held in the public account of the state, with centre-state contributions of 75:25. Assistance from the CRF is guided by strict norms issued by the Ministry of Home Affairs. The categories of assistance include gratuitous relief, which comprises ex-gratia assistance for loss of kin and injury, as well as relief including clothing, food etc. to families that have been affected particularly harshly, and supplementary nutrition. The guidelines state that 'gratuitous relief should only be given to those who have no food reserve, or whose food reserves have been wiped out in a calamity, and who have no other immediate means of support' (GOI, 2009b: 1). There are provisions for assistance to small and marginal farmers, input subsidies for crop losses of 50% or more, animal husbandry, assistance to fishermen and artisans, assistance for repair/restoration of damaged houses, repair of damaged infrastructure, and also employment generation 'to meet additional requirements' after taking into account funds available under various other schemes that have elements of employment generation.

⁹¹ Interview held on 22/8/10.

Assistance towards loss however does not amount to compensation. ‘Financial assistance in the wake of natural calamities is towards relief and not for compensation of loss.....the main objective of the relief fund is to assist the affected persons to restart their economic activities. On the other hand, compensation is basically replacement of the damage in financial terms.... It is a *legal obligation*. Relief is by way of gratuitous assistance as an immediate help to overcome the stress. *It is generally understood that no country in the world is in position to fully compensate the losses incurred due to natural calamities*’ (Undated circular, Ministry of Home Affairs, obtained in April 2010; italics added for emphasis).

Taking note of this important point, the researchers were careful not to suggest to respondents that the money that they may have received was in fact like-for-like compensation. In Oriya, they simply referred to it as, for example, ‘money for damaged house’ (*ghara bhanga tanka*)⁹². However, for the purposes of this report, this cash assistance is referred to interchangeably as ‘compensation’ as well if only to distinguish this from other types of assistance. Moreover, data on compensation is difficult to collect. The research team used multi-method triangulation to verify the information provided to a high level of rigour. Survey data on compensation was verified and triangulated through enumerator checks, repeat visits and focus group discussions, and more details were acquired through qualitative in-depth interviews.

This section will first briefly discuss the experience of compensation in 1999 in Erasama. It will then present a more detailed account of the compensation story in Garadpur, whose population have had several rounds of assistance since 1999 in course of repeated episodes of flooding. The experience of compensation provision after the 2008 floods is also particularly significant as it came after the passing of the Disaster Management Act, 2005, and following the initiation of several key measures of improvement by the state government. It will conclude with a discussion on the social implications of receiving and not receiving compensation for loss.

Loss and compensation in Erasama in 1999

In 1999, households received compensation for two categories of loss/damage: damage to house and loss of life. Nobody received anything towards permanent injury, damage of agricultural land, loss of standing crop or loss of means of livelihood (as these were not provided in 1999).

Chart 12.1 shows the assistance that was given for a damaged or destroyed house to the sampled households in Erasama. 119 out of 120 households had *kutcha* houses, all of which were fully destroyed. Amounts reportedly received by households for a damaged *kutcha* house ranged from 2,000 to 7,000 rupees. These include cases of father and son, or of two brothers in same household that received separate amounts (hence 7,000 rupees). The chart also shows that four households in Garia received 1,000 rupees each for a damaged *pucca* house. 114 households received compensation for damage to their *kutcha* house. Three households that were compensated for their *pucca* house did not receive any money towards their damaged *kutcha* house. One household each in Sahadabedi and

⁹²The many interviews and conversations that were had on this subject also reveal that people generally appreciate this, and do not expect state assistance to ever compensate loss entirely. But they do have intangible and necessarily varying ideas around ‘sufficiency’ of the amounts provided, which can then produce frustration as well as strategies to try to get more money than is due.

Kalabedi reported not receiving any money towards their sole *kutcha* house that was fully damaged. Yet, most households with damaged *kutcha* houses reported receiving 3,500 rupees, and a few less than this. To some extent, this could be a matter of recall, and in a few cases, households recalled having to pay small bribes to the Revenue Inspector, but this did not seem to be the general practice.

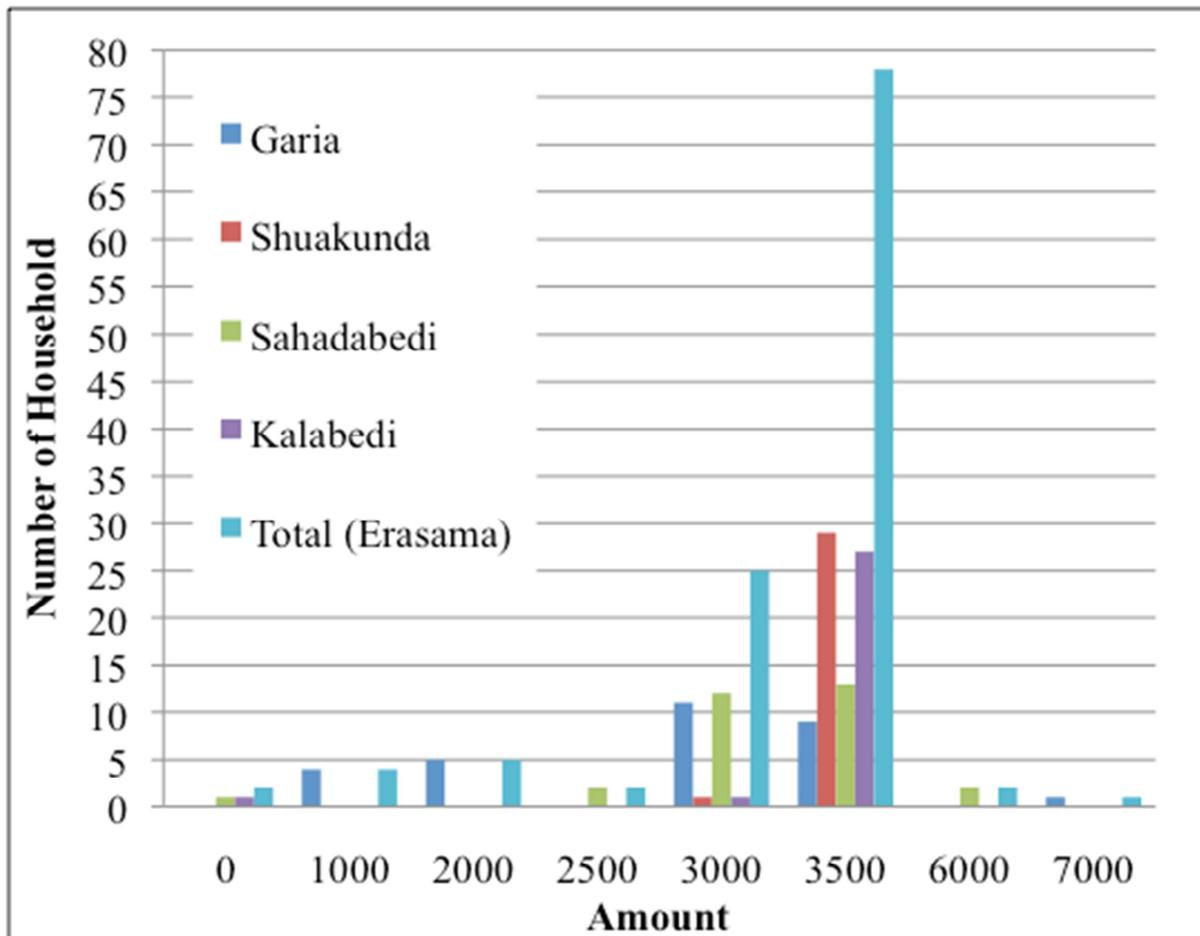


Chart 12.1: Erasama: Ward-wise (n=30) & site-level (n=120) assistance for damage to housing, 1999

Surprisingly just eight of the 120 sampled households reported losing at least one family member in the cyclone. Of these, two households did not get any ex-gratia assistance for loss of kin. Both households are from Kalabedi, one of which is an old lady who lost her son in the super-cyclone, and never received compensation, and most likely lacked the capability to ‘chase’ authorities. There were two other households in Kalabedi who lost more than 3 and 5 members respectively, but who only got compensation for 1 member. In the case of one widow who lost her younger son, daughter-in-law and grandchildren in the super-cyclone, she was able to claim compensation only for her son’s death (respondent no. 120). Another household lost 4 members and was entitled to 300,000 rupees in total, but only received 275,000. Three households that lost members later, on account of injuries sustained during the super-cyclone, were never able to claim any compensation because of the stipulation that ex-gratia assistance is to be offered for deaths suffered either on the day or up to two-three days after the event. For example, the wife of the brother-in-law of a scheduled caste widow in Sahadabedi (respondent no. 87), died a few days after the super-cyclone, after her stomach had swollen from

eating cooked rice that had been spoilt by seawater. She died on the 31st October, and when her husband sought compensation, he was told that she would have to had died on the 29th or 30th.

Most households reported receiving their money 3-4 months after the cyclone, but those with contentious cases also drew on for longer. There have been specially created dispute forums to deal with complaints, and appeals have also been made to the High Court for resolution. The state government has also entertained retrospective claims regarding compensations for deaths in the 1999 super-cyclone, up until December 2009. The Padmapur *sarpanch* reported that several such claims had been filed from his gram panchayat, with decisions awaited yet. Other villagers claimed, in 2010, that they had been unaware of this possibility of retrospective claim.

Loss and compensation in Garadpur in 1999

Chart 12.2 shows compensation for damaged houses in Garadpur after the super-cyclone. Most households reporting full damage to their *kutch*a house were given 2,000 rupees, and a few households reported getting between 4,000-5,000 rupees (likewise, these included cases of father and son or two brothers receiving separate amounts). A number of households also got 1,000 rupees for partial damage to their *kutch*a as well as *pucca* houses. A handful of households also reported getting smaller amounts, ranging from 200-665 rupees.

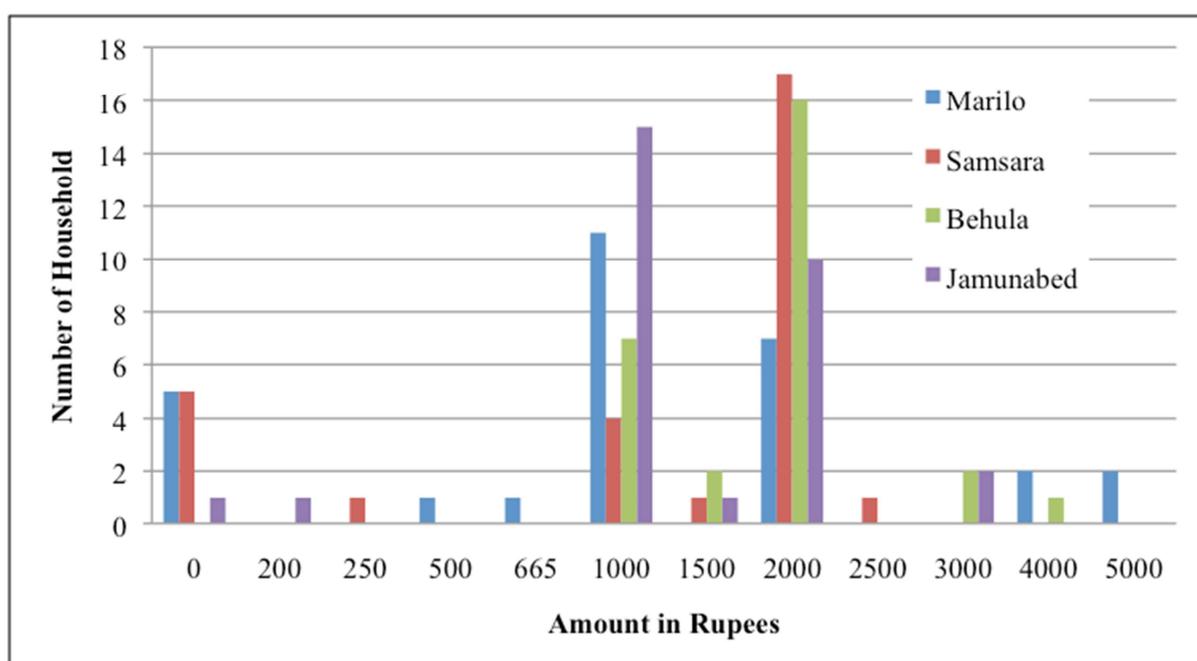


Chart 12.2: Garadpur: Ward-wise (n=30) assistance for damage to housing, 1999

In 1999 the assessment was carried out by the RI, often accompanied by the ward member, or sometimes with other government officials from the block, and disbursements were through cash. A number of respondents recalled paying bribes to the Revenue Inspector. One respondent from Marilo said, ‘after the super-cyclone I received a compensation of 2,000 rupees from Marshaghai, out of which I had to give 200 rupees to the RI as bribe. It was a condition made by the RI to make it full compensation otherwise we would have received partial compensation’ (respondent no. 187). But

significantly, bribes were not always demanded, sometimes they were offered by people desperate to get the most they could.

Housing damage and compensation in 2001 and 2003 in Garadpur

Garadpur has experienced floods in 2001, 2003 and 2006, and 2008 (up till fieldwork in 2010) and then again in 2011. People suffered damage to their houses after each episode and received varying amounts by way of compensation. However, as there have been multiple incidents of flooding, and claims for compensation, there is a major issue of recall regarding precise amounts received. This research obtained data regarding loss and compensation for house damage in the floods of 2001 and 2003. There is nothing particularly remarkable to report, except that in each round, there were households that suffered damage, but reportedly received nothing by way of compensation.

Housing damage and compensation in 2008 in Garadpur

By the time compensation had to be given for damage suffered in the 2008 floods, the CRF norms had been revised in favour of higher amounts. The current rate stands as follows: fully damaged *pucca* house: 35,000 rupees; fully damaged *kutcha* house: 10,000; severely damaged *pucca* house: 5,000; severely damaged *kutcha* house: 2,500; partially damaged houses (both *kutcha* and *pucca*): 1,500; destroyed huts: 2,000; and household items: 2,000. Table 12.1 presents the reported amounts received for compensation for house damage.

Damage	<i>Pucca</i>		<i>Kutcha</i>	
	Status of compensation	Number of households	Status of compensation	Number of households
Yes	No	6	No	9
Yes (partially to severely damaged)	1,500-2,500 received	4	1,500-5,000 received	58
Yes (fully damaged)	-	-	10,000 or 20,000 received	35
No loss- has asset	-	50	-	9
No loss- no asset	-	60	-	9
Total	-	120	-	120

Table 12.1: House damage compensation after the 2008 floods in Garadpur

Table 12.1 provides information for two categories: *pucca* and *kutcha*. It is clear that very few households with *pucca* houses suffered damage (50 households with *pucca* houses reported no damage). A few that did suffered minor damage only and obtained 1,500 rupees compensation for a partially damaged house. Most of the compensation claimed was for damaged *kutcha* houses. Barring 9 households, all others in the sample owned a *kutcha* house in 2008. Of these 58 households reported receiving between 1,500-5,000 rupees, which were most likely assessed as anything from ‘partially’ to ‘severely’ damaged (four households received between 1,500 and 2,000 rupees, possibly for damaged cowsheds or kitchens). 33 households received 10,000 rupees, the maximum amount available for a fully damaged *kutcha* house, and 2 households received 20,000 each (most likely because a father and son, or two brothers, were compensated separately). The local Revenue Inspector

interviewed for the study confirmed that this decision was taken later on in the compensation assessment process. Also noteworthy in the table is that 6 households reported that they suffered damage to their *pucca* house, and 9 households to their *kutchha* houses, but all 15 received no compensation (highlighted in bold, Table 12.1).

Conversations with villagers individually and in groups revealed a high level of discontent with the assessment process, especially amongst those who had been awarded compensation for ‘partial’ damage. This was because they felt that others had got more by lying or bribing. One woman from Behula said, ‘75% of our villagers received 12,000 rupees and 25% received 4,500 rupees. *Most of the people* have given a bribe of 200 rupees for getting 12,000 rupees, and those who did not bribe received 4,500 rupees. People whose house was not totally destroyed got 12,000 rupees. Our houses were destroyed and the people of Nadiabari came and took the photo of our house and received compensation money. The authorities must have shared all the profit’ (respondent no. 217, italics added for emphasis). It is difficult, nearly impossible, to ascertain exactly how many people paid bribes given the sensitive nature of the subject. Yet, the quote does provide an accurate insight into how a lot of respondents perceived the process.

Moreover, in the above respondent’s testimony, the total amount of ‘12,000’ referred to includes 2,000 rupees given for damage to house possessions that was provided in a later, separate installment, following a late decision by the government. However in some cases it was made to appear like an ‘extra’ to villagers who were unsure of what they were entitled to, resulting in bribing. Clearly as well, many people acted cynically, having themselves photographed in front of others’ ruined houses to qualify for compensation or for a higher amount. Like in 1999, bribes were very often paid out of peoples’ own volition. ‘No one asked for any bribe. *Actually people gave money on their own to get compensation...* Actually those people were eligible to receive compensation, but by giving a bribe they got more compensation’, said a man in Samsara (respondent no. 148, italics added for emphasis).

These irregularities occurred despite two very important measures adopted by the Special Relief Commission to minimise discretionary awards. Firstly, it was decided that all compensation amounts would be given through A/C payee cheques and not through cash (a new innovation). Secondly, as different types of assessment had to be carried out under the new CRF norms (for loss of kin, housing, crop, livestock and so on), composite teams of assessors were sent. This was ostensibly done to make the process more efficient and also to reduce discretionary assessment by one individual.

Both measures appear to have been somewhat circumvented through a mix of popular and official guile. As for the first, it is true that money was transferred through cheques, but bribes were collected at an earlier stage in the process- at the time of assessment. A bribe made the all-important difference to whether a beneficiary’s name appeared in the ‘partially’ or the ‘fully’ damaged house list. As for the second, composite teams did go out, and in most cases this seems to have been a positive improvement. In a few cases, junior staff were utilised to collect bribes after the team’s departure, away from the glare of collective scrutiny. One man reported the RI said he would get 5,000 rupees, and then the RI’s peon came two days later to say he would get 2,000 more if he gave 200 rupees. This is what happened.

This investigation would not have been complete without also obtaining the perspective of Revenue Inspectors, who are the key state functionaries regularly implicated in various charges of irregular conduct. Interviews with the Amin of Garadpur Block and the RI of Talakusama (close to Korua) generated some interesting insights into the challenges they face. Both maintained that carrying out damage assessment after a disaster was physically arduous. There are breaches everywhere and stinking carcasses, and an extremely chaotic situation within which to assess damage. They also clarified that they did follow a logical method – such as awarding ‘full damage’ when the house had fully collapsed, and ‘severe’ damage when some walls were down – in their assessment. The Special Relief Commissioner had also clarified that all RIs had been instructed to ‘err on the side of generosity’⁹³. The RI interviewed said, ‘we did not know what was right or wrong, but we knew we should do a fair job, so that nobody would blame us’. He also maintained that most nights, the RIs met with the Tehsildar to discuss issues arising from the compensation process.

Compensation for crop loss in Garadpur, 2008

Farmers suffer crop loss regularly in the recurrent floods, but it was in 2008 that crop loss compensation was given for the first time by the state government, and this was a positive step. The current CRF norm in this respect is for two categories:

- Assistance to small and medium farmers: ‘Agricultural input subsidy where crop loss was 50% and above’ is 2,000 rupees *per* hectare in rainfed areas’. It is also mentioned that no input subsidy will be payable for agricultural land remaining un-owned or fallow, and also that assistance payable to any small farmer with tiny holding may not be less than 250 rupees.
- Input subsidy to farmers other than small and marginal farmers: Assistance may be provided where crop loss is 50% and above, *subject to a ceiling* of 1 ha per farmer and up to 2 ha per farmer in case of successive calamities irrespective of the size of his holding being large, at the following rates of 2,000 rupees per hectare in rainfed areas (*italics added for emphasis*).

Table 12.2 shows the loss of standing crop reported by farming households and the amounts of compensation that were received. The table shows that 22 farming households reported crop loss but did not get compensation (12 of these were entitled to the minimum of 250 rupees, the other 10 to more than 250 rupees, given the size of their cultivated land). This matches with qualitative testimonies. A few likely reasons are two brothers owning land but only one brother having kept the compensation, and incorrect registration of lands in other villages (in one such case, when the compensation cheque was sent there, villagers wanted a bribe to release it to the rightful recipient!). But while these may explain a few of the cases of non-receipt, they do not explain all such cases. The table also shows that 3 farmers got below the minimum of 250 rupees. The CRF guidelines explicitly say that assistance payable to any farmer may not be less than 250 rupees. And finally, 8 farmers received more than 2,000 rupees (note that for farmers other than small and medium, 2,000 per hectare for a maximum of 2 hectares is allowed in case of calamities in successive years). The farmer who got 6,000 rupees actually filled out different forms to get more compensation.

⁹³ View expressed at the project dissemination workshop held in Bhubaneswar in November 2010.

Damage/loss	Compensation received	Samsara	Jamunabad	Marilo	Behula	Garadpur site total
Yes	0	9	4	4	5	22
	100-250	0	1	0	2	3
	250-800	2	16	12	10	40
	800-2000	0	4	6	7	17
	>2000	1	2	3	2	8
	Don't know	0	1	0	0	1
No loss- no land	-	12	2	4	4	22
Land idle- no loss	-	6	0	1	0	7
Total	-	30	30	30	30	120

Table 12.2: Compensation for crop loss in Garadpur in 2008

There is some confusion regarding the implementation of the ceiling for farmers other than small and medium farmers. We interviewed the Amin of Garadpur Block, and the RI of Talakusuma, and neither knew (or perhaps chose not to know) of any ceiling, and maintained that compensation had been given depending on the acres of land owned, which is not in keeping with the CRF norms. One could easily presume that larger farmers may exert political or economic pressure to get higher amounts of compensation.

A major problem with the way crop loss compensation works is that sharecroppers do not receive anything. This needs rectification, because as shown in Chapter 4, sharecroppers are increasing in number and are often the poorest in society. Farmers must show land *pattas* to get agricultural input subsidies (towards crop loss). Typically, sharecropping rests on informal agreements and sharecroppers have no proof to show. We did not come across any cases where landowners willingly gave sharecroppers a portion of the input subsidy. This investigation shows that 'input subsidies' clearly favour landholders, especially larger ones.

Other losses in Garadpur, 2008

In 2008, compensation was also given for loss of means of livelihood in Garadpur, especially to the traditional bamboo craftsmen and women of Samsara (2,000 rupees per artisan in accordance to CRF norms). However the 50 or so households from the weaving community of Samsara did not receive compensation from the Handloom department, even after the Laxmi Narayan Cooperative Society (its office near Pundhalo) had come to assess the condition of the weavers following the flood. We were told they had made the villagers strip so that they appeared half-naked in the photographs they had taken⁹⁴. A few others who reported a loss of means, for example loss of grocery shop or iron shutter, did not receive any compensation. Livestock losses were supposed to be compensated, though we only have a few cases of livestock loss in our sample households, and only one of these received compensation. This villager (respondent no.148, an OBC), told us that he was sanctioned 10,000 rupees for the death of his cow, though he only received 6,000 rupees, the other 4,000 having been kept by the person who facilitated the claim⁹⁵. Others informed us that they were not compensated for

⁹⁴ Interview conducted in Samsara on 23/6/10.

⁹⁵ Focus group discussion on compensation held in Samsara, 18/8/10.

losses of goats, cows and calves. Fodder for livestock was properly distributed in all four wards – another positive sign.

12.3 Social implications of ex-gratia assistance

This chapter concludes with a brief discussion on the social implications of ex-gratia assistance from the CRF. Do the victims of a disaster have limitless expectations of the state? And do they consider that the amounts can actually compensate for loss? Also, how do non-recipients actually perceive the receipt of larger amounts of assistance, such as for loss of kin? These are a few questions that will be addressed below. The discussion is intended to illustrate that the receiving of ex-gratia assistance is a profoundly social experience.

The household survey asked respondents to estimate the amount of money that the government should give as ex-gratia assistance for loss of kin. The results are presented in Chart 12.3. The median amounts in both sites is 100,000 rupees, which is exactly what the present norms give, although the majority in Erasama know little of the new rates. There is a variation in the minimum and maximum amounts estimated, ranging from 0 to even 700,000 rupees in Erasama. In Garadpur, the minimum suggested was 50,000 and the maximum was 500,000 rupees.

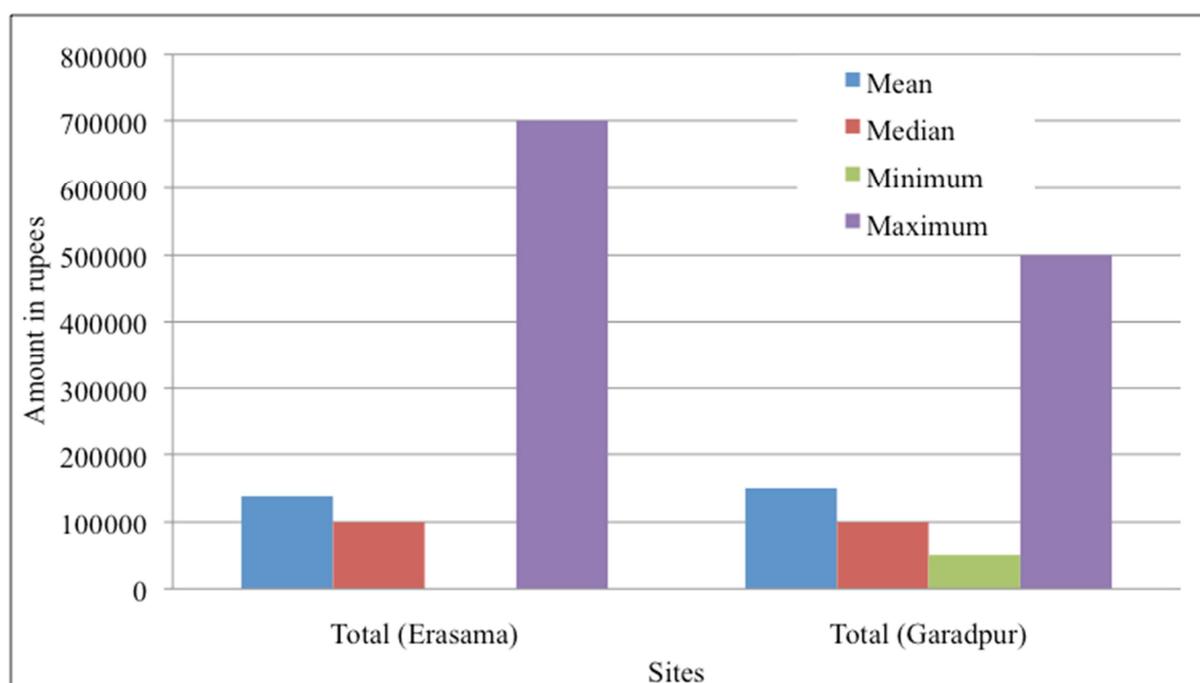


Chart 12.3: Household estimates of suitable amount of ex-gratia assistance for loss of kin, both sites

Chart 12.4 shows that there seems to be no correlation between the numbers of deaths suffered in a ward’s sampled households and the amounts estimated. Both Sahadabedi and Kalabedi’s respondents, from the wards where most deaths were reported by sampled households as these were the closest to the sea, actually reported fairly low minimum amounts, and also lower mean amounts than Garia and Shuakunda, where no direct deaths were reported amongst the sampled households. No doubt individual perceptions vary, but this brief exercise does suggest that many people do not have unrealistic expectations of the government. Besides, no survivors see this assistance as ‘compensation’ for the loss of kin, even in monetary terms. The widow in Kalabedi who lost her

younger son, said that she would have received much more through her son's earnings over his lifetime than the 75,000 rupees provided by the government (respondent no. 120). This sentiment is widely shared.

Besides negotiating the trauma of losing a loved one, survivors also had to suffer excessively to actually receive the amounts they were due. The case of Sek Muhammad (not his real name) from Kalabedi will illustrate the kind of challenges that prospective recipients of ex-gratia help were up against. Sek Muhammad lost his wife in the cyclone, but because there was a spelling mistake in his wife's name, it not only took more than a year but also it brought unnecessary problems for him. He had to do a lot of follow up with the then *sarpanch*, tehsildar and block office at Erasama. He had to hire a lawyer from Patpur village to get it corrected. He must have spent 5,000 rupees including the fee of the lawyer and transportation and food. Finally he managed to get a cheque for 75,000 rupees. Other cases of struggle have been documented in Samal et al (2005). Yet, despite these troubles, recipients have found these amounts exceedingly useful, such as for building a new house or plot of land further away from the sea, or starting a new venture. Samal et al (2005) report that many survivors also earned interest from savings created through these amounts (though this study did not come across any such cases).

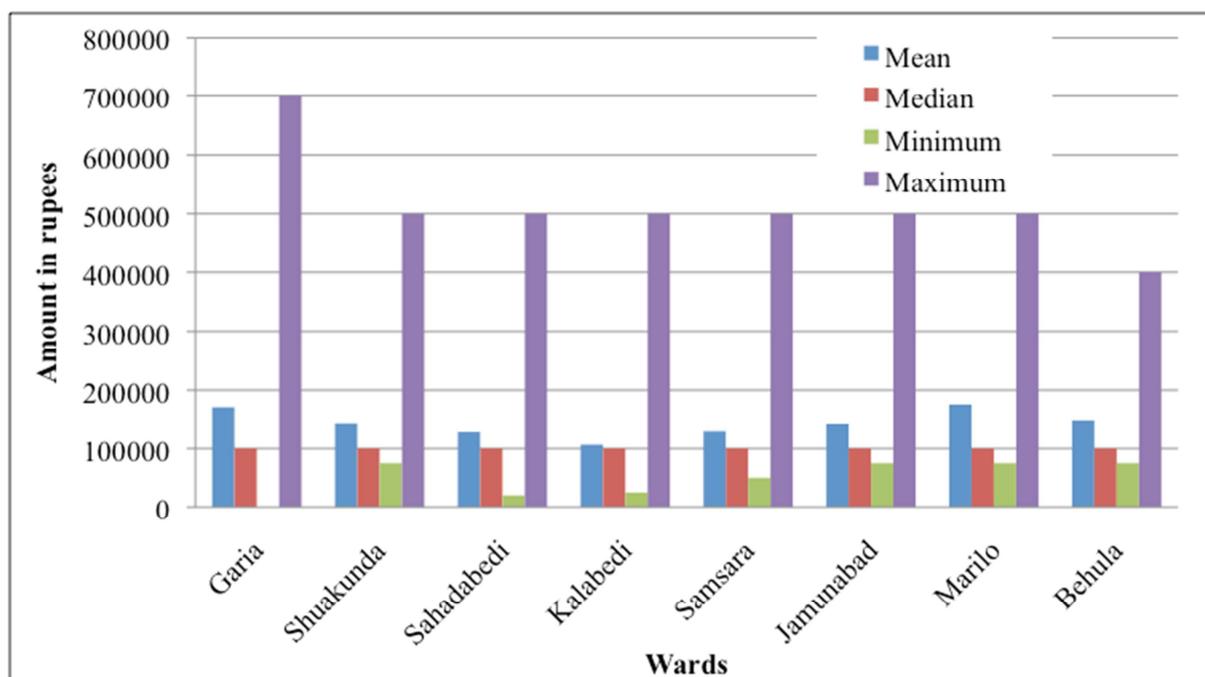


Chart 12.4: Ward-wise household estimates of suitable amount of ex-gratia assistance for loss of kin

Although not meant to be compensation, 75,000 rupees (the ex-gratia amount for loss of kin after the super-cyclone) nevertheless remains a very large amount for poor rural households in coastal Odisha. In cases where survivors had multiple losses, and received multiples of 75,000 rupees, they also had to deal with profound envy and not uncommonly, a bad reputation. A widow in Garia said, 'In a family, if most of the members are dead, then after the compensation is received, the young members enjoyed their lives, drinking alcohol and raping women'. This could be an exaggeration, but it does signal the kind of negative perceptions that resulted from a few households getting a flush of cash, when the cyclone had been a cause of misery for everyone. The same widow continued, 'If five

people die, a household gets lots of money, but if one person dies, they get just one payment - is this right or wrong? If I would have received money I could have fed my children and given them a better education' (respondent no. 4). For households who did not lose anyone, there were perceptions that there was a higher value placed on those who had died than on those who had lived.

12.4 Relief and ex-gratia assistance: Summary and key recommendations

This chapter has provided an in-depth discussion of delivery and access to state relief and ex-gratia assistance. These are the two principal forms of state assistance specifically related to any disaster. The account has established that there is no substitute for effective state action immediately after a disaster. Relief supplies of essentials are provided at a time when the victims of a disaster need it the most. The research showed that there were massive obstacles to effective relief delivery after the super-cyclone, which negatively impacted upon access, especially of people in more remote wards. Particularly vulnerable households were adversely affected by this. *Sarpanches* and ward members played a very critical role at this time, and the evidence generally leads to the conclusion that most local functionaries did their job well at a difficult time. If anything, disorder was infused into the relief process through mass misbehavior, looting and general lawlessness.

However, the more recent experiences of relief delivery in Garadpur have shown clear signs of improvement, with vastly improved communication between the district, block and gram panchayat, better road networks and finally, many well-stocked gram panchayat depots. Lapses remain however, like at Samsara, the site of breaches in the 2001 and 2008 floods, and whose embankment remains weak and vulnerable after a shoddy repair job in 2009.

The analysis of access to ex-gratia assistance shows that several challenges persist, despite clear measures of improvement by the state's Special Relief Commission. Here, more than *sarpanches*, it is the Revenue Inspectors that play a vital part in ensuring fair assessment. But the discussion has shown that this process is fraught with challenges. RIs are confronted not just with a physically arduous task, but also with many strategic recipients that employ their cunning to try and make the most of the process. There are often serious administrative hurdles that recipients face in actually getting their hands on the money, and the need to spend a lot of time chasing up compensation amounts. This seriously disadvantages recipients that lack the physical and economic capacity to do so. The chapter has also briefly reflected that recipients do not see such cash assistance as 'true compensation' for loss. The giving of larger amounts of money to survivors that have lost kin evokes envy amongst those who are not in a similar position.

The chapter concludes with a few key recommendations:

- There is an urgent need for making special provisions at the gram panchayat and ward level for identifying especially vulnerable households (like female headed households, or those with disabled members for instance), so that their share of relief can be reached to them after a disaster. Some advance planning should be in place to cope with urgent situations that are unforeseen. One way could be for gram panchayat level plans for extra support to be given to such households, of which a list should be maintained with every ward member. This scheme, to be successful, would need proper attention.

- The amounts currently designated in the CRF norms for damage to houses are higher than they were in 1999, but these are still extremely inadequate for households to meet the ever rising costs of reconstruction⁹⁶. Besides, as many households no longer consider it desirable to rebuild *kutchha* houses, the government needs to consider increasing these amounts to give a positive boost to people living in disaster prone areas. The money is available, as pointed out by a senior officer, but the share of the total pie dedicated to housing support is miserly. This point assumes even greater salience for areas that face the risk of recurrent flooding.
- The unfairness of excluding sharecroppers from any disaster related assistance is an urgent problem, and the government must look into a practicable solution to remedy it. It could run awareness campaigns amongst farming communities urging sharecroppers to obtain a written agreement of the sharecropping arrangement they have entered into, as without this no disaster related compensation can be given.
- Flooding in the Mahanadi is not purely natural, but is also manmade (related for example to control of the Hirakud reservoir's water level) as distinct from disasters caused by cyclones. For villages such as Samsara, which have suffered direct blows in 2001 and 2008, and which continue to run a high risk of another breach because of poor repair work done to their embankment, is it fair to give standard rates of 'assistance'?
- An interview with the Joint Secretary, Disaster Management, Ministry of Home Affairs, in Delhi in April 2010 revealed that state governments often do not claim much assistance under CRF for categories like livestock loss or disability caused by disasters. There is apparently scope for more intensive reporting of loss and awarding of compensation, which will no doubt benefit disaster victims.

⁹⁶ One man from Samsara said in video interview that he received 2,000 rupees as compensation for the loss of his three bedroomed *kutchha* house after the 2008 flood, even though he estimated its market value at 30,000 rupees.

Chapter 13: Other key state interventions in disaster prone areas

In the previous chapters, the discussion has focused on the role of the community, of NGOs and also of the state with respect to offering assistance to those affected by disaster. But the issue of recovery is not fully addressed without also considering the role of key state interventions that exist, especially as these play a significant part in the everyday survival and coping strategies of households. The advantage of pursuing a longitudinal approach into recovery, as in this study, is that it shows the significance even of state interventions that are not specifically focused on disasters for households trying to recover. It enables the posing of a particularly challenging question: 'Are key state interventions in disaster prone areas effectively serving their purpose'? Addressing this question will be the focus of this chapter.

The discussion includes a brief treatment of below poverty line (BPL) related benefits, especially access to the public distribution system (PDS), access to pensions and finally, the working of NREGS as an important source of employment to households. There will be an analysis of the principal governance challenges confronting the execution of several of these schemes. It will conclude with a consideration of how communities are dealing with these challenges, and whether any increase in awareness of entitlements can be observed.

13.1 BPL coverage and access

Odisha is among the six states that was not able to finalise the BPL list as per the 2002 survey (as the methodology was challenged in a PUCL petition to the Supreme Court). It continued to use the list produced in 1999 for a long time amidst continued controversy and allegations that such a list was thoroughly out of date. After a long wait, in October 2011, the state government carried out another BPL survey and it is expected that the new list will be operationalized at the earliest.

In the two field sites, household coverage of BPL cards is as follows. 56 out of 120 sampled households in Erasama have BPL cards, while 69 out of the 120 sampled households in Garadpur have the same. Note that this is a collation of information provided by respondents on the cover page of the household survey form, which does not say anything about eligibility. While it is difficult to ensure if all households with BPL cards met the criteria, and this was not within the scope of the research project, field researchers triangulated this information to ensure that those with BPL cards in the sample had disclosed this correctly, and divided the remaining households into those who should be classified as BPL and those who clearly are above poverty line (APL).

Like anywhere else in the country, there were numerous households in either site that complained that they were in fact eligible, i.e. below poverty line, but did not have BPL cards. The reasons offered for this state of affairs were not unique. A sample of such reasons included: one brother has a BPL card and does not allow another brother any benefits; perception that the list itself is manipulated by people from the ruling political party; a strong feeling that the *sarpanch* was either deliberately unhelpful or out of bounds.

BPL access to subsidised rice and food security

Not having a BPL card means poor households cannot access subsidised rice under the various different schemes of the central government⁹⁷. We examined access of BPL households to subsidised rice, and found that there are a number of households that were eligible to receive subsidised rice, but did not do so. While this may be an unremarkable situation in other parts of the country, this research shows that it could have extremely serious consequences for poor households in a disaster prone region as coastal Odisha. To establish this, a simple but effective analytical exercise was undertaken. We asked the question: What does not accessing BPL rice mean for households with no (0 months) or low (0.5-4 months) stocks of rice grown on fields that they own and/or operate, in a disaster prone area? The results are captured in Chart 13.1.

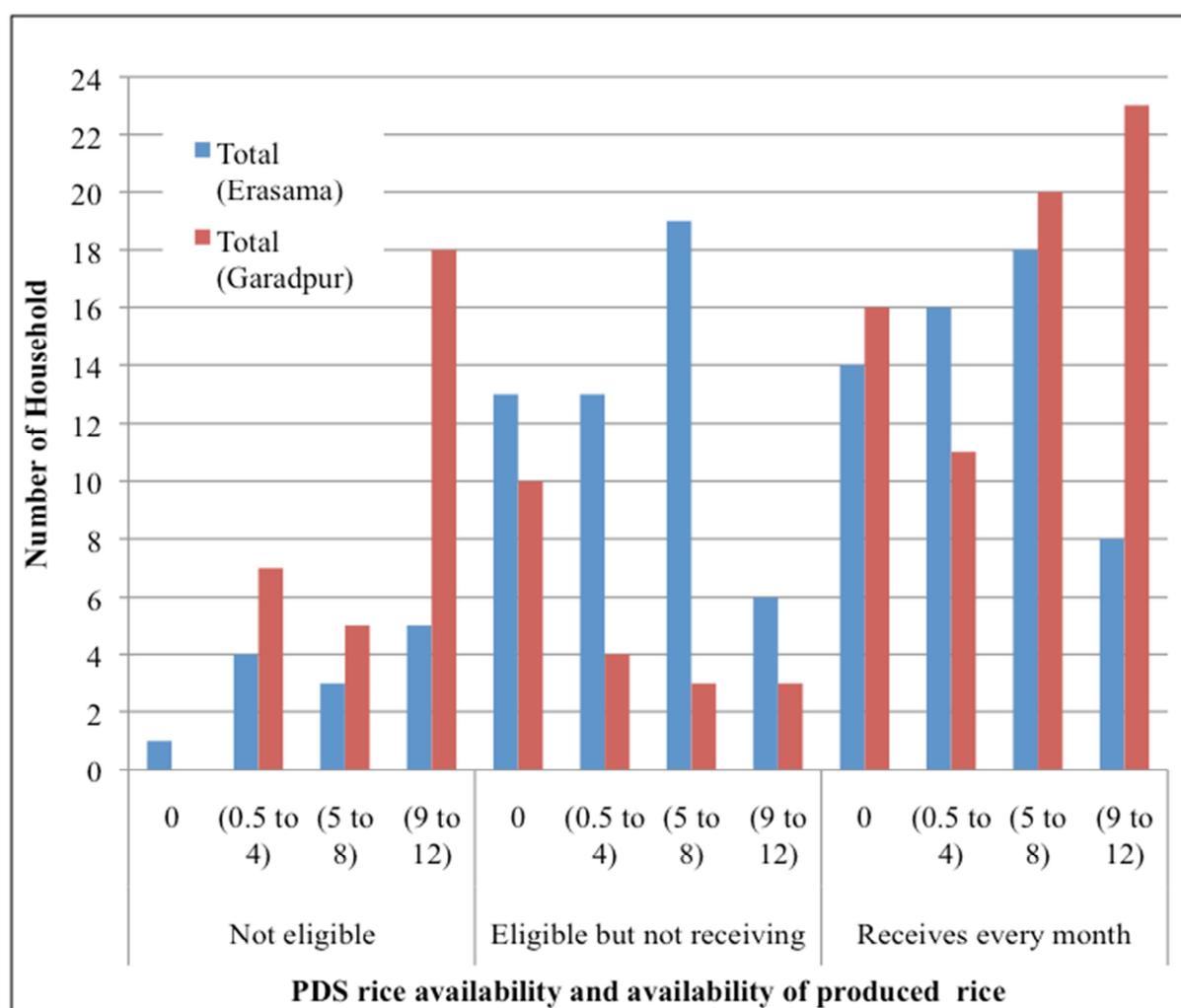


Chart 13.1: PDS rice (eligibility) and rice availability for consumption (in months), both sites

⁹⁷ All BPL households are entitled to purchase 25 kg of rice per month on a subsidised basis. In 2008, the state government of Odisha announced that this rate would be 2 rupees per kg (the rate until then was 4.75 rupees for the first 16 kg each, and 6.30 rupees for the second 9 kg. Then there is the Antyodaya Anna Yojana (AAY) (launched on 25th December, 2000) that aims to identify one crore families out of the number of BPL families who would be provided with food grains (rice or wheat) at the rate of 35 kg per month at subsidised rates (2 rupees a kg for wheat, and 3 rupees a kg for rice). In Odisha the latter is 2 rupees per kg. Finally, there is the Annapoorna scheme that was launched on the 1st of April, 2000, which aims to provide food security for senior citizens who, though eligible, have remained uncovered under the National Old Age Pension Scheme. Beneficiaries must be destitute, above 65 years of age, not in receipt of a pension and such individuals are then provided 10 kg of rice per month free of cost (<http://rural.nic.in/book01-02/ch-8.pdf>).

The three sections along the x axis show households that are a) not eligible for BPL public distribution system entitlements, b) eligible but do not receive PDS rice (i.e. are below poverty line, but do not have a BPL card), and c) eligible and do receive PDS rice (i.e. do have a BPL card). Within each section are clustered groups of households with varying degrees of 'food security', using produced rice as a proxy (wheat and other grains are not grown in the sites, see Chapter 4). The chart refers to a simple proxy for food security that refers to food stocks in months from rice that households cultivate on land they own and/or operate (to include land that is rented in on share). These are in four categories: 0 months, 0.5 to 4 months, 5 to 8 months and 9 to 12 months. The worrying categories are the former two where households report either having *no* rice stocked or very *little* rice stocked that would last them for 4 months or less. For such households, being eligible to receive critical state assistance through the PDS but having this denied to them is an extremely serious matter. There are 26 such households in Erasama (13 with 0 months rice, and 13 with 0.5-4 months rice) and 14 in Garadpur (10 with 0 months rice and, 4 households with 0.5-4 months rice). Many of these households are presently facing malnutrition. They will be hit extremely adversely in the event of another disaster, and could be driven to acute suffering without a reliable supply of food for several months. For such households, recovery in the broadest sense of the term remains a distant prospect, as they remain precariously positioned to deal with their current life, leave alone the next disaster.

In Odisha, the introduction of PDS rice at 2 rupees a kg has proved to be a controversial measure. There is a strong argument prevailing amongst the 'development community' (of NGOs, government officials) that this is proving to be a major disincentive for rural households to work in agriculture or do other wage work (such as NREGS). Large landholders who rely on cheap labour to profit from cultivation also promulgate the argument. Although it was not within the scope of this research study to investigate this particular phenomenon systematically, the field team obtained some valuable perspectives on this issue. In a group meeting in Shuakunda ward in Erasama, some people admitted that labourers who do receive PDS rice may not always go to work. However, household size was an important factor in their decisions too. One man said that he obtained 23 kg rice per month, but there were 8 members in his household, so relying only on PDS would not suffice, and he had to work. At a group meeting in Garia in Erasama, people clarified that large farmers are against excessively subsidised rice as this affects their sales, but at the same time, many small and marginal farmers who cannot produce enough, are in favour of PDS 2 rupees per kg rice. The poorest households in Kalabedi said that their life (only) goes on because of this scheme.

Overlapping failures of access: Pension, PDS and food security

Another important source of state assistance for the most vulnerable households is pensions for the elderly, disabled and also widows. Pension amounts are miserly (at 200 rupees per month for a recipient), but for persons with no other income source, are critical nevertheless. Chart 13.2 presents access to pensions in the two sites (note there can be more than one recipient at a household level, since pensions are given to individuals).

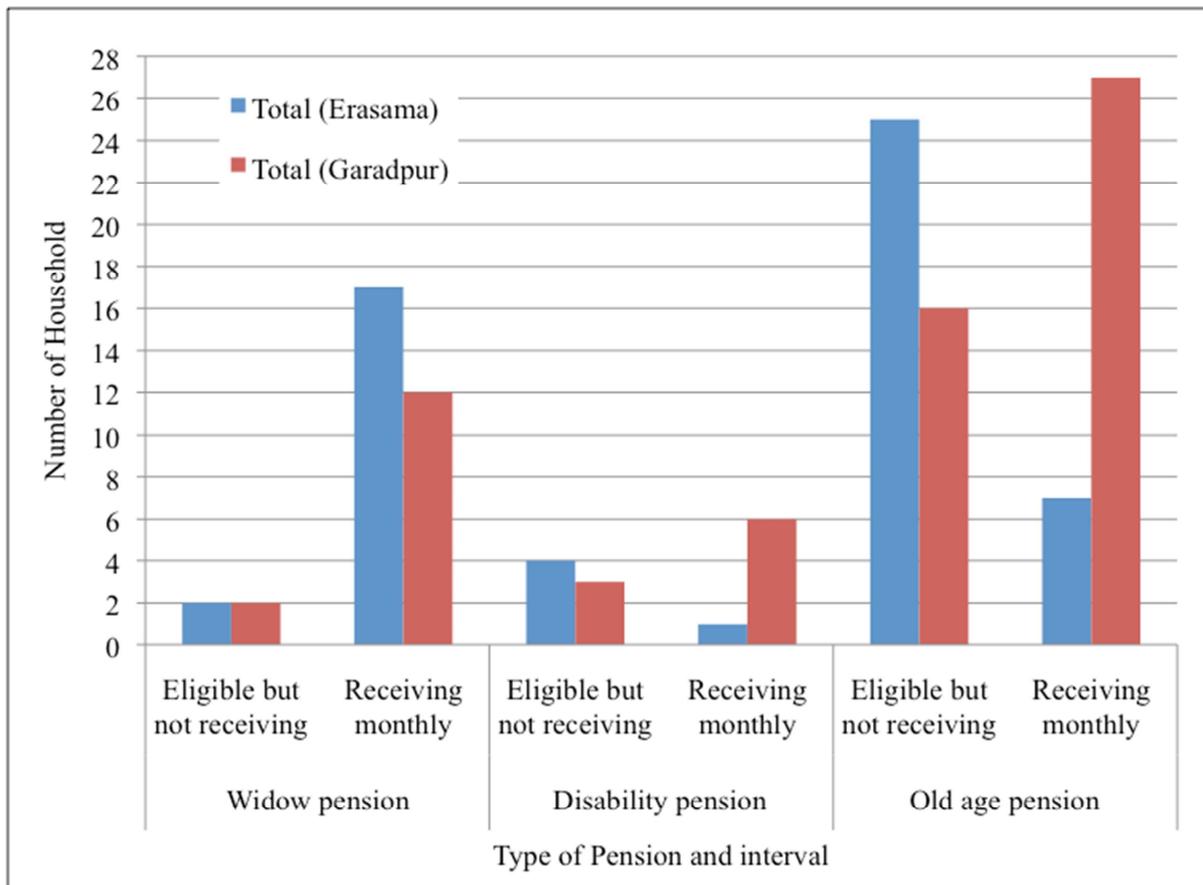


Chart 13.2: Access to pensions in both sites, 2010

The chart shows there are a large number of old persons that are eligible but not receiving pensions, both in Erasama (25 households) and Garadpur (16 households). The coverage is particularly poor in Erasama, where only 7 individuals are recipients. In contrast, in Garadpur there are 27 recipients of old age pensions. Numbers of people eligible to receive widow and disability pensions are relatively smaller, but here too there are a few eligible persons in both categories that are not receiving the pensions they are owed. Disabled people in particular fair terribly: of 14 disabled people (and these are very disabled people) just 50% are receiving their pension. One poor scheduled caste household in Garia has two adult mentally disabled members, and neither is in receipt of a pension, even though they live close to the *sarpanch*'s house⁹⁸. This amounts to criminal negligence on the part of the state.

Non-receipt of pensions despite eligibility is a familiar problem across India, and the reasons in these sites are not remarkable. Getting a pension means having a form signed by the *sarpanch* that then needs to be submitted to the block office, which is very difficult for the poorest households. There are umpteen cases of misuse and improper payments. For example, it is said the mother of one of the richest men in Garadpur collects an old age pension. In Garadpur, there are cases of a few service-holding households, whose government or private sector earner resides outside the villages, having made 'arrangements' with block officials enabling some of their resident family members to receive pensions.

⁹⁸ That they live close to the *sarpanch* is significant: the *sarpanch* sees these two very disabled young men on a daily basis.

As with the failure of access to PDS, failure to access pensions can be a very serious concern for vulnerable households anywhere, but this has special resonance in a disaster prone area. The reality is particularly difficult for some, with compounded problems of access to both pensions and PDS rice. The research mapped these overlapping failures of access with their existing food security. Looking back at the households with no or low food stocks and no effective access to subsidised rice, out of 26 households in Erasama, 5 get pensions, 4 do not get pensions despite being eligible and the remaining 17 are not eligible. In Garadpur, out of 14, 3 get pensions, 3 do not get pensions despite being eligible, and the remaining 7 are not eligible.

For the 7 households from the combined sample of 240 in the two sites, which despite being eligible get neither the pension that is owed, nor subsidised rice, and additionally suffer from either no or very low food security, life is extremely difficult. They constitute a 3% of the sample. In the six revenue villages studied, there are 1,295 households. 3% translates to 38 households in just six revenue villages, which are possibly in this precarious position. Taking Erasama Block (27,033 households as of 2001) and Garadpur Block (32,044 households as of 1997 BPL list) together, there are at least 60,000 households. 3% translates into 1,800 households in two blocks alone that likely do not get a pension that is owed, nor subsidised rice, and produce less than 4 months worth of rice (or no rice).

These represent the most vulnerable households that are suffering a serious, criminal failure of entitlements with respect to state assistance. The super-cyclone and recurrent floods (as in Garadpur) have made life especially difficult for this group, but the everyday marginalisation they suffer as a result of poor governance has compounded such suffering. Such individuals and households will be brutally exposed to suffering the harsh effects of another disaster.

This analysis leaves little doubt that while effective access to dedicated disaster related assistance matters for the victims of a disaster, similarly, effective access to other key state interventions for BPL households and other vulnerable persons is also extremely significant. It is important if recovery means, as is the position adopted in this study, not just a reversal of status quo but a clear advancement to a position of security with respect to any future disaster.

13.2 NREGS

As discussed in Chapter 6, the National Rural Employment Guarantee Scheme (NREGS) is meant to provide 100 days of wage employment on demand to rural households, whose adult members volunteer to do unskilled manual work. As the previous discussion established, there are a chain of malpractices in NREGS, with contractors getting machines to do the work, taking job cards from people, obtaining their signatures and withdrawing money on their behalf, while paying a very small proportion of money to the account holder.

This arrangement could not have flourished without a measure of people's connivance with contractors, although the research recognises that people are severely constrained by their circumstances (for example, respondents claim *palli sabhas* are not being held). One resident from Jamunabad in Garadpur said, 'I don't think I am doing anything wrong, as with no other work available, I can get 20 rupees a day' (respondent no. 155). That much of NREGS work is often extremely physically arduous is another dimension to consider. However, the latest reports from

Garadpur arouse concern because they point to unacceptable levels of harassment by NREGS contractors for the extraction of job cards from households. One respondent in Marilo said, ‘All the work is done by the machine and the contractor has taken my card to withdraw some money from the bank. I won’t receive any money for that. *They are threatening us that if we won’t give our cards, they will cancel our card.* Most of the people in the village have given the card. *These contractors are scaring us.* To whoever asks and runs behind them, they will give 50 or 100 rupees. I can’t go and spend the whole day for it. I think because of the dirty politics these things are happening’ (respondent no. 190, italics added for emphasis).

These are serious allegations, and suggest that at least in a few cases, contractors do not give the job card holders even a percentage of the day’s wages. As with the receipt of ex-gratia assistance, marginal farmers and wage labourers simply do not have the time to chase up officials and in this case, contractors. One man in Marilo expressed his frustration at the inability of poor people, who bear the brunt of such malpractices to actually do anything about this situation. He said, ‘People, both rich and poor, have job cards. I invited them many times to have a village meeting regarding this but no one came. The rich people are not really bothered’ (respondent no. 187).

The study team interviewed the block development officers of both Erasama and Garadpur Blocks, putting to them these findings. Their responses reveal the extremely polarised nature of debate around NREGS. Both stuck vehemently to the official description of procedure on NREGS, and denied such malpractices, even when presented with quantitative and qualitative data collected by this project. The BDO of Erasama, when shown a villager’s testimony exemplifying the full extent of malpractice, said, ‘No, this is all wrong. Funds are paid to workers through account paid cheques, and deposited in the bank. Nobody else can draw this money. There are many supervisors, the *grama sathis* [at village level] and the *grama sanjojak* [a 7 member committee]. There is the *sarpanch*, then the Junior Engineer, then the Assistant Engineer, then the BDO, then the Collector, and there is also the Ombudsman. All are supervising the work, so it cannot be true that machines are doing the work.’ According to the BDO of Garadpur, NREGS work is ‘going smoothly in Odisha, under the supervision of the Secretary, Panchayat Raj...And everything is going properly, and no machinery is used to do the work’. Both BDOs also maintained that NREGS guidelines require that at least 50% of decisions relating to work should be made by the gram panchayat, but in both their blocks, 100% of this decision has been devolved to the gram panchayat. The BDO of Erasama clarified that only in cases where the soil was hard, then machinery could be used, but with the specific permission of the district collector⁹⁹.

Both BDOs also insisted that people were extremely aware of their entitlements with respect to NREGS. The BDO of Erasama said, ‘In Erasama, the social audit occurs every 6 months to monitor the NREGS work. There is a group at village level [the *grama sanjojak*] to monitor the NREGS work which comprises two SHG leaders, two *grama sathis* and three job card holders. Everything has to be decided in *palli sabhas* at village level about the type of work need to be done. BDO does not have the authority to provide work orders, it has to be decided by the panels.’ The BDOs also said that the minimum wage rate per day was 90 rupees, as decided by the state administration as per its Labour

⁹⁹ The interviews with BDOs were conducted in Erasama (16/11/10) and Garadpur (18/12/10) block offices.

Act. As will be discussed later in the chapter, awareness of entitlements does not automatically translate into the effective realisation of such entitlements given the wider structural constraints facing poor people.

Moreover, officials often readily furnish other explanations for why NREGS may not be working. As the BDO of Garadpur put it, people are simply not interested in working for NREGS because they can get more money working 'outside'. He also said that the administration has tried to sensitise and make local people aware of the benefits of NREGS and the unemployment allowance. Under the scheme, a rural household is given 100 days of employment in one financial year. If a job seeker does not get employed within 15 days of submitting the application or from the date when work is sought, a daily allowance has to be paid by the state government. States (and not just Odisha) have generally 'failed to comply with the law' on this¹⁰⁰. There are also huge administrative difficulties with adverse consequences. The Public Accounts Committee (PAC) on the implementation of NREGA for 2009-2010, found that the applications for demand of work submitted by NREGA workers under the Act were not 'documented or dated', and the dated receipts for such applications were not even issued in 'most cases'. In the absence of the recorded date of demand, the eligibility of rural households for unemployment allowance was unverifiable, said the PAC in its report¹⁰¹. Odisha has separately been in trouble with the Supreme Court over reports regarding the 'diversion' of NREGS funds for other uses¹⁰².

In the wider context of difficulties with the implementation of NREGS, as reported nationally, the problems reported by villagers in the study site need to be taken seriously. These have been triangulated in different settings, and by different researchers, and cannot be dismissed as lightly as the BDOs interviewed above have done. Their refusal even to consider the findings of an independently conducted research as this, signals the mentality of some government officials, especially at junior levels, not to see this as an opportunity for cross-investigation and the launch of corrective measures. Yet it can also be seen to indict higher officers and, ultimately state level politicians, for the fact that exactly the same scandal is ongoing in both researched blocks, and in other non-coastal districts, which suggests that the go-ahead for the use of machinery must have been sanctioned at higher levels.

13.3 Politics of flood damage repair (FDR) work

There is a collusion of interests amongst contractors, block officials, other functionaries like the Junior Engineer and political parties. While this was to an extent implicit in the investigation relating to NREGS, it became explicit in frank interviews obtained from *sarpanches*, the block chairperson and a block official regarding the politics of flood repair works¹⁰³.

¹⁰⁰<http://southasia.oneworld.net/todayshadlines/no-unemployment-allowance-under-nrega-in-india>, by A. Naqshbandi (accessed 2011).

¹⁰¹ As reported in the Deccan Herald, March 28, 2010 (<http://www.deccanherald.com/content/60630/nrega-workers-may-not-get.html>)

¹⁰²<http://timesofindia.indiatimes.com/india/Probe-NREGA-fund-diversion-SC-tells-Odisha-govt/articleshow/7110806.cms>

¹⁰³They shall remain anonymous, as they have offered the information below in confidence to the researchers.

After the latest 2008 floods, a number of flood damage repair (FDR) works, including the repair of roads were carried out in Garadpur Block (as in other flood-affected areas). Works were carried out by a number of different contractors, but a number of respondents maintained that there was a clearly observed preference for contractors affiliated with the ruling BJD over other parties, like Congress or BJP. After 2008, FDR work worth nearly 2.6 crore rupees was approved and undertaken. According to two informants, while nearly 2 crore rupees were paid to BJD contractors, only 17-18 lakh rupees were paid to Congress or BJP contractors, and the remaining 43 lakh rupees of work also carried out by non-BJD contractors are yet to be paid¹⁰⁴. A further 15 lakh rupees of work was also completed, but not still approved, and therefore not paid for. The research team was provided with various details of projects and payment to further substantiate this point (for example, in Samsara a BJD contractor has been paid 2 lakh rupees for a concrete road, but another concrete road made by a BJP contractor has not yet been paid the due 1 lakh rupees; also in Samsara, a BJD man was paid 2 lakh rupees for a tiny bit of road work down from the embankment, when it is estimated by the respondents that the costs incurred were a quarter of this amount).

The research team also interviewed a BJP contractor who had repaired a concrete road in Samsara. He said he had completed the work in a short time span, upon the instructions of the Junior Engineer. But he has yet to be reimbursed for the costs incurred. A year before the interview, he had even given a bribe of 3,000 rupees to a middle man, to pass on to 'higher officials' to help expedite his payment, but to no avail. Interestingly, this contractor said he used to be affiliated to the BJD when he was younger, but became disaffected with the party, and switched to BJP. Since then, he says 'he has been out of the game' because 'all contracts go to BJD contractors'.

Our informants wondered how and why, if all projects were documented 'online', that the expenditure of non-BJD contractors had not been processed? They ventured the answer that the MLA and block officials would normally ask the gram panchayat members regarding who has done the work. These local panchayat functionaries blamed the BDOs and officials from the Public Works Department as well as the DRDA for this state of affairs, but they gave the Collector a clean chit for being free of such political party considerations. They illustrated this with an example of one FDR road work in Jamunabad, where a BJP contractor brought the materials to the site, but then the BDO stopped the work. This was because two opposition party members made a complaint to the Collector, who then asked the BDO to inspect and report on the matter. The JE had given a certificate that the raw materials were there, and the work could start, but the BDO blocked it. The gram panchayat functionaries interviewed, felt that the BDO should have done one of two things: hold a *palli sabha* to decide on fresh work, or allow the contractor to work, but he did neither. Some villagers in Jamunabad said in a group interview that ultimately this was to the detriment of the village, as the work got held up. They felt that people should have come together to find a compromise.

13.4 Awareness of rights and entitlements

Through the various challenges that people face with respect to accessing state assistance, there is a continuous process of increasing information about entitlements that is also perceptible. One man in Behula spoke for many, when he said, 'though financially we have not improved a lot, but we know a

¹⁰⁴ These interviews were held in November 2010, so the information provided is correct until this date.

lot of things. There is still scope for better information to be made available'. Given the broader emphasis on rights-based approaches in development, perhaps this is the first stage. But the difficult question still remains, on whether better awareness is actually producing effective access to entitlements, and any meaningful realisation of rights?

In the previous sections, the discussion has revealed how on the one hand, people are routinely frustrated by official behaviour, but on the other, there are those who can also strategise and manipulate as best as they can. This was evident most starkly with respect to the discussion on ex-gratia assistance in Chapter 12. Given the connivance of many persons in the corrupt behaviour of the RIs, the vast majority did not see the receiving of such assistance from the state as an effective right. But although rare, it was encouraging to find a few cases of popular indignation that were articulated through an organised complaint to the district administration. After the 2008 floods, some disgruntled people actually pooled money to go and see the Tehsildar, and then ultimately the Collector to complain about discrepancies in assessment of damage, who reportedly instructed the Tehsildar to re-assess all the households. Although they said that nothing concretely changed as a result of the enquiry, it was an example of people acting collectively to approach the governance structures in place. And at the very least, there is anger amongst those who are not in a position even to undertake any direct action. A landless woman from Marilo said, 'if the RI comes this time, I am going to beat him. Why did he not do justice to all?' (respondent no. 188).

The injustice of disaster assistance is particularly serious for sharecroppers, who bear an unfair proportion of risk and do not get anything from the state after a disaster. After the 2008 floods, when assistance towards crop losses was given for the first time, many sharecroppers became aware of this unfairness, especially as landowners received compensation amounts but generally did not share these with their sharecroppers. Many sharecroppers interviewed said categorically that they would no longer farm on share agreement the land of those landlords again (though as the example in Chapter 4 shows, sharecroppers can end up returning to work the farms of landlords, even if they take a break in protest). This is a significant move, and shows poor people exercising their own agency to resist an exploitative arrangement. It will not be enough to change the wider rules relating to these issues however. We suggest that the state needs to do more to make farming communities aware of the significance of obtaining written evidence of sharecropping arrangements, which would be a necessary step for sharecroppers to be compensated.

The discussion on peoples' access to BPL related benefits, especially PDS and pensions, shows that the situation is grim for the most vulnerable households. They fall into the trap of marginalisation, often unable to complete the paperwork needed to access rights promised to them by the Indian state. Gram panchayat functionaries, such as the *sarpanch* or ward members, tend to discriminate in regards to whom they support, and vulnerable households do not really have the physical and/or economic resources to follow up officials. In worse cases, when some enlightened individuals complain about corrupt practices in one area, for example about the disbursement of relief, then the *sarpanch* or ward members express their ire by 'taking revenge'. The complainant then finds it difficult to get an IAY allocation or a BPL card, even when it is due. This unfolds in the context of no meaningful village assemblies or *gram sabhas*. So even when there is awareness of rights, the wider institutional and political environment does not facilitate grassroots action for claiming such rights.

Perhaps the best example of this is NREGS. It is not easy for people to complain about irregularities or for their complaints to be taken seriously. Moreover, most poor people in the study areas, and generally in rural coastal Odisha, are wage labourers and marginal farmers with daunting everyday obligations. They also need to survive amidst the same power holders (*sarpanches*, contractors etc.) and negotiate work and benefits from them. Collective action against these persons is not an easy option, and can even be dangerous. For example, when a group from Samsara repeatedly went to the collector's office to report upon the shoddy embankment repair work after the breaches caused by the 2008 flood, they received threatening phone calls from the contractor and his goons, instructing them to return home immediately, which they promptly did.

13.5 Key state interventions: Summary and key recommendations

This chapter has focused on the efficacy of key state interventions in a disaster prone area. It has tried to show that any meaningful appraisal of recovery after a disaster in the long-term is incomplete without a consideration of effective access to key state schemes like the PDS and pensions. The chapter has continued this section's focus on the socio-political dimensions of vulnerability and recovery. It has shown that relationships with *sarpanches*, ward members and contractors both expedite and constrain what poorer households can hope to get out of state interventions like NREGS. The discussion on flood damage repair (FDR) works is useful here because it contains a raw exposition of the kind of politics that pervades rural development work.

The previous chapters have made specific recommendations around NGO assistance and specific disaster related assistance (relief and ex-gratia help). The principal recommendation arising from this chapter has already been encapsulated within the previous section on awareness of entitlements. It is worth reiterating this message at the end.

- Some beginnings have been observed with popular awareness regarding various state entitlements, but there is a lot still that constrains people from acting upon this information. There is a long road ahead with respect to systematic awareness building regarding the array of rights that people have.
- There is still the need for greater transparency regarding procedure, whether it is for accessing pensions or for the disbursement of compensation after a disaster. While newspaper publications do help, they are restricted to the literate population, and perhaps more effective use could be made of radio campaigns and other forms of broader awareness-raising.
- Local corruption is pervasive, especially at the block level, which acts as a nodal point for the implementation of various state schemes. Harsher penalties need to be introduced for proven/demonstrable malpractice sustained by both elected and non-elected persons. Public shaming in village assemblies, in the presence of senior officials from the state level, could be considered as a possible method of enforcing accountability. Dismissal should become a popular option.

Section 5: Disaster preparedness and ongoing vulnerability

Chapter 14: Disaster preparedness

When it comes to disaster preparedness, the state government of Odisha is leading the way at the national stage for its innovative and proactive measures in the ten plus years since the fateful super-cyclone. The establishment of the Odisha State Disaster Mitigation Authority (OSDMA) in 2000 has been critical in enabling bureaucratic space for focused attention to disaster mitigation and recovery issues. A number of other agencies, especially the Red Cross and UNDP-India, have played a key part in supporting OSDMA through individual and joint ventures. This discussion will refer briefly to various commendable initiatives that have been undertaken. However, the purpose of the chapter is to present the realities of disaster preparedness at the local level, in the study wards. It will also discuss community based assets and activities, and the deficits in these. It will review household attitudes towards disaster preparedness¹⁰⁵.

14.1 Leading the way: Community based disaster preparedness in Odisha

It is generally acknowledged within the circle of practitioners working on disasters in India that OSDMA has influenced policy development at the national level: the National Disaster Management Act and the National Disaster Management Authority are based on experiences from the Odisha state (Hedger, Singha, Reddy, 2010). Odisha is also the first state in the country to produce a State Climate Change Action Plan (CCAP)¹⁰⁶. In addition to disaster experiences, there are also energy and development issues around the climate change agenda. The underlying rationale is to lead Odisha to move towards a carbon conscious, climate resilient development path. This CCAP has projected a budget of 1,700 crore rupees in different sectors in adaptation, mitigation, knowledge building and policy reform.

Odisha has been the site of at least three major programme initiatives in the area of community based disaster preparedness and risk reduction. The first is the Government of India-UNDP Disaster Risk Management (DRM) programme 2002-2009, which started with a modest target of disaster preparedness and vulnerability reduction in 28 districts in the Indian states of Bihar, Odisha and Gujarat. The geographic coverage and outreach expanded progressively to cover almost one third of the country – 176 districts spread over 17 states. The programme outlay grew from US\$ 2 million in 2002 to US\$ 41 million during the seven year programme duration. In Odisha, it was implemented in 16 disaster-prone districts in order to reduce vulnerability in two phases from 2002-2008 with the support of GOI (Home Affairs) and UNDP (supported by DfID). The recent evaluation of the GOI-UNDP DRM programme emphasised 17 thematic areas of good practices. There were several which emphasised local action both amongst gram panchayat representatives, other local functionaries, and the community.

¹⁰⁵ By way of clarification, it is not within the scope of this research project to follow up or evaluate any particular programme or initiative at the government or donor level. The state of disaster preparedness reported for the study wards must not be interpreted as a general criticism of the positive measures embarked upon by OSDMA, Red Cross, UNDP and other agencies. This is a discussion of the extremely challenging realities confronting agencies tackling a very tricky problem.

¹⁰⁶ The National Action Plan has been prepared under the guidance and direction of Prime Minister's Council on Climate Change. The Indian Prime Minister has urged each State Government to create their own state level action plan consistent with the strategies in the National Plan. However Odisha based civil society groups have condemned the way the CCAP was drawn up (see <http://www.ahrchk.net/pr/mainfile.php/2010mr/754/>, accessed in January 2011).

The second is the Community Based Disaster Preparedness (CBDP) programme in joint collaboration between OSDMA, UNDP and DfID. The project started in March 2001 and was completed in September 2002. This project was based on the premise that the community was the first to confront and respond to any emergency and therefore the need for community-based disaster preparedness was critical. This project was implemented in ten selected coastal blocks, including various blocks in Jagatsinghpur, Kendrapara and Puri Districts. A principal point of emphasis in the CBDP programme was the preparation of district, block, grampanchayat and village level multi-hazard disaster management plans. The formation and training of various task forces, enhancement of community preparedness, and training and capacity building of government stakeholders as well as NGOs are all key objectives. The programme was decentralised in orientation, and the gram panchayat was seen as a vital intermediary between the block and the village. The formation and training of gram panchayat level disaster management committees was emphasised.

The third major initiative is the Odisha State Disaster Mitigation (ODM) programme implemented by the Indian Red Cross Society, and supported technically and financially by the German Red Cross that has been in operation since 1995. ODMP is divided into two components: the first involves the physical construction of well-equipped multipurpose cyclone shelters (MPCSs), and the second deals with social mobilisation ranging from community training for proper use of the shelter both at times of disasters and normal times, to community training for self-help. The first phase of the ODMP lasted from 1995-2002, and targeted nearly 50,000 people from 97 villages in 6 coastal districts. Villages where MPCSs were situated were mobilised to collect and deposit a sum of 10,000 rupees for their 'self-sustainability' during a future emergency. A shelter community chest was created to allow households to contribute small amounts to fund maintenance work for the shelter, and also fund development work after a disaster. The second phase of the programme spanned from 2003 till 2008 with the construction of more MPCSs and accompanying social mobilisation measures¹⁰⁷.

14.2 District level arrangements

In this wider environment of emphasis on community-based disaster preparedness, the state government has paid keen attention to beefing up the institutional infrastructure to respond to disasters at each district. A basic disaster management structure is in place to facilitate district level responses and enable community-based training and awareness building. The District Emergency Officer (DEO) is the head of this structure, above the District Planning Officer and Disaster Risk Management Officers. This team is required to coordinate with the block administration (BDO and his staff) to provide training to gram panchayat representatives regarding disaster warnings, response and other related matters. There is also a District Information Officer in the Collector's Office who is responsible for coordinating the sharing of information with the public.

Each district also has a district level disaster management plan (DMP). The district plan includes capability analysis of storage facilities, cyclone/flood shelters, NGOs, boats, and other equipment. There is an extended discussion of disaster preparedness and mitigation measures. Emphasis is placed on the establishment of control rooms at all levels, proper functioning of communication systems,

¹⁰⁷ Information provided by Sudhir Kumar Sahoo, Reporting Officer on Disaster Management, Red Cross, Bhubaneswar, December 2010.

training of disaster management team members, organisation of mock drills, and the orientation of committee members. There are specific measures indicated for different types of disasters as well.

14.3 Gram panchayat level preparedness

This research followed up on the extent to which the above measures are being effectively implemented at the gram panchayat level. Although derived from the working of four gram panchayats in two districts, these findings raise some larger questions.

Sarpanches in all four gram panchayats enthusiastically acknowledged a clear improvement in communication systems. Communications which proved to be the major stumbling block in the aftermath of the 1999 super-cyclone have advanced dramatically with mobile phones, effective use of warnings through radios and TV (and much wider ownership of these in the current day) and better coordination between the district, block and *sarpanches*/ward members. Also, a major problem faced by relief officials after the 1999 super-cyclone had been the ready availability of rice stocks in the public distribution system. According to the Special Relief Commissioner¹⁰⁸, arrangements are now in place for minimum stocks to be available from PDS for relief organisers to manage within 3-4 days, which gives time for further stocks to be obtained from the Food Corporation of India (FCI). *Sarpanches* in both sites confirmed the GP offices have capacity to stock 100 quintals or more, but only one of our two sample GPs' *sarpanches* in Garadpur confirmed there were 500 quintals of rice being held in their gram panchayat godown for distribution in case of a flood during the 2010 flood season. On the 18th of August, 2010, newspapers reported a government announcement that food, fodder, polythene and medicines should be stocked at the block and gram panchayat levels, but both *sarpanches* interviewed in Garadpur a few days afterwards (on 21st and 22th August) knew nothing of this. In Tikanpur the *Sarpanch* had nothing at his panchayat office, but claimed that because he is a whole-saler, he can provide relief to his villagers. In Patkura the *sarpanch* said that no arrangements had been made for polythene, fodder, or medicine supplies to the hospital situated there. This is especially worrying as August is in midst of the flood season. There also remain concerns with respect to four other critical issues.

First, given the national and state level emphasis on *training* of local gram panchayat functionaries, the emphasis on training has been extremely thin on the ground. *Sarpanches* in the Jagatsinghpur site said they had only attended a single one-day training programme in 2009 upon the invitation of the BDO of Erasama, and strongly urged for a yearly programme in their areas. The *sarpanches* in the Kendrapada site said that no training had been conducted for them. They also said they had not been consulted at all in the recent formulation of the new district level DMP 2010-11, which they knew nothing about. The DMP had not been shown to them up to the end of field research in late August 2010.

Second, no *mock drills* for gram panchayat functionaries have been held for gram panchayats in either site. According to block level functionaries, mock drills are held each year on the 19th of October. However, the reality as confirmed by gram panchayat members in the study wards was that not a single such drill had been held since the super-cyclone, though they confirmed that they had heard of

¹⁰⁸ Interview with the Special Relief Commissioner, Bhubaneswar, December 2009.

the first drill being planned. One *sarpanch* said, 'From this year only there will be a mock drill at the gram panchayat on 19th October. Before there has been no such instruction, but this year the BDO has instructed us'.

Third, despite the improvements in centralised coordination of relief and rescue operations at the state level, there is a strong sentiment at the gram panchayat level that *more equipment* should be provided to GPs themselves (so they would not have to wait for these to come from the block or district during a rapid onset disaster). Specifically, functionaries mentioned equipment to measure wind speed, wireless equipment, loud speakers, and vehicles for rescue operations (including boats).

And fourth, in theory, in each gram panchayat there ought to be 8-10 *local committees* pertaining to different aspects of disaster management (from warning to rescue to health and so on). But this study could not find evidence of robust and well functioning committees in either site. In the two revenue villages (Garia and Sahadabedi) selected for this study in Erasama, committees were constituted by Samadhan, an NGO that was entrusted with this task in 2007. Samadhan was commissioned by Erasama block to prepare revenue village level disaster management plans (DMPs) in 17 panchayats. These plans were prepared for every revenue village, wherein a *palli sabha* was called and different committees were constituted with the help of nominations from the *sarpanch*. The NGO itself had three coordinators and was assisted by 12 volunteers from the selected villages. However, Samadhan was given extremely little money for this work (to the tune of 500 rupees only per gram panchayat plan and social mobilisation)¹⁰⁹. This hampered its activities greatly, and it could not provide any training to the newly constituted committees. At present, people in these villages are aware of these committees, but these are not really functional.

People generally do not know much about committees in their area. A few people in all wards studied could recognise committees but did not know more about their purpose. One man in Sahadabedi was optimistic that when a disaster would come, people would fulfil their role. In Kalabedi, some women remembered that a committee had been formed by Lutheran in the days after the cyclone, but could not remember if this was functional. People from Padmapur know about the activities at the multipurpose cyclone chelter in their gram panchayat, but those from other nearby villages (like our study wards in neighbouring Gadaharishpur) are not aware of such activities. The research did not obtain any evidence that committees had been formed in Garadpur.

14.4 Community based preparedness

The emphasis on community-based disaster preparedness follows from the need for people to respond to a disaster on the frontline. Chapter 11 has discussed the tremendous acts of self and mutual help that were observed during and in the immediate aftermath of the super-cyclone. There is little doubt that after experiencing a life-changing episode like that, there is a tangible increase in consciousness about disasters. In comparison with 1999, when even those who had received warning of a severe cyclone did not pay heed to it, and underestimated its strength, there is hardly a person in coastal Odisha who will not take a warning seriously in the present day. However, as Chapter 10 on cyclone shelters has shown, effective access still remains of concern for three out of four of the study wards in

¹⁰⁹ Interview with Priyatama, Head of NGO Samadhan, Bhubaneswar, December 2010.

high-risk Erasama. This has produced an attitude of despondency and resignation amongst many poorer households. In this context, there is still a lot that can be done to improve community-based preparedness.

The previous discussion has already established that local village level committees trained in different aspects of disaster preparedness are not functioning properly. This was reflected in interviews with households (both individually and in groups), where generally people felt that there was no community-level plan to deal with disasters. In the absence of a wider plan as such, the research investigated if people possessed any 'assets' that they could immediately use if a cyclone or flood occurred¹¹⁰. In all study wards, both in Erasama and Garadpur, there were no collectively owned assets that people readily identified as usable in case of disaster. At the household level, some people have ropes, polythene, containers for keeping kerosene; a few have asphalt and poor quality tarpaulin but nothing more. In the Garadpur study wards, we found out that there are no boats owned by local people. However, the traditional community of boatmen in nearby villages did play a very critical role during the 2008 floods.

People told us of the measures they can and do adopt in case of a flood or cyclone. In Erasama they pile beds, one on top of the other, and stock their grain on top. Men take their cattle and other livestock to open spaces and leave them free to fend for themselves (so that they will not be killed by collapsing walls or falling trees), before returning to look after their family members. In Garadpur those who have the money buy candles, kerosene and extra food from the market (at inflated prices) upon a flood warning.

In numerous interviews with households in the study wards, the research team encountered a strong attitude of resignation, especially in Erasama. This sense of insecurity is very concretely linked to the perception that there is not enough space for everyone to seek shelter in cyclone shelters, but also to their everyday living conditions. One scheduled caste woman from Garia, whose husband is disabled, and who receives Annapurna 10 kg rice monthly and is economically very poor, said 'I'll die here; I cannot leave my husband behind'. There is also insecurity regarding losing their assets, in the absence of strong *pucca* houses. People widely place a lot of emphasis on sheer luck regarding whether or not they would make it if another disaster struck. There is a deep sense, especially in Erasama, that a cyclone of a larger magnitude would still impact them badly.

For too many people, the absence of savings contributes to a deep sense of vulnerability to the next disaster. Without a regular income and even modest savings, poorer households in coastal wards feel helpless to make the substantive changes that would see them through a disaster. This mainly includes the building of a strong cyclone/flood resistant *pucca* house, better storage facilities for food and other household assets, secure protection for livestock, and of course, ready cash that could afford transportation to a hospital if needed. Instead, being in a general state of impoverishment, people lament their general haplessness. Many respondents vehemently denied that relocation was an option. Attachment to birth place, lack of contacts in other places, lack of sellable assets, lack of savings, and not least the unsavoury experiences faced by their migrant children all contribute as reasons.

¹¹⁰ This was done upon a specific request by the MD of OSDMA, made at the first project dissemination workshop in Bhubaneswar, November, 2010.

14.5 Disaster preparedness: Summary and key recommendations

This chapter has highlighted the active role played by OSDMA and other agencies (UNDP, Red Cross) towards improving the state of disaster preparedness in coastal Odisha. Odisha has been the site of many innovations, and a number of different programmes have enveloped large parts of the coastal districts under programmes of training, awareness generation and community mobilisation. The state government has systematically tried to institutionalise a clear management structure that will respond to disasters comprehensively, led by the District Emergency Officer. It has beefed up both physical infrastructure as well as communication systems considerably. The creation of comprehensive district level disaster management plans is also an extremely positive measure.

At the same time, the chapter has revealed a scope for better grounding of these macro level initiatives. Although drawn from the experiences of the study wards, these have thrown up general challenges to do with gram panchayat level capacity and training in particular. The state of local committees on different aspects of disaster preparedness and risk reduction, which can definitely play a vital role, arouses concern. Block level officials interviewed display a worrying complacency; the Social Education Officer in Erasama even suggested that there were ‘so many *pucca* houses’ in Erasama today, that there was ‘no chance of casualties’ if a cyclone occurred (and we have already discussed the state of such housing)¹¹¹. There is also a serious lacuna in systematic community-level preparedness despite much better awareness. And as Chapter 10 has discussed, there is a real need for OSDMA to extend support and maintenance to all cyclone shelters (e.g. school-cum-cyclone shelters), and not just multipurpose cyclone shelters (MPCSs).

The chapter concludes with a few principal recommendations:

- While innovations at the district and block level are commendable, more attention needs to be paid to yearly training of *sarpanches* and ward members.
- *Sarpanches* should also be consulted in the formulation of the district level district management plan (DMP), instead of this being a top-down plan.
- Gram panchayat offices should be better stocked with essential equipment to offer the first response for disasters (wireless equipment, wind speed monitors, loudspeakers and so on).
- Mock drills should be organised not just for gram panchayat members, and for villagers living next to MPCSs, but also for the wider community at large.
- More efforts need to be invested for the identification of the most vulnerable households in advance of disasters through a process of community mobilisation. A mobilised local community could identify households with the most vulnerable persons and agree on a systematic plan to take these individuals to a cyclone/flood shelter. A widow in Garia made a telling remark, ‘Only families with male members would survive, so what is the point?’ (respondent no. 4). Similarly, the mapping of houses according to their precise location, in order to identify those that are located at particularly vulnerable spots, needs to be carried out in each ward. Advance planning could be done to ensure that these persons vacate their houses in sufficient time. The community could appoint vigilantes to look out for these households when warning strikes.

¹¹¹ Interview with SEO, Erasama, April 2010.

- But given that these issues are embedded in social relations, it may be difficult for an external agency to do more than sensitise. This could be an area for action research.

Conclusion: Recovery in the context of ongoing vulnerability

Conceptual approach

Finally, it is worth restating the two key elements of the conceptual approach that have shaped this study. These were discussed in the introduction. First, vulnerability is both socially differentiated and socially generated. Vulnerability is not about the risk of exposure to a physical hazard alone, but crucially, it is about peoples' underlying ability to respond and adapt. This ability is fundamentally shaped by the distribution of resources and assets, and by the social and political relationships that actually influence peoples' access to assistance, and to the entitlements that are owed to them. Second, what makes a disaster is not solely the physical impact of the hazard itself, but a range of conditions. These crucially include the lack of community capabilities, the inefficacy of state and other agency action and more generally, a larger failure of entitlements. Thus the impacts of hazard and disaster situations cannot be viewed as external to a society. Instead, a disaster and its effects are both a reflection of society, of its internal make up, relationships and dynamics.

Both these conceptual elements taken together mean that disasters are not events, but processes with long-term antecedents and potentially long-term consequences. It also means that any consideration of the disaster and its impacts is necessarily intertwined with larger issues affecting resource use; not just environmental resources like land and water, but also social and political resources like networks, relationships and connections with a variety of actors. It is this combined focus on both the *environmental* and the *socio-political* dimensions of resource use that distinguish this study. The research has accordingly addressed key environmental aspects like the nature of hazards and risk (cyclone, floods, salinisation), micro-geographies (sea-lying areas, flood prone riverine areas), and physical resources more generally. It has equally considered societal relationships (inter-household, based on caste, kin and gender), relationships with political actors (gram panchayat leaders, MLAs), government functionaries at different levels (Revenue Inspectors, Block officials, Collectors) and NGOs.

This conceptual approach means that this study is not about measuring the impacts of the super-cyclone. Instead, while taking the year of the super-cyclone as a starting point, this study aims to analyse how communities that have experienced this disaster have accessed various resources over a ten year period in their trajectory to recovery (hence the sub-title: 'critical lessons *since* the 1999 super-cyclone'). And in doing so, this study goes beyond revealing immediate impacts on various aspects of farming, other livelihoods and housing. It presents the far more complex story of how trajectories in each of these dimensions of the lives of people pan out over a ten year period, and which factors prove to be the most crucial.

Ultimately, this research adopts a challenging definition of recovery. As Wisner, Blaikie et al (2004) have argued, it is not enough for a household to simply return to status quo ante. Recovery must mean a return to a better, more robust state than before the last major disaster, and tested only through substantive evidence of improved resilience to the next disaster. This research examines the question of recovery with respect to various aspects of livelihoods change, housing, access to state assistance, and disaster preparedness. In each area, it considers both the trajectories of change, and while doing

so, addresses several auxiliary issues that frame the context of change. Each chapter also presents several pointers for change and recommendations of how these may be pursued.

Major findings and coverage of issues

With respect to **livelihoods**, the study presents a detailed analysis of agricultural trends over ten years. It reveals a complex picture of changing land ownership and use after the super-cyclone, but while also relating to other factors like salinisation in Erasama, and recurrent floods in Garadpur. It shows that the super-cyclone affected paddy cultivation in Erasama both directly, through immediate loss of crop and damage to land, and indirectly through salinisation and loss of livestock. It considers the implications of prawn cultivation in Erasama, both for farmers' profitability and indebtedness, and the wider context of agriculture in the area, relating this specifically to the changes in areas under fresh and saline water. It shows that prawn cultivation by locals, while not exclusively a post-cyclone endeavour, did increase in the years following the super-cyclone, only to decline again, as the majority of locals who tried it found it unprofitable. It discusses the precarious food security situation in Erasama today, which while now back to pre-1999 levels, has not improved. Reduced landholdings and assets, and increased salinity have been the main challenges, although improved yields for some may have helped in the short-term (though further research here is needed). It shows the rise in land mortgaging as a worrying sign of indebtedness. The study describes the pressures generated by recurrent floods on the already food insecure populace of Garadpur. In Samsara, sand-casting during floods has led farmers to shift away from pulse to groundnut production, and a reported increasing variation in river water levels has forced many to leave formerly cropped floodplain land idle. The study documents the rise of sharecropping in both sites and for Garadpur reveals the particular constraints sharecroppers face in terms of credit, insurance and disaster related compensation. The study argues that livelihoods recovery has been undercut by the lack of planned agricultural diversification, and the notable absence of any robust new livelihoods, especially in Erasama.

The livelihoods discussion considers migration, a growing phenomenon in both study sites. It documents the factors that push youth to migrate, and contemplates on the types of factors that draw them to particular destinations. It describes the arduous, risky and overwhelmingly unsatisfactory experiences of migrants, and the variable amounts of their remittances. It shows that while the impacts of the super-cyclone or floods have certainly not helped key local opportunities to do with agriculture, wage labour or indeed, the savings needed for the start of local enterprise, they cannot be held solely responsible either. Finally, it also points out that many but not all of Garadpur's migrants are older and better educated than those from Erasama, which fits with the larger situation in these two sites. Some of Garadpur's residents clearly have better access to education and work opportunities around their villages, and in neighbouring cities, compared to those from Erasama, but there is also a significant proportion of the population not benefitting from these conditions.

The chapter detailing the decline in other livelihoods, namely livestock ownership, fruit cultivation and fishing (river and sea), analyses the principal factors responsible. Lack of pasture for animals, especially in Erasama, has been a key contributory factor responsible for the difficulty in restocking animals lost in 1999, besides their having been no state assistance in this regard. This chapter shows that fruit trees were decimated in both sites during the super-cyclone, though to a greater extent in Erasama, and again there is no evidence of any state assistance for replanting, which local populations

have been unable to realise themselves. Sea fisherfolk are witnessing a decline in their catch and continue to receive no support from the government, directly with equipment or indirectly through infrastructure. In Erasama pisciculture is on the rise, perhaps due to the increasing marginalisation of people and their livelihoods, and as a strategy to improve nutritional food intake.

On the whole, the livelihoods study shows the tenuousness of the situation confronting both study sites though with some important differences. In Erasama, there is a greater uniformity in the poverty of livelihoods, but in Garadpur, there is more visible inequality, with a section of the sampled households in a better situation now than in 1999. This is confirmed by indicators to do with food security, which is markedly better for some farming households, on the one hand, and the rising incidence of sharecropping by landless or households with marginal landholdings on the other. It also shows the systematic deficits in appropriate assistance to farmers in both sites (credit, seeds, marketing and so on), and also the wider politics of fresh and saline water management and irrigation planning that act as key constraints for improvement. Finally, it shows that planned livelihoods diversification is not observable in either site, and there is widespread recourse to daily wage labour and migration.

The study presents a detailed analysis of the question of recovery related to **housing and shelter**. A house is the principal physical asset that can protect people from a severe hazard. It considers the changing landscape of *kutchha* and *pucca* houses in both sites, while carefully reviewing the implications of these for recovery since 1999, and preparedness for the next major disaster. The assistance that households are able to count on for shelter during a disaster as well as in the reconstruction stages is a key factor in the recovery process. Moreover, time spent outside the house in temporary shelters, and the time taken for actually reconstructing the house, are used as indicators to appraise recovery. The study concludes that recovery is much more of a distant prospect in Erasama, where the large majority of the sampled households have not been able to recreate stronger *kutchha* or indeed good quality *pucca* houses, compared with 1999. It shows a more promising picture for a larger number of households in Garadpur, with larger numbers of usable *pucca* houses, which also serve to help those (neighbours) with *kutchha* houses for shelter during floods. But cautiousness is necessary here for some of the most vulnerable in the Garadpur site continue to live in poor quality housing.

The report also analyses the various factors responsible for these differences. It discusses in detail the difficulties that confront NGOs and the state in providing effective housing assistance, given the expectations of disaster victims for comprehensive help with minimal contributions. It shows how these have restricted the efficacy of NGO housing assistance in Erasama. Caritas' intervention in Erasama is used as case study to reflect on these wider challenges. The government's Indira Awas Yojana programme is discussed in some detail, and the difficulties constraining effective IAY access for the poorest households in both sites are presented. The role played by greater economic opportunities around Garadpur compared to Erasama, which have played a key part in better housing in that region, is emphasised. Positive lessons are drawn from the gradual story of improvement in Garadpur, as evidenced in the latest floods; but equally, the continued fragility of households in Erasama is highlighted.

The report documents positive measures taken in the larger area of **disaster preparedness**, principally by OSDMA with support from agencies like the UNDP, World Bank and Red Cross. But the implications for local communities in these study sites are critically considered. The increase in the coverage of cyclone shelters is assessed with respect to a micro-level analysis of the concrete spatial, social and demographic factors that will compound access. While impressive strides have been made with respect to macro policy level and institutional efforts to galvanize infrastructure and awareness for promoting disaster preparedness, this study considers the persistent lacunae at the gram panchayat and village level.

At the same time, a disaster as massive as the super-cyclone has undoubtedly shaped popular consciousness about what to do in case of another extreme event. The first major point of change is that communities in these areas will no longer take a disaster warning lightly, as they had done in 1999. In Erasama, whenever cyclone warnings since 1999 were issued, those who could go to a cyclone shelter did, though this experience raised concerns regarding wards like Shuakunda and Sahadabedi, where people did not feel confident about finding space in the nearest shelter. In Garadpur, the growing numbers of *pucca* houses has meant that more households than ever before are able to seek shelter effectively in case of a flood, though clearly, there are still a large number that are more vulnerable on account of *kutch*a houses, or as in the case of Samsara, risky proximity to breach points. Concerns are raised about the quality of repairs made to Samsara's breached embankment. This is an important issue given that there are numerous villages in a similar position, located precariously under breach points. This research has shown there is increased awareness about the need to prepare at an individual household level (like through purchase of emergency food stocks, candles and kerosene etc.) in the event of a flood warning. But also, the research highlights the constraints that impede preparedness, and these are principally to do with poor quality housing (especially in Erasama), lack of savings that can help with mobility at the time of disaster, and in female-headed households, the absence of able-bodied men. Given that these are serious constraints that may impede the preparedness of the poorest households, the report considers the deficit in community preparedness in the study wards.

The study critically dissects the **nature and source of assistance** that households are able to access (effectively use in order to gain something substantive), over the long ten year period under consideration, in order to embark on a successful course of recovery. It discusses the significance of inter-household community relationships during and right after the super-cyclone, but also highlights their limited usefulness deeper into the reconstruction process. The key role played by NGOs after the super-cyclone is highlighted, but issues concerning long-term involvement of NGOs with their beneficiaries and coordination with the government are also flagged.

The report presents a detailed analysis of specific state action related to a disaster. The purpose is to highlight the critical role by the state in a recovery process that cannot be substituted. The research shows that relief is crucial for immediate survival, whereas ex-gratia assistance is a vital source of much needed cash assistance for households at a time (generally a few months after a disaster) when cash stocks are low to cope with the multiple demands of reconstruction. The study documents the chaos surrounding relief delivery after 1999, but also chronicles clear advancements since, especially as observed after the 2008 floods. It appraises the giving of state ex-gratia assistance, and details the

major problems that have plagued this process. It highlights the unfairness contained in some of the categories of compensation (such as to do with sharecroppers). For relief, as for ex-gratia assistance, the discussion draws attention to the critical role played by *sarpanches*, ward members, RIs and block officials.

The study also extends consideration to the key question of whether general state interventions for welfare, unrelated to disasters in particular, are functioning effectively in these disaster-prone areas. This provides a wealth of valuable insight. The report contains a clear account of how the most vulnerable households are doubly disadvantaged when they are unable to realise their entitlements, as to the PDS or pensions scheme, or to NREGS for that matter. This part of the report exposes the politics of governing these various schemes, as also the political considerations (at a local level) that obfuscate transparency and accountability. The analysis establishes that failures in accessing these critical schemes in fact make poor households more vulnerable to suffering the effects of the next major disaster. When poor households are deprived of basic minimum food security (through the PDS), or cash for survival (pensions), or wages through state-provided employment (as NREGS), or a good quality *pucca* house (through the IAY), then these collectively amount to a failure of entitlements that undermines their chances of long-term recovery since 1999, or following flood events such as the 2008 floods (and then again in 2011) that hit Garadpur and other blocks.

Recovery in the context of ongoing vulnerability

The study has shown that there have been key improvements with respect especially to housing, cyclone shelters, disaster preparedness and also the delivery of relief and ex-gratia assistance. But equally, there are continuous challenges to do with limited support for dwindling agriculture, lack of credit and irrigation support, risky prawn cultivation and generally low returns from migrant livelihood seekers. There are also serious issues compounding the quality of *pucca* housing, corruption with respect to the IAY and the lack of positive support from the block. There are major obstacles for the poorest households to get effective access to PDS, pensions and employment under NREGS. Each of these depends on connections with locally powerful *sarpanches*, contractors and block officials – which the poorest households, many from the lower castes, simply do not have. These constraints mean that despite growing awareness of their rights, households are frustrated by limited opportunities for redress within the system.

In this context, if there is one conclusion that stands out, it is that there is no definitive state of recovery for the studied communities. This is because there is a continuous process of ongoing vulnerability. This is not just with respect to the ever present risk of a future hazard and constraints of physical resource use. Instead, it is to do with the ongoing problems of access to effective assistance, from NGOs but mainly from the state, which pose staggering obstacles to households trying desperately to move to a position of strength in their everyday life. At the minimum, this should include a good quality *pucca* house, a modicum of food security, some sellable assets, and effective access to state assistance for BPL families. And without this minimum, households will always be at risk of suffering the effects of another disaster, even if there are fewer lives lost.

The report contains specific pointers at the end of each chapter for further action. A key message of this study is that a broader approach to vulnerability and recovery is needed both by the state and by

other development agencies (i.e. NGOs). Issues to do with livelihoods, housing, cyclone shelters, disaster preparedness, and both disaster and non-disaster related state assistance need to be viewed in an interrelated manner. A business-as-usual attitude ought to be replaced with a sense of urgency to create positive change. This is particularly important for drastically improving the awareness of local communities, in order for them to stake a stronger, better informed claim on their entitlements.

Bibliography

- Adger, N. (1999) 'Social vulnerability to climate change and extremes in coastal Vietnam', *World Development*, 27(2): 249-269
- Adger, W.N. (2006) 'Vulnerability', *Global Environmental Change*, 16: 268-281
- Anderson, M. and Woodrow, P. (1998) 'Rising from the ashes: development strategies in times of disaster', Intermediate Technology Publications, London
- Barenstein, J.D. (2006) 'Housing reconstruction in post-earthquake Gujarat: A comparative analysis', Network paper no. 54, Humanitarian Practice Network, Overseas Development Institute, London
- Cutter, S.L. (1996) 'Vulnerability to environmental hazard', *Progress in Human Geography*, 20: 529-39
- Cutter, S.L., Mitchell, J.T. and Scott, M.S. (2000) 'Revealing the vulnerability of people and places: A case study of Georgetown County, South Carolina', *Annals of the Association of American Geographers* 90 (4): 713-737
- Cutter, S.L. (2006) *Hazards, vulnerability and environmental justice*, Earthscan, London
- D'Souza, R. (2002) 'Colonialism, capitalism and nature: Debating the origins of Mahanadi Delta's hydraulic crisis (1803-1928)', *Economic and Political Weekly* March 30, 2002: 1261-1272
- Eriksen, S., Brown, K. and Kelly, M. (2005) 'The dynamics of vulnerability: locating coping strategies in Kenya and Tanzania', *The Geographical Journal*, 171 (4): 287-305
- Few, R. (2003) 'Flooding, vulnerability and coping strategies: local responses to a global threat', *Progress in Development Studies*, 3: 43-58
- Few, R. (2006) 'Flood hazards, vulnerability and risk reduction' in Few, R. and Matthies, F. (eds) *Flood hazards and health: responding to present and future risks*, Earthscan, London, 8-27
- Global Environmental Negotiations (2008) 'Climate change and Orissa: Orissa factsheet', <http://www.freewebs.com/epgorissa/climateorissa.pdf> (accessed October 2010)
- Government of India (2009a) 'Evaluation report on Indira Awas Yojana: Jammu and Kashmir', Programme Evaluation Organisation, Planning Commission, Government of India, New Delhi
- Government of India (2009b) 'Guidelines for Calamity Relief Fund', Ministry of Home Affairs, Government of India, New Delhi

- Government of Orissa (2008) 'State Agriculture Policy 2008', Agriculture Department, Orissa, Bhubaneswar
- Government of Orissa (2009) 'Orissa Agricultural Statistics 2008-09', Directorate of Agriculture and Food Production, Orissa, Bhubaneswar
- Government of Odisha (2010) 'Strategic Plan for Green Revolution in context to Odisha', Directorate of Agriculture, Orissa, Bhubaneswar
- Harris, N. (2005) 'Migration and development', *Economic and Political Weekly*, 40 (43), October 22
- Hedger, M., Singha, A. and Reddy, M. (2010) *Building climate resilience at state level: Disaster risk management and rural livelihoods in Orissa*, Strengthening climate resilience discussion paper 5, Institute of Development Studies, Sussex
- Hilhorst, D. and Bankoff, G. (2007) 'Introduction: Mapping vulnerability' in G. Bankoff, G. Frerks, and Hilhorst, D. (eds) *Mapping vulnerability: Disasters, development and people*, Earthscan, Trowbridge, 1-9
- Kruks-Wisner, G. (2011) 'Seeking the Local State: Gender, Caste and the Pursuit of Public Services in Post-Tsunami India', *World Development*, 39(7): 1143-1154
- Kumar, A. (2009) 'Monitoring report of Dhar, November 2009', http://nrega.nic.in/CEGC/MGNREGA_Monitoring_report_of_Dhar%202009.pdf (accessed November 2010)
- Kundu, A. (2009) 'Exclusionary urbanisation in Asia: A macro overview', *Economic and Political Weekly*, 44 (48), November 28
- Ministry of Home Affairs (2004) *Disaster Management in India: A Status Report*, National Disaster Management Division, Ministry of Home Affairs, Government of India
- Oliver-Smith, A. and Hoffman, S. M. (eds) (1999) *The angry Earth: Disaster in anthropological perspective*, Routledge, New York
- Pelling, M. (2003) *The vulnerability of cities: Natural disasters and social resilience*, Earthscan, London
- Ray-Bennett, N. (2009) *Caste, class and gender in multiple disasters: The experiences of women-headed households in an Oriya village, India*, VDM, Germany
- Reddy, D. N. and Mishra, S. (2008) 'Crisis in agriculture and rural distress in post-reform India' in Radhakrishna, R. (ed) *India development report, 2008*. New Delhi, Oxford India, 40-53

Roy, B.C., Mrithyunjaya, Selvarajan , S. (2002) ‘Vulnerability to climate induced natural disasters with special emphasis on coping strategies of the rural poor in coastal Orissa, India’, Paper prepared for the UNFCCC COP8 Conference organised by the Government of India, United Nations Environment Programmes, and FICCI during October 23-November 1, 2002, Vigyan Bhavan, New Delhi, India

Samal, K.C., Meher, S., Panigrahi, N. and Mohanty, S. (2005) *State, NGOs and Disaster Management*, Rawat Publications, New Delhi

Saranghi, N. and Kundu, A. (2007) ‘Migration, employment status and poverty’, *Economic and Political Weekly*, 42 (4), January 27

Scott, J. (1985) *Weapons of the weak: Everyday forms of peasant resistance*, Yale University Press

Thakkar, H. (2008a) ‘Orissa flood disaster could have been avoided: Wrong operation of Hirakud Dam responsible’, South Asia Network on Dams, Rivers and People (SANDRP)
<http://www.sandrp.in/floods/> (accessed November 2010)

Thakkar, H. (2008b) ‘India’s manmade flood disasters: Why are we not bothered about accountability?’ South Asia Network on Dams, Rivers and People (SANDRP)
<http://www.sandrp.in/floods/> (accessed November 2010)

UDYAMA (2010) ‘Demonstrating community capacity to program and manage: Community disaster resilience fund (CDRF) in India’, submitted to National Alliance for Disaster Risk Reduction

Winchester, P. (2000) ‘Cyclone mitigation, resource allocation and post-disaster reconstruction in South India: Lessons from two decades of research’ *Disasters* 24 (1): 18-37

Wisner, B., Blaikie, P., Cannon, T. and Davis, I. (2004) *At risk: Natural hazards, people’s vulnerability and disasters*, Routledge, London

Appendices

Appendix 1: Infrastructural details of the eight sampled wards

Jagatsinghpur District's Erasama Block

Garia, ward 5 of Gadaharishpur Gram Panchayat, has 93 households in 2010. It is served by two handpumps, and has a government primary school up to class VII, after which children attend the privately managed but government acknowledged secondary school (classes VIII -X) that is housed in the Red Cross school-cum-cyclone shelter, built in 2000. The teachers of this secondary school are not paid by the government but by money raised via childrens' fees and by village donations and private donors. After studying to class X, successful children study at Goda College, located some 5 km away. The closest health centre is at Olarah, 4 km away. The nearest cooperative bank is 1.5 km away at Gadaharishpur *chakka* (there are two cooperative societies here, one private and one government), whereas the nearest commercial bank is the Indian Bank at Goda. There is no electricity supply for the scheduled caste population who constitute the majority – they are connected (ostensibly for free) but are being denied a current.

Shuakunda, ward 9 of Gadaharishpur Gram Panchayat, has 64 households in 2010. The three wards of Shuakunda (9, 10 and 11) have just one functional handpump located at the primary school in ward 10 – the handpump also serves the population of Ghasua and Patua wards (wards 12 and 13 of Gadaharishpur), and thus serves possibly 300 households. There have been attempts following the super-cyclone to sink another borewell though these have been unsuccessful and have only struck saline water. Post-1999 a water supply project brought piped water as far as Garia, to a large tank, however taps were never created and the water does not serve anyone in Garia Revenue Village (the neighbouring villages of Goda and Ahuri benefit from it though). Villagers complain that their school's one teacher (for classes I-V) rarely turns up (he actually commutes from Paradip), that he has misappropriated money allocated for school repairs and children's uniforms, and that their multiple complaints in this matter have fell on deaf ears. As a result of these absences the fifth grade students manage the younger children. The nearest secondary school, if a child can make it that far, is located at Garia, some 1.5 km away, whereas the closest college is also Goda. Shuakunda's population are served by the same cooperative and commercial banks, and health centre, as Garia's. There is no electricity as yet, and in December 2010 the villagers themselves were seen erecting poles for fear that if they did not do the work, electricity might not come to them for several more years.

Sahadabedi, ward 20 of Padmapur Gram Panchayat, has 78 households in 2010, served by two handpumps and its own primary school. It is 3 km from the nearest health centre, located at Olarah. The nearest college is at Goda, some 8 km away. The closest cooperative bank is 5 km away at Padmapur, though villagers also use the Gadaharishpur private cooperative society. The nearest commercial bank is at Goda, the Indian Bank. There is no electricity but recently electric poles have been erected. The villagers general condition is poor, they suffer many diseases and health problems, dowry torture cases seem common, as does exploitation by commercial banks such as the Goda Indian Bank.

Kalabedi, ward 21 of Padmapur Gram Panchayat, has two handpumps, and a primary school, besides which stands the newly completely anganwadi centre-cum-cyclone shelter. Its 95 households (in 2010) reside some 3km from the health centre at Olarah, 11 km from the college and commercial bank at Goda, and 5 km from the cooperative bank at Padmapur. As with Sahadabedi there is no electricity although recently poles have been erected.

Kendrapara District's **Garadpur Block**, in comparison to Erasama, seems well connected, its economy appears to be stronger, and it has a large and popular college at Korua *chakka*. This is verified by better infrastructural provision in the study wards.

Marilo, ward 2 of Tikanpur Gram Panchayat, has a population of 61 households in 2010 served by three handpumps and a water supply connection. It has been electrified. The primary and secondary schools are located at Tikanpur, some 2 km away. The primary health centre (PHC) and college are located at Korua, just 3 km away. Just recently the road to Marilo, which otherwise sits amidst farmland, has been renovated.

Behula's two wards, wards 9 and 10 of Tikanpur Gram Panchayat, comprise 99 households in 2010 and have three handpumps besides connectivity to a water supply system. The wards have been electrified, and the primary health centre and college at Korua are 5 km away. Behula lies on one of the main roads connecting Garadpur, the block headquarters, to Kendrapara town, the district headquarters. Its primary school also functions as a cyclone shelter, having been constructed post-1999 by Lutheran World Services.

Samsara Revenue Village's ward 6, in Patkura Gram Panchayat (Patkura is also the assembly constituency). The revenue village consists of two wards, ward 5 being socio-economically and politically stronger than ward 6. Ward 6, selected as a research ward, has 154 households in 2010, and has five handpumps but no water supply connection. It has electricity and a primary school, but its secondary school and primary health centre are located at Patkura, 2.5 km away. Korua College is 11 km from Samsara.

Jamunabad Revenue Village, ward 17 of Patkura Gram Panchayat, comprises Jamunabad and Gobandia hamlets, and has a population of 71 households in 2010. Jamunabad has two handpumps and Gobandia has one, and both hamlets have been electrified. Jamunabad has a primary school but the nearest secondary school and primary health centre are at Patkura, some 2.5 km away. Korua College is 12 km from Jamunabad. In 2009 the government had given 1700 rupees per household to an NGO to construct latrines, however the money was all misappropriated: the NGO claims it had given the money to the ward member, though he vehemently refutes this.

Appendix 2: Household survey format

See next page onwards

United Nations Development Programme (UNDP) – India
University of East Anglia – UK

Coastal Orissa Livelihoods and Disaster Management Research Project

Household Survey

Please explain to the respondent(s) that the information collected will be treated as confidential. Please ask them to be honest in their responses.

Date:

Enumerator Name:

Name [and ID code] of Respondent(s):

Household Code:

Ward No. and Name:

Revenue Village:

Gram Panchayat:

BPL Card Holder (Yes/No):

Caste:

Note: Answer questions using a code where given. A text box can be left empty only if a code box has been filled. Text can be added where necessary.

If a table is not applicable, write 888 in the first box. Rows in tables can be left empty, but only if the entire row is 'not applicable'.

If none of the stated codes matches the response, then the following codes can be used: 888 = not applicable, 777 = I don't know, 666 = other, specify.

A: BASIC HOUSEHOLD DATA

A1: Members of Household currently resident

ID	Name	Age (years)	Sex	Relationship to HH head of 2010		Current Education or Education attained		Main occupation	
	<i>Note: enter household head in top row, i.e. ID 1</i> Write name	Write age in years	1 = M 2 = F	<i>Note: enter household head in top row, i.e. ID 1</i> 1 = Head 2 = Wife / Husband 3 = Son / Daughter 4 = Mother / Father 5 = Brother / Sister 6 = Other Relative 7 = Non-Relative		1 = None 2 = Std I - II 3 = Std III - IV 4 = Std V - VI 5 = Std VII - IX 6 = Std X or X achieved 7 = Technical education 8 = Std XI - XII 9 = Std XII achieved 10 = Higher		1 = Pre-school child 2 = School 3 = Non-school child 4 = Housework plus some Farm work 5 = Farmer 6 = Fisherman 7 = Prawn cultivator 8 = Wage labourer 9 = Govt / Parastatal Employee 10 = Private Sector Employee 11 = Self-employed (Non-farm) 12 = Elderly / Pensioner / Disabled 13 = Unemployed 14 = Multiple jobs/livelihoods 15 = Other (specify)	
			CODE		CODE		CODE		CODE
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									

If more than 10 Household members, continue on back-side of sheet

A2: Total number of currently resident Household members:

Note: go to Cover sheet (page 1) and add ID code(s) from A1 besides the respondent(s) name(s) in brackets.

A: BASIC HOUSEHOLD DATA (cont.)

A3: Members of Household permanently or mostly away

Use codes and descriptions from table A1

ID	Name	Age (years)	Sex		Relationship to HH head of 2010		Current Education or Education Attained		Main occupation	
			CODE		CODE		CODE		CODE	
11										
12										
13										
14										
15										

If more than 5 family members permanently or mostly live away, continue on back-side of sheet

A4: Members of Household permanently or mostly away (same people as for question A3)

ID	When left	Time spent away	Current place of residence		Sends money home?		How often?		How much?	Year total
	Year Person Left	No. of Months Away	1 = In this district (name place) 2 = In Orissa (name place) 3 = In another state (name place) 4 = Abroad (name country)		1 = Yes 2 = No		1 = Each week 2 = Each month 3 = Quarterly 4 = Twice a year 5 = Once a year 6 = Very occasionally 7 = Never	Amount each time	Calculate Amount for the past 12 months <i>Note: ask this question directly, and enter the figure given by respondent</i>	
			CODE		CODE		CODE			
11										
12										
13										
14										
15										

A5: Total estimated Remittances in the past 12 months: Rs (Period from to)
Note, A5 should be completed even if A3 and A4 are not applicable (888)

A6: Total number of Household members (currently resident + mostly away):

A: BASIC HOUSEHOLD DATA (cont.)

A7: Please recall and tell us the members of your household resident at the time of the super-cyclone (1999):

ID	Name	Sex	Relation to HH head of 1999	Status in 2010 (the present)
	Write name <i>Note: ensure ID codes for household members tally with those in A1 and A3.</i>	1 = M 2 = F	1 = Head 2 = Wife / Husband 3 = Son / Daughter 4 = Mother / Father 5 = Brother / Sister 6 = Other Relative 7 = Non-Relative	1 = In current household (i.e. listed in Table A1 or Table A3) 2 = In separate household (i.e. not listed in Table A1 or Table A3) 3 = Expired (specify <u>year</u> and <u>reason</u> (illness, natural, or hazard/disaster))
		CODE	CODE	CODE
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				

For enumerator to complete (i.e. not to ask directly to respondent):

A8: When was the current household (A1+A3) formed, before or after the cyclone? (1 = Before / 2 = After)

A9: If the current household was formed after the cyclone (A8 = 2), in which year was it formed? (if A8 = 1, then A9 = 888)

B: ASSETS 1 – LAND

B1: Land owned and operated by the Household in the present (June 2009 to May 2010 agricultural year)

Note: ask the respondent first about agricultural land, then prawn cultivation, fish cultivation, and then homestead vegetable cultivation

Plot ID	Area	Ownership status	No. households co-operating the plot	Use of plot	Did you own or operate this plot before the cyclone (1999)?	Relative productivity of plot/crop compared to pre-cyclone period
	Area of each plot (in acres)	1 = Owned, Used 2 = Owned, Idle 3 = Owned, Rent-out Contract 4 = Owned, Rent-out, Share 5 = Owned, Rent-out, Bandha 6 = Rent-in, Contract 7 = Rent-in, Share 8 = Rent-in, Bandha 9 = Government land 10 = Other (specify)	No. of households	1 = Paddy, one crop 2 = Paddy, two crops 3 = Paddy + Pisciculture (fish) 4 = Paddy + Other crop 5 = Pisciculture (fish) 6 = Prawn cultivation 7 = Other crop (crop name) 8 = Rock salt production 9 = Uncultivable since cyclone 10 = Other (specify)	1 = Yes (fill next column on relative productivity, then go to B2) 2 = No (state year acquired and skip the next column)	1 = No production since cyclone 2 = Lower than before cyclone 3 = Same as before cyclone 4 = More than before cyclone 5 = Incomparable due to change in land use 6 = Incomparable due to change in seed type 7 = No production due to disturbance by road/culvert construction 8 = Other (specify)
		CODE		CODE		CODE
1						
2						
3						
4						
5						
6						
7						
8						

Notes:

Area: 1 acre = 100 decimals, and 1 guntha = 4 decimals

No. of households co-operating a plot: do not include co-owner if they do not share work or benefit

Use of plot: indicate use even if rented-out

B: ASSETS 1 – LAND (cont.)

B2: Land owned and operated by the Household before (1999) and after (2000) the 1999 super-cyclone

Ensure the plot IDs correspond with those in table B1. Include land owned in 1999/2000 which has since been sold.

Plot ID	Area	Ownership status		No. households co-operating the plot		Use of plot		Relative productivity of plot/crop in 2000 as compared to before the cyclone	
		1 = Owned, Used 2 = Owned, Idle 3 = Owned, Rent-out Contract 4 = Owned, Rent-out, Share 5 = Owned, Rent-out, Bandha 6 = Rent-in, Contract 7 = Rent-in, Share 8 = Rent-in, Bandha 9 = Government land 10 = Other (specify)							
	1999	1999	2000	1999	2000	1999	2000	After the cyclone (in 2000)	
		CODE	CODE			CODE	CODE	CODE	
1									
2									
3									
4									
5									
6									
7									
8									

B: ASSETS 1 – LAND (cont.)

B3: Household calendar for total land owned and/or operated and its use (from 1999 to 2009/2010)

Note: if A8 = 2, then draw a thick line partitioning the two different households according to the year stated in A9 (divide the table into 2 parts)

ID	Area under use (acres), and reason for change	1999 (before cyclone)	2000 (after cyclone)	2001 and 2002	2003 and 2004	2005 and 2006	2007 and 2008	2009 and 2010
1	Area owned under paddy cultivation (one crop)							
2	Reason (use code)							
3	Area owned under paddy cultivation (two crops)							
4	Reason (use code)							
5	Area owned under prawn cultivation							
6	Reason (use code)							
7	Area owned under paddy + other (specify)							
8	Reason (use code)							
9	Area owned and idle							
10	Reason (use code)							
11	Area rented-in for paddy cultivation							
12	Reason (use code)							
13	Area rented-in for prawn cultivation							
14	Reason (use code)							
15	Area rented-out							
16	Reason (use code)							
17	Other (specify)							
18	Reason (use code)							
19	Other (specify)							
20	Reason (use code)							
21	Total area <u>operated</u>							

Codes for B3: Reasons for change:

1 = No change 2 = Farm land spoiled by cyclone (saline water) 3 = Farm land converted to prawn cultivation 4 = Land sold 5 = Land rented-out
 6 = Land purchased 7 = Farm land recovered after saline water intrusion 8 = Received own land back (after renting-out) 9 = Divided land 10 = Other (specify)

B: ASSETS 1 – LAND (cont.)

B4: How do you pay for crop/prawn production costs in the present day? *Note: enter 1, 2 or 3 codes, as necessary*

Codes for B4:

- 1 = Using own earned money 2 = Exchange labour 3 = Loan from family / kin 4 = Loan from money lender
 5 = Formal farming credit (Kisan Credit Card) 6 = Loan from Bank 7 = Loan from Cooperative Society 8 = Other (specify)

B5: Household calendar for own rice consumption (number of months per year)

Note: if A8 = 2, then draw a thick line partitioning the two different households according to the year stated in A9 (divide the table into 2 parts)

ID	Consumption of own rice (number of months)	1999 (before cyclone)	2000 (after cyclone)	2001 and 2002	2003 and 2004	2005 and 2006	2007 and 2008	2009 and 2010
1	Code							
2	Text (no. of months as stated by respondent)							

Codes for B5:

- 1 = 0 months 2 = 0-3 months 3 = 3-6 months 4 = 6-9 months 5 = 9-12 months 6 = 12+ months (i.e. surplus)

B6: Household calendar for profitability of prawn production and sale

Note: if A8 = 2, then draw a thick line partitioning the two different households according to the year stated in A9 (divide the table into 2 parts)

ID	Profitability of prawn sale	1999 (before cyclone)	2000 (after cyclone)	2001 and 2002	2003 and 2004	2005 and 2006	2007 and 2008	2009 and 2010
1	Code							
2	Text (if any detail)							

Codes for B6:

- 1 = Did not pursue in year 2 = Lost money (loss) 3 = Broke even (recovered costs only) 4 = Small profit made 5. Good profit made

B7: If your household cultivated prawn before 1999, from which year did you first do so?

C: ASSETS 2 – LIVESTOCK AND OTHER NON-LAND BASED NATURAL RESOURCE RELATED ACTIVITIES

C1: Household calendar for livestock owned (or looked after) by the Household (from agricultural year 1999/2000 to 2009/2010)

Note: if A8 = 2, then draw a thick line partitioning the two different households according to the year stated in A9 (divide the table into 2 parts)

ID	Number of livestock (include young livestock), and reason for change	1999 (before cyclone)	2000 (after cyclone)	2001 and 2002	2003 and 2004	2005 and 2006	2007 and 2008	2009 and 2010
1	Cow (number of)							
2	Reason (use code)							
3	Bullock/Ox							
4	Reason (use code)							
5	Water buffalo cow/ox							
6	Reason (use code)							
7	Goat							
8	Reason (use code)							
9	Sheep							
10	Reason (use code)							
11	Chicken							
12	Reason (use code)							
13	Duck							
14	Reason (use code)							
15	Other (specify)							
16	Reason (use code)							

Codes for C1:Reasons for change:

1 = No change 2 = Birth 3 = Purchase 4 = Looking after other's animal 5 = Returned other's animal
 6 = Gave to other to look after 7 = Took back from other 8 = Death by disease/ natural 9 = Death by cyclone 10 = Sold off 11 = Other (specify)

C2: In the past ten years, have you ever given any of your livestock to another household to look after (Yes = 1 / No = 2):

C3: In the past ten years, have you ever received any livestock from another household to look after (Yes = 1 / No = 2):

C: ASSETS 2 – LIVESTOCK AND OTHER NON-LAND BASED NATURAL RESOURCE RELATED ACTIVITIES (cont.)

C4: Household calendar for fruit trees owned by the Household (from agricultural year 1999/2000 to 2009/2010)

Note: if A8 = 2, then draw a thick line partitioning the two different households according to the year stated in A9 (divide the table into 2 parts)

ID	Type of fruit tree	1999 (before cyclone)	2000 (after cyclone)	2001 and 2002	2003 and 2004	2005 and 2006	2007 and 2008	2009 and 2010
1	Coconut	No. owned						
2		Reason for change (use codes)						
3		Available for consumption (yes = 1, no = 2)						
4		Available for sale (yes = 1, no = 2)						
5	Mango	No. owned						
6		Reason for change (use codes)						
7		Available for consumption (yes = 1, no = 2)						
8		Available for sale (yes = 1, no = 2)						
9	Cashew	No. owned						
10		Reason for change (use codes)						
11		Available for consumption (yes = 1, no = 2)						
12		Available for sale (yes = 1, no = 2)						
Total number of trees								

Codes for C4: Reasons for change:

1 = No change

4 = Regeneration through replanting via NGO project

2 = Destroyed in cyclone

5 = Planting (unrelated to cyclone)

3 = Died by natural causes

6 = Other (specify)

Note: If production and availability of fruits is very less, then please write 'no' for availability for consumption

C: ASSETS 2 – LIVESTOCK AND OTHER NON-LAND BASED NATURAL RESOURCE RELATED ACTIVITIES (cont.)

C5: Other natural resource related Household activities (2009/2010)

ID	Type of activity	No. of household members pursuing	Number of months pursuing in year		Use of product	
		Write '0' if household is not pursuing	1 = Not pursue 2 = Up to 3 months 3 = Between 3 and 6 months 4 = Between 6 and 9 months 5 = Between 9 and 12 months 6 = 12 months (every week/month)		1 = Not pursue this activity 2 = Household consumption only 3 = Both consumption and sale 4 = Specifically for sale	
			CODE		CODE	
1	Sea fishing					
2	River fishing					
3	Pisciculture					
4	Rock salt production					
5	Firewood collection					
6	Cow dung collection					
7	Other (specify)					
8	Other (specify)					

C6: Household calendar for Pursuit of and Use of Product from other natural resource related Household activities

Note: if A8 = 2, then draw a thick line partitioning the two different households according to the year stated in A9 (divide the table into 2 parts)

ID	Type of activity	1999 (before cyclone)	2000 (after cyclone)	2001 and 2002	2003 and 2004	2005 and 2006	2007 and 2008	2009 and 2010
1	Sea fishing							
2	River fishing							
3	Pisciculture							
4	Rock salt production							
5	Firewood collection							
6	Cow dung collection							
7	Other (specify)							
8	Other (specify)							

Codes for C6:

1 = Not pursue this activity

2 = Household consumption only

3 = Both consumption and sale

4 = Specifically for sale

D: SOURCES OF INCOME OTHER THAN AGRICULTURE AND NATURAL RESOURCE BASED ACTIVITIES

D1: Household calendar for Household non-agricultural income (from agricultural year 1999/2000 to 2009/2010)

Note: if A8 = 2, then draw a thick line partitioning the two different households according to the year stated in A9 (divide the table into 2 parts)

ID	Type of Household livelihood, and reason for change (code)	1999 (before cyclone)	2000 (after cyclone)	2001 and 2002	2003 and 2004	2005 and 2006	2007 and 2008	2009 and 2010
1	Agricultural labour in village (Yes = 1, No = 2)							
2	Reason (use code)							
3	Agricultural labour outside of village (Yes = 1, No = 2)							
4	Reason (use code)							
5	Non-agricultural labour in village (Yes = 1, No = 2)							
6	Reason (use code)							
7	Non-agricultural labour outside of village (Yes = 1, No = 2)							
8	Reason (use code)							
9	NREGS (Yes = 1, No = 2)	Note: NREGS not introduced to Jagatsinghpur and Kendrapada until 2009						
10	Reason (use code)							
11	Self-employed (non-farm) inc. business (Yes = 1, No = 2)							
12	Reason (use code)							
13	Private sector employment in village (Yes = 1, No = 2)							
14	Reason (use code)							
15	Private sector employment outside of village (Yes = 1, No = 2)							
16	Reason (use code)							
17	Other (Yes = 1, No = 2)							
18	Reason (use code)							

Codes for D1: Reasons for change:

1 = No change 2 = Non-availability of work 3 = Availability of work 4 = Low pay rate 5 = Good pay rate
 6 = Introduction of new livelihood 7 = Took loan to start business 8 = Started receiving pension 9 = Became disabled / unable 10 = Other (specify)

D2: Does your household regularly receive cash/gifts from family members outside your household (Yes = 1 / No = 2)?

D3: Does your household annually receive rice (or other grains) from family members outside your household (Yes = 1 / No = 2)?

E: HOUSING

E1: Household's housing before and immediately after the cyclone:

Multiple codes and explanations are allowed where extra rows exist

ID	Question	Coding / Units	Answer	
			CODE	
1	What type of house did you have before cyclone?	1 = Kachha 2 = Pucca 3 = Both kachha and pucca		
2	How many living rooms did you have?	No. of rooms		
3	What damage was done to your house in the cyclone? <i>Note: if the house was kachha and pucca, and the damage to each was different, enter details for kachha house in top row and pucca house/room in bottom row</i>	1 = Destroyed completely 2 = Partly destroyed (wall damage) 3 = Roof damage (blown off) only 4 = Minor damage 5 = No damage		
4	Where did you live after (but not <i>immediately</i> after) the cyclone? <i>Note: two rows exist, in case the respondent lived in one place for several weeks, before living in another</i>	1 = In your own home / house, even though it may have been damaged 2 = In tent / temporary shelter on your own property 3 = In your family's home in village 4 = In a neighbour's home in village 5 = In a community building, e.g. a school 6 = Fled village to stay with kin outside of cyclone area		
5	If code 2-5 for above (ID 4), how many months did you live there? <i>Note: again two rows exist, to correspond with ID 4</i>	No. of months		

E: HOUSING (cont.)

E2: Housing assistance post-cyclone:

Multiple codes and explanations are allowed where extra rows exist

ID	Question	Coding / Units	Answer	
			CODE	
1	What type of house do you have now (2010)?	1 = Kachha 2 = Pucca 3 = Both kachha and pucca		
2	How many rooms do you have?	No. of rooms		
3	If you currently have an IAY or NGO-built/funded pucca house/room, in which year was it constructed?	State the year the pucca house/room was constructed <i>Note: this question is not concerned with IAY pucca rooms constructed before the cyclone</i>		
4	Who built or funded the pucca house/room?	1 = Government (IAY) 2 = NGO (specify NGO's name, e.g. CRS)		
5	What is the state of the pucca house/room now?	1 = Good/fine (used for living in) 2 = Moderate/manageable (used for living in) 3 = Poor condition (e.g. falling apart, but living in) 4 = Not living in and using for storing goods 5 = Useless and not being used		
6	If the Orissa government assisted you to rebuild your house, how much did they pay you?	Amount in Rupees	Rs	
7	If an NGO gave you assistance to rebuild your house, what was the NGO's name?	Name of NGO <i>Note: if two NGOs assisted you, please use both rows</i>		
8	If the NGO gave you construction material, specify type of material?	Specify material type <i>Note: the two rows correspond with the two rows in ID8</i>		
9	If you received (free) assistance from family or the community, please specify the type of assistance	1 = Labour 2 = Construction material 3 = Cash 4 = Other (specify)		
10	How else did you manage to rebuild your house?	1 = Using personal savings (specify amount) 2 = Money borrowed/given by family (specify amount) 3 = Bank loan (specify amount) 4 = Money borrowed from SHG (specify amount) 5 = Money borrowed from elsewhere (specify amount) 6 = Sale of assets, e.g. land, livestock (specify value) 7 = By earning money and with difficulty		
11	What is the state of your house now?	1 = Good/fine 2 = Moderate/manageable 3 = Poor condition (e.g. falling apart, but living in)		

E: HOUSING (cont.)

E3: On cyclones, housing, and cyclone shelters

ID	Question	Coding / Units	Answer	
			CODE	
1	What do you think would happen to your house if another super-cyclone was to occur?	1 = It is strong enough to take shelter in 2 = It is not strong enough to take shelter in		
2	If code 2 for above (ID 1), why do you think this?	1 = It would collapse 2 = It might collapse or parts would collapse		
3	How far away is the nearest cyclone shelter?	Kilometres		
4	If there was another super-cyclone, would you be able to go to that cyclone shelter?	1 = Yes 2 = No		
5	If you could not stay in your house, and could not go to a cyclone shelter, then do you have a place to go?	1 = Yes 2 = No		

F: GOVERNMENTAL PROGRAMMES AND SUPPORT

F1: Household receipt of government benefits/schemes (non hazard related) in the present (i.e. 2009/2010)

ID	Scheme name or entitlement	Interval receiving		Since when receiving	Is it regular?		Amount each time		
		1 = Not eligible 2 = Eligible but not receiving 3 = One-off 4 = Monthly 5 = Once every 3 months 6 = Once every 6 months 7 = Once every year 8 = Other (specify)	State year for both on-going and one-off schemes <i>(If not eligible, or eligible but not received, enter 888)</i>	1 = One-off 2 = Yes 3 = Yes, but cannot always afford 4 = No <i>(If not eligible, or eligible but not received, enter 888)</i>	If food item, write the amount in kg or litres actually received. If loan or pension, write the amount in Rupees	Specify the unit cost (in Rupees) per kg or litre	Specify the total amount paid (in Rupees)		
		CODE			CODE		UNIT		
1	Rice: BPL (specify scheme)								
2	Cooking oil: BPL								
3	Kerosene: Ration (Control) card								
4	Sugar: Ration (Control) card								
5	Safety latrines: BPL								
6	Mosquito Nets: BPL								
7	Priority Crop Loan from Cooperative Societies: BPL								
8	NREGS job card (apply via Sarpanch)								
9	Widow benefit/pension								
10	Disability benefit/pension								
11	Old age pension								
12	Other pension								
13	Other (specify)								

F: GOVERNMENTAL PROGRAMMES AND SUPPORT (cont.)

F2: Household receipt of relief/ex-gratia assistance from the government over the past ten years (hazard-related)

If the respondent's household was formed after the cyclone (A8 = 2), then information on the previous household (A7) should also be recorded

ID	Type of loss	Experienced type of loss?		Year of loss	Cause(s)		Relief: Amount received		Year received
		1 = Yes 2 = No 3 = No such asset		Write year in which loss occurred (If not experienced loss, write 888)	1 = Cyclone + tidal wave 2 = Cyclone – tidal wave 3 = Flood 4 = Heavy rain 5 = Fire 6 = Heat wave 7 = Lightning 8 = Other (specify)		Unit are: Rupees if payment Kg if paddy seed Kg if food Note: If amounts have been received for multiple losses, use one row for each loss		Year (If not received relief, write 888)
		CODE			CODE		UNIT		
1	Loss of a household member (name should have been given in A7)								
2	Permanent injury: loss of ability (specify: limb, eye)								
3	Damage to pucca house								
4	Damage to kachha house								
5	Damage to agricultural land								
6	Loss of standing crop								
7	Loss of means of livelihood (e.g. fishing nets)								
8	Other – specify								
9	Other – specify								

F: GOVERNMENTAL PROGRAMMES AND SUPPORT (cont.)

F3: Imagine you had the power to decide compensation. How would you distribute compensation for these different types of losses caused by a natural calamity?

Note: Show the respondent the picture card and give them the 33 proxy coins to distribute on the different boxes of the card. Then count the coins placed by the respondent on each box, and list below.

ID	Type of loss	Number of coins
1	Loss of one person's life	
2	Full disability of one person on account of loss of limbs/eye etc	
3	Full destruction of a <i>kachha</i> house	
4	Loss of one acre of land (it's fertility permanently damaged)	
5	Total number of coins	33

F4: How much money do you think the government should give as compensation for the loss of a person's life due to a natural calamity?

Estimate amount in rupees: Rs

F5: How do feel about your household's condition now in 2010 as compared with what it was like before the devastating 1999 super-cyclone?

Code for F5:

1 = Better 2 = Same 3 = Worse

F6: How satisfied are you with your life:

Code for F6:

1 = Very unsatisfied 2 = Unsatisfied 3 = Neither satisfied nor unsatisfied 4 = Satisfied 5 = Very satisfied

End of Household Survey (Thank Respondent(s), and reassure them the survey data is confidential)

Appendix 3: In-depth semi-structured interview schedule

A During the cyclone

- Did you receive early warning information that the cyclone was coming, and how did you prepare?
- Where did you seek shelter during the cyclone? (and how did you survive?)
- What about other household members?
- If you sought shelter at some house, who else was there? (how did you get on, if in regular times you would not normally go to such a house or be with those people?)
- What did you lose in the cyclone?

B Help received and denied after the cyclone (informal social protection)

- In the days after the cyclone where did you stay and what did you eat?
- Did you leave the village at all? Where did you go and when did you return?
- What is the first thing you did when you came back to your ward/house after the super-cyclone?
- What did you eat? How many times a day did you eat? Who cooked (if relevant)?
- What for you was the biggest difficulty immediately after the cyclone?
- Whom did you ask for help? What did you ask for (financial help or some other kind of assistance)? Was it obtained or denied? Had you ever sought help from this person/household before the cyclone? Did you ever ask this person/household for help again?
- Did anyone ask you for help? What did they ask for? (ask as above)
- Did this change your existing relationship in any way, either with this household or others in the village?
- Did you strike any new relations with others from different castes in the years afterwards? If so, was this due to the involvement of any outside agencies/actors?

C Relief after the cyclone

- Did your household receive relief from government and/or NGOs after the cyclone?
- What was provided (food, utensils, clothing)? How was it distributed, and over what time periods?
- How was it actually accessed/obtained? (Also ask where the relief was actually disbursed and the logistics involved in actually obtaining it (like for example if there was a community kitchen, who was actually running it?) Also if families relied on some household members to actually go to certain places or do certain things then that needs to be documented)
- If anyone was injured during the cyclone, did they receive treatment and from whom? Did any doctors come to your ward after the cyclone? If anyone was severely shocked/distressed, did they receive counselling?
- About specific compensation: who assessed the damage that you suffered? (lives lost, disabilities, housing, livestock, crops, land, tools/equipment) Do you think you were fairly assessed?
- Ask respondent more generally about their perception of relief delivery after the cyclone; this will probably bring out accounts of looting which is interesting. Ask also about any food-for-work programmes that might have taken place either right after the cyclone or in later months.
- What more could have been done to give relief fairly?

D Rebuilding of house

- What was the biggest hurdle you faced trying to rebuild your house?
- If assistance was received from the government, how was this calculated?
- Did other households receive the same assistance, and if not why?
- Tell us about the process of building your house?
- If an NGO assisted you (i.e. worked in your ward), how did they assist you and why do you think you were selected (how were you contacted)? Did everyone in your ward receive similar assistance? If not, then how did they feel about you receiving help? If an NGO did not help you, how do you feel about others having received help? Did the NGO advise you on how to maintain the house? If appropriate ask if people have had to suffer higher construction costs to keep up the maintenance of a pucca house given by any NGO or the government.

E Livelihoods

- If you farm land, tell us about its fertility and crop production post-cyclone?
- How has agriculture changed in this area post-cyclone (e.g. Borikena/ Balikuda, irrigation etc)?
- If you do prawn cultivation, tell us about how you started this, and what happened?
- If a member of your household migrates, when and why did they start doing so? How is life nowadays as a result of this migration?
- If you lost livestock during cyclone, tell us about the problems encountered in restocking your animals? Ask also about the challenges of looking after livestock even in regular times.
- How has your pursuit of other livelihoods (e.g. sea fishing) changed in the last ten years?

F Extended family networks/remittances

- Do you normally receive food grains from family members outside your household? What about cash? Has the extent of such help changed at all since 1999?
- Do you have any extended family members (daughter married off and living in town for example, uncles, cousins etc.) who live and work in towns? Do they support you in any way?
- Have you considered moving away from the village and relocating to urban areas with (or without) the help of extended family?

G Loan/indebtedness

- If you fall short of money, whom do you normally approach for help? What are the sorts of things that you borrow money for?
- What loans do you have? Have you ever received financial assistance from either the government or an NGO? Have you ever borrowed for your house, agriculture, prawn?
- Have you ever been a part of an SHG? What has been your experience?

H Government benefits

- If you are a BPL card holder, what benefits are you receiving?
- If you are unable to access certain benefits, what have you done about this? Whom have you spoken to? What was the response? Why do you feel you cannot do more?

I NREGA

- Have you got a job card for NREGS? If so, what did you have to do to get it? If not, what have you done to try to get one?
- Have you ever received any work as a part of NREGS? What have been your experiences (work conditions, duration, wages etc.)?
- Who do you think is responsible for the problems with NREGS?

J Relations with external actors

- Do you know the Sarpanch? Have you ever approached him/her? What was the response?
- Do you use the Anganwadi/ANM, and what is your experience of them?
- When you fall ill, to whom do you go? Have you used the hospital?
- Can you tell us how you involve yourself in the palli sabha?
- Can you tell us about your panchayat and village level worker?
- Have you ever gone to meet your BDO or Revenue Inspector?
- What is your experience with the police?
- What is your involvement with party politics/political parties? (Ask discretely) Are others in the village close to these actors?

K Caste in ordinary times

- What is your caste, and what castes live in this village?
- Is your house located in a separate hamlet for members of your caste or is housing interspersed?
- What about marital relations? Are there any inter-caste marriages in your family or extended family?
- Do you eat with members of other castes in the village in ordinary times?
- What do you think about casteism?

L Preparedness for a future cyclone

- Post-cyclone, have you taken any kind of insurance for your household members, housing, crops etc?
- Is there any kind of cyclone committee in your ward, in case a cyclone warning should be sounded? Is there any kind of protocol in place?
- If there was a warning of an impending cyclone, where would you go to seek shelter? If you were to seek refuge in a school cum cyclone shelter, how would entry to the shelter be managed: who would be allowed in and who would be refused?
- What sort of relief from the government would you expect if there were to be another cyclone?

M Final questions

- If you were to describe the major changes in this village since the super-cyclone in a few lines, what would these be?
- How do you compare your household's condition now in 2010 with its condition before the devastating 1999 super-cyclone (better, same, worse, and why)?

Appendix 4: Agriculture and agrarian relations

Agriculture in the agrarian state of Odisha, according to the Directorate of Agriculture, Government of Odisha, plays a pivotal role in Odisha's economy despite its small and direct share of the total gross domestic product (GDP): though the agriculture and animal husbandry sectors contribute just 22.6% of the net state domestic product (NSDP) in 2007-08 at current prices, these sectors provide direct and indirect employment to 70% of the state's workforce as per the 2001 census (GoO, 2009, 2010). Agriculture in Odisha continues to be characterised by low productivity due to traditional agricultural practices, inadequate capital formation and low investment, inadequate irrigation facilities and uneconomic landholding size. For these reasons the government has devised a new agricultural policy that it declares is 'futuristic and flexible'. Its plan includes improvements to input management – seeds, irrigation, fertilisers, farm mechanisation – alongside restoration of soil health, agricultural research and extension, horticulture, watershed development, organic farming, integrated farming (combining agriculture, horticulture, livestock, poultry, pisciculture etc) and post harvest management (GoO, 2008).

Land utilisation

The research sites fall within Jagatsinghpur and Kendrapara Districts, which comprise just 1% and 2% of Odisha's total area, yet together they account for some 4% of its net sown area (Table A4.1, source GoO, 2009). Agriculture is intense in the coastal districts – 58% and 55% of Jagatsinghpur and Kendrapara's total geographical areas are cultivated upon, compared to 36% of the entire state's geographical area. Forest cover is low in these districts (8% and 9%) compared to the state's total proportion under forest cover (37%). This relatively high proportion of land under cultivation and low proportion under forest cover heightens the vulnerability of agriculture and its dependent population to the effects of natural hazards.

Land utilisation categories	Jagatsinghpur	Kendrapara	Odisha (total)
Geographical area	167,000 (100%)	264,000 (100%)	15,571,000 (100%)
Forest area	13,000 (8%)	25,000 (9%)	5,813,000 (37%)
Miscellaneous trees, groves	4,000 (2%)	5,000 (2%)	342,000 (3%)
Permanent pasture	7,000 (4%)	8,000 (3%)	494,000 (3%)
Cultivable waste	6,000	6,000	375,000
Land put to non-agricultural use	13,000	49,000	1,298,000
Barren and uncultivable	13,000	5,000	840,000
Current and other fallow	14,000	22,000	805,000
Net sown area	97,000 (58%)	144,000 (55%)	5,604,000 (36%)

Table A4.1: Land utilisation statistics (hectares), 2008-09, for the research sites' districts and Odisha

Crop coverage and production

In the *kharif* season 97% of the total cropped area is covered with paddy and vegetables, in both Jagatsinghpur (88% rice, 9% vegetables) and Kendrapara (91% rice, 6% vegetables). *Kharif* paddy includes both *saradh* and *biali* paddy, grown on lowlands and higher lands, and for longer and shorter periods, respectively. Besides paddy, other *kharif* crops include other cereals, pulses, oil seeds,

vegetables, fibres and spices. In the *rabi* season, after paddy has been harvested, a second crop of paddy (known as *dalu*), other cereals, pulses, oilseeds, vegetables, spices and sugar cane are all sown to varying proportions (Table A4.2, source GoO, 2009). Jagatsinghpur (4%) and Kendrapara (6%) together sow and harvest 10% of Odisha's *rabi* season pulse (chiefly green and black gram), not an insignificant amount considering that these pulses form an important part of the Odiya population's staple diet. Similarly, some 11% of Odisha's spices are produced in the research districts during the *rabi* season. Second crops are prevalent in coastal Odisha precisely because the region is deltaic, thus fertile. However in the first research site, Erasama, upon most of the land paddy is mono-cropped, i.e. there is no second crop, because of proximity to the sea, lack of irrigation facilities, and high salinity levels. Inland just 20 km or so (for example, at Borikina and Balikuda), double cropping is practised.

Kharif and rabi cropped area		Jagatsinghpur District	Kendrapara District	Odisha (total)
Kharif	Rice	88,200 (88%)	138,000 (91%)	4,123,640
	Other cereals	140	340	420,370
	Pulses	290	40	738,010
	Oilseeds	40	0	416,120
	Vegetables	9,070 (9%)	8,140 (6%)	290,930
	Fibers	40	3,310	97,300
	Spices	2,160	2,100	74,030
	Total cropped	99,940	151,930	6,160,400
Rabi	Rice	2,850	5,020	330,970
	Other cereals	230	610	36,280
	Pulses	49,520	75,780	1,262,700
	Oilseeds	13,220	13,280	412,100
	Vegetables	11,070	11,620	379,120
	Spices	3,350	4,440	73,280
	Sugarcane	610	370	37,940
	Total cropped	80,850	111,120	2,536,420
All year	Fruits	5,570	5,400	373,800
Gross cropped area		186,360	268,450	9,070,620

Table A4.2: Kharif and rabi cropped areas (hectares) for the research sites' districts and Odisha

Cropping intensity is 192% and 186% for the districts of Jagatsinghpur and Kendrapara respectively, compared with 162% for Odisha¹¹². Jagatsinghpur has a gross cropped area of 186,000 hectares and a net sown area of 97,000 hectares, and Kendrapara has a gross cropped area of 268,000 hectares compared with a net sown area of 144,000 hectares. High yielding varieties of paddy are sown on 80% of the area under *kharif* paddy (70,670 out of 88,200 hectares) and 100% of the area under *rabi* paddy (2,850 hectares) in Jagatsinghpur, and 58% of the area under *kharif* paddy (79,660 out of 138,000 hectares) and 100% of the area under *rabi* paddy (5,020 hectares) in Kendrapara, compared with 75% of Odisha's total paddy *kharif* crop and 100% of its total *rabi* crop¹¹³. The yield rate of paddy is low in Odisha. Data for 2006-07 shows an Odisha average yield rate of 1557 kg per hectare

¹¹² Cropping intensity (%) is the gross cropped area divided by the net sown area.

¹¹³ It seems dubious that 100% of all paddy sown in the *rabi* season is HYV. However this may be correct.

(6.3 quintal per acre), some 73% of the all-India yield rate of 2131 kg per hectare (8.6 quintal per acre). Other nearby states' average yield rates are: Bihar 1486, West Bengal 2593, Andhra Pradesh 2984, and Jharkhand 1828 kg per hectare¹¹⁴.

It is interesting to observe that although Odisha is a paddy (the staple food) surplus state (producing 8.17 *lakh* tonnes of rice, 2008-09), the district of Jagatsinghpur has hardly a surplus (0.04 *lakh* tonnes) and Kendrapara produces a deficit (-0.13 *lakh* tonnes rice) (Table A4.3, source GoO, 2009: 79). This fits with field research findings that show few households produce a surplus.

Calculation details		Jagatsinghpur	Kendrapara	Odisha (total)
Projected population (in <i>lakh</i>)		11.90	14.65	415.34
Adult equivalent (88%)		10.47	12.89	365.50
Consumption requirement (<i>lakhtonnes</i>)		1.53	1.88	53.36
Total requirement (<i>lakhtonnes</i>)		1.75	2.15	60.99
Production	Kharif (<i>lakhtonnes</i>)	1.73	1.92	60.92
	Rabi (<i>lakhtonnes</i>)	0.06	0.10	8.24
	Total (<i>lakhtonnes</i>)	1.79	2.02	69.16
Surplus/ deficit	Rice (<i>lakhtonnes</i>)	0.04	-0.13	8.17
	Paddy (<i>lakhtonnes</i>)	0.06	-0.19	12.19

Table A4.3: Marketable surplus of rice, for research sites' districts and Odisha, during 2008-09

Fertiliser and seeds

Fertiliser consumption is stated to be 68 kg per hectare (27.5 kg per acre) in Jagatsinghpur and 37 kg per hectare in Kendrapara (15 kg per acre), compared with 59 kg per hectare for the state. The rate is slightly lower for the research districts if one considers total cropped area, and slightly higher for the state (65, 35 and 62 kg per hectare, respectively). This compares with an Indian national average of 113 kg per hectare. The Odisha State Seeds Corporation (OSSC) distributes seeds to farmers. The seed replacement rate is currently just 10% (GoO, 2008). The data shows that 6980 quintals of paddy seed was distributed in Jagatsinghpur's *kharif* season, and 1193 quintal in the *rabi* season, compared with 5303 and 1222 quintals in Kendrapara's *kharif* and *rabi* seasons respectively. Seeds of black gram (*biri*, or urad dal), green gram (*muga*, or mung dal) and groundnut (peanut) among others are also distributed. In the Garadpur site, farmers stated and a block official confirmed that groundnut seed being delivered to the block had been commandeered by locally powerful businessmen, who would go on to sell it themselves.

Farm mechanisation and irrigation

The state agricultural department is promoting and monitoring farm mechanisation; and large subsidies are being offered to farmers for their purchase of modern technology such as tractors and power tillers. For example, tractors are subsidised at half their cost, the subsidy limited to a maximum of 90,000 rupees. Irrigation data exists, however the selected research wards cannot be said to have assured irrigation facilities (Section 3.2), so it is of little worth presenting statistics.

¹¹⁴ District-wise data is available for area sown, yield rates and production of all crop types, see GoO, 2009

Characteristics of the research districts' populations

Scheduled castes are highly represented in the research districts, at 21% of the total population, as compared with 17% of Odisha's entire population (Table A4.4). The coastal districts are densely populated, with Jagatsinghpur District being the second most densely populated of Odisha's districts, at 634 persons per square kilometre (only Khordha District, containing the capital Bhubaneswar, has a higher density at 667). Kendrapara is the seventh most highly populated district in Odisha, following other coastal districts, having 492 persons per square kilometre. Literacy is highest in Odisha's coastal districts; Jagatsinghpur has the second highest literacy rate in Odisha (79.08%), after Khordha District (79.59%), and Kendrapara has the fourth highest literacy rate (76.81%) after Puri District, which is in third place (77.96%).

Population data	Jagatsinghpur District	Kendrapara District	Odisha (total)
Total population	1,058,000	1,302,000	36,804,000
Scheduled castes	223,000	267,000	6,082,000
Population density per km ²	634	492	236
Population decadal growth	13.26	13.27	16.25
Literacy rate	79.08	76.81	63.08

Table A4.4: Population data for the research sites' districts and Odisha, census 2001

Landholdings categories

The Directorate of Agriculture and Food Production, Government of Odisha use the following categories for farmers: marginal (less than 1 hectare), small (1-2 ha), semi-medium (2-4 ha), medium (4-10 ha), and large (over 10 ha). These categories shall therefore be used in this report. Jagatsinghpur and Kendrapara have an average size of landholding per farming household of 1.03 hectares (2.5 acres) and 1.11 hectares (2.7 acres), respectively, compared with the Odisha average of 1.25 hectares (3.1 acres) (Table A4.5). 63% of Jagatsinghpur's farming households have marginal holdings (i.e. less than 2.5 acres), as do 60% of Kendrapara's (compared with 56% of all farmers in Odisha). Another 25% and 26% of farmers have small landholdings (i.e. between 2.5 and 5 acres) in Jagatsinghpur and Kendrapara, compared to 27% of farmers at the state level. Thus 88% and 86% of farmers have less than 2 hectares in the districts, compared to 83% of farmers at the state level. Only a tiny proportion of farmers own over 4 hectares (10 acres): some 1.6% and 2.3% of farmers respectively, for Jagatsinghpur and Kendrapara.

Agricultural credit

Under Odisha's 'agricultural credit plan', targets were set to distribute 3224.19 crore rupees worth of crop loans in 2008-09, and some 2614.18 crore rupees were distributed (81% of the target), 64% in the *kharif* season and 36% in the *rabi* season. 85.95 and 79.56 crore rupees worth of crop loans were targeted to farmers in Jagatsinghpur and Kendrapara, respectively, however the achievement fell significantly short of this in Jagatsinghpur, at 53.03 (just 62% of the target), though did extremely well in Kendrapara at 75.45 (95%) (GoO, 2009: 29). These statistics tie with the project's findings, which show agricultural credit to be available but hard to access for many households (Chapter 4). It is worth pointing out that the presentation of statistics by Odisha state departments is always in financial terms, rather than in terms of numbers of households covered: numbers alone are of little use for assessing progress, whether the subject is cyclone shelters or crop loans.

The Government of Odisha provides interest subvention support to cooperative banks to enable them to give credit to farmers at a low rate of 7% interest (GoO, 2008). In the Garadpur site, the bank manager of ‘Patkura Co-operative Society’ (Cuttack) told us that by 2009-10, the interest rate has become as low as 3%¹¹⁵. Farmers use their Kisan Credit Cards (KCC) to collect credit at cooperative societies.

Landholding category		Jagatsinghpur District	Kendrapara District	Odisha (total)
Marginal (<1 ha)	No.	74,105 (63%)	75,914 (60%)	2,294,520 (56%)
	Area	38,427	37,674	1,155,145
Small (1-2 ha)	No.	29,625 (25%)	33,521 (26%)	1,113,599 (27%)
	Area	41,309	46,043	1,543,709
Semi-medium (2-4 ha)	No.	11,320 (10%)	14,689 (12%)	500,531
	Area	29,862	39,709	1,344,201
Medium (4-10 ha)	No.	1,720 (1.5%)	2,780 (2.2%)	145,110
	Area	9,344	15,082	817,591
Large (>10 ha)	No.	114 (0.1%)	116 (0.1%)	13,375
	Area	1,535	1,935	220,387
All sizes	No.	116,884	127,020	4,067,135
	Area	120,477	140,443	5,081,033
Average size of holding		1.03	1.11	1.25

Table A4.5: Number of farmers by landholding for the research sites’ districts and Odisha, 2000-01

Crop insurance

Crop insurance is a way farmers can overcome the uncertainties posed by natural and man-made calamities. The Rashtriya Krishi Bima Yojana (RKBY) is being implemented in the state since the 1999-2000 *rabi* season. It is compulsory for farmers taking agricultural loans and optional for those not taking loans. In the *kharif* season insurance may be taken to cover paddy, maize, groundnut, jute etc, and in the *rabi* season insurance can be taken to cover paddy, groundnut, mustard and potato.

In Odisha in 2008-09 55,900 farmers benefitted from crop insurance in the *kharif* season and 44,300 farmers benefitted in the *rabi* season, being paid compensation of 30.35 and 8.37 *crore* rupees, respectively. In those respective seasons, some 611,000 and 162,000 farmers were covered (i.e. paid the premium), meaning some 9% and 27% of farmers who paid the premium had a loss and received compensation. The RKBY fell short of covering its own costs in 2008-09, which is unsurprising given the enormity of the 2008 floods. Farmers were insured for a total of 1093.0 *crore* rupees in 2008-09 by paying a total premium of 26.75 *crore* rupees, however the total payout was 38.72 *crore* rupees, larger than the collected premium.

¹¹⁵ 9% is the interest rate, with a 2% subvention by the central government, a 2% subvention by the state government, and now a further 2% subvention give by the state government, bringing the interest rate down to 3%. This final 2% is provided only if the farmer repays the loan within the stipulated period (25 March for a *kharif* season loan, and 25 June for a *rabi* season loan), and is rebated to the farmer’s account.

The bank manager of the Garadpur-based cooperative society informed us that the loan waiver scheme has been operational since the 2008 flood. The insurance company is the National Agricultural Insurance Corporation (NAIC), the namesake of the scheme (National Agricultural Insurance Scheme/RKBY)¹¹⁶. Simply put, a farmer pays a 2.25% insurance premium for their paddy loan, and to this the government adds 2.25%, totalling 4.5%, so for a 1000 rupees loan, the farmer will have to repay 1022.5 rupees, but if in the meantime disaster strikes and the crop is destroyed, the farmer may have some 80% of his loan waived. This 50% premium subsidy is available for small and marginal farmers only, i.e. those farmers having below 2 hectares of land.

Agricultural research and extension

Within Jagatsinghpur and Kendrapara Revenue Districts there are two and three agricultural districts respectively: Erasama Block comes under Tirtol's District Agricultural Office (along with Tirtol and Kujanga Blocks) and Garadpur Block comes under Marshaghai District Agricultural Office (along with Mahakalapada and Marshaghai Blocks). The farmers' point of contact with government agricultural officers is the block agricultural officer (Chapter 4.3), so for the Erasama and Garadpur research sites farmers must travel to Erasama and Garadpur Blocks, respectively, to receive advice and/or to purchase seeds and fertilisers.

There are programmes being run in villages on a trial basis, such as System of Rice Intensification (SRI), though these programmes had not been initiated in the selected research villages. Research institutes such as Orissa University of Agriculture and Technology (OUAT), Bhubaneswar and Central Rice Research Institute (CRRI), Cuttack, are working to develop suitable seeds for the differing agro-ecological situations of the state. Agricultural Technology Management Agencies (ATMAs) are operating in each of Odisha's states. In 2010 the Ministry of Agriculture has announced that there soon will be 'radical changes' to the agricultural extension services in Odisha, with extra staff to be placed at district and block levels, and more village agriculture workers (VAWs) to be appointed¹¹⁷.

¹¹⁶ See <http://www.indg.in/agriculture/schemes/nationalagriculturalinsurancescheme> for more details.

¹¹⁷ 'Radical changes coming in the agri extension services', New Indian Express, Bhubaneswar, 08/11/2010.