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Kosi Floods 2008

How we coped! What we need?

Perception Survey on Impact and Recovery Strategies

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FOREWORD

As part of the United Nations Development Programme's (UNDP) contribution to disaster risk reduction and recovery endeavours in India, I am pleased to present: Kosi Floods 2008: How We Coped? What We Need? Perception Survey on Impact and Recovery Strategies.

This report is a primary survey about the views and perceptions of the people affected by floods in the eastern Indian state of Bihar, in 2008, following the breach of the embankment of the Kosi river. It aims to highlight existing local capacities, knowledge and skills of women and men, with regard to coping mechanisms; and documents their requirements and preferred recovery strategies.

The survey was conducted between October and December 2008, covered 800 households and an additional 200 respondents in relief camps in the five most-affected districts of *Araria, Saharsa, Supaul, Madhepura* and *Purnia*, by the Institute of Human Development it has benefited from their vast experience and understanding of the socio-economic conditions prevailing in Bihar.

Disasters are quick to strike but their effects take very much longer to overcome. The extent to which their effects increase existing inequalities is dependent to a significant extent on how governments and other actors integrate human development into preparedness and response. In this context, the shift in the approach led by the Government of India, to integrate disaster mitigation into the development process is a step in the right direction.

This shift assumes importance as India is traditionally vulnerable to natural disasters, on account of its unique geo-climatic conditions; with over 40 million hectares being prone to floods. This perception survey demonstrates an important method of proactive consulting with women and men, affected by floods, to devise methods of sustainable disaster risk management, based on their experiences and requirements.

I hope that this perception survey, that has been enriched with important contributions from the women and men in the flood affected districts will prove to be a useful resource for administrators and institutions involved in disaster management.

Deirdre Boyd
Country Director

ACKNOWLEDGEMENTS

This study is an outcome of the collaborative efforts of the United Nations Development Programme (UNDP) and the Institute for Human Development (IHD). I am grateful to Ms. Deirdre Boyd, Country Director of UNDP, New Delhi, for giving IHD the opportunity to conduct such an important study. She not only took keen interest in it, but also gave valuable inputs to the research design. I am likewise thankful to Dr. K. Seeta Prabhu, Ms. Meenakshi Kathel and Dr. K.S. Vatsa of UNDP for providing their support. Their valuable inputs and experience shared enriched the study and was particularly useful at the questionnaire development phase. The help from other UNDP officials (in the study districts), who supported us directly during fieldwork, is also gratefully acknowledged.

I would like to record my heartfelt thanks to Dr. Gerry Rodgers, for his invaluable support throughout. He not only helped in conceptualizing the study and developing the questionnaire but also participated briefly in fieldwork. Most importantly, he assisted considerably in analysis of the field data and provided extremely valuable comments on the draft We are thankful to International Labour Organisation (ILO) for providing Gerry Rodgers services for this work.

Immense thanks are due to Dr. Sunil Kumar Mishra, Mr. Tawheed Reza Noor and Ms. Sonia Sultana Ashrafee for their contributions in analysis and drafting parts of the report. Dr. Sunil Mishra also managed the data processing in a very short time, for which he deserves special appreciation.

The team of research investigators and supervisors deserve our great appreciation for conducting very difficult fieldwork. In several cases, they had to reach villages either on foot or by boat, given that roads were damaged or waterlogged. I especially thank Dr. Ramashray Singh, Mr. Ashwani Kumar, Mr. S.D. Choudhary, Mr. Subodh Kumar, Mr. Vijay Prasadh, Ms. Shashi Gupta and Mr. B.N. Singh all the field supervisors for managing the fieldwork and ensuring quality in the information.

I would like to thank Dr. Krishnamurty and Mr. Navin Chandra, for going through the draft report and providing comments. The valuable help of my colleague Mr. C. Upendranadh was very important in completing this study. Apart from other support, he also contributed to the analysis and drafted a part of the report.

The support received from the IHD administration needs to be acknowledged, especially that of Mr. S.P. Sharma for typesetting. I am also thankful to Ms. Shashikala Menon, for editing the draft and improving it.

Last but not least, preparing this report would never have been possible if the villagers from the affected areas had not spared their valuable time and wholeheartedly cooperated and responded to queries. We are immensely grateful to them for their time and hope that they will soon be able to overcome the miseries.

January 2009

Alakh N. Sharma
Director
Institute for Human Development

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LIST OF ABBREVIATIONS

AAY	Antodaya Anna Yojana
APL	Above Poverty Line
BDO	Block Development Officer
BPL	Below Poverty Line
FGD	Focus Group Discussion
FHHs	Female-Headed Households
HHS	Household Survey
IAY	Indira Awaas Yojana
IHD	Institute for Human Development
MHHs	Male-Headed Households
NGO	Non-Government Organization
NREGS	National Rural Employment Guarantee Scheme
OBC I	Other Backward Caste I
OBC II	Other Backward Castes II
PDS	Public Distribution System
SCs	Scheduled Castes
SDO	Sub-Divisional Officer
SHG	Self-Help Group
SSB	Seema Suraksha Bal
STs	Scheduled Tribes
UNDP	United Nations Development Programme

EXECUTIVE SUMMARY

The massive Kosi River floods of August 2008 caused unprecedented loss to lives, livelihoods, infrastructure and property in north-eastern Bihar. Although floods have been a recurring feature in parts of the state, the 2008 floods were not usual. The Kosi burst its embankments and changed course, inundating areas of Bihar that had not experienced such flooding for half a century. About 1,000 villages in five districts (*Araria*, *Madhepura*, *Purnia, Saharsa* and *Supaul*) were affected, involving three million people, of whom about one million were evacuated.

This perception survey was conducted to document the experiences of affected groups; explore the extent of damage at village and household levels; document impacts on shelter, access to food, water and sanitation, health and education, and livelihoods; identify coping mechanisms of people belonging to different social and occupational groups; and document potential recovery mechanisms as suggested by people. A total of 40 broadly representative villages were surveyed, as well as 820 sample households, of which 377 respondents were women; another 200 respondents from relief camps were selected. Focus Group Discussions (FGDs) were held with people belonging to various social groups in 20 out of 40 villages, where household surveys were not conducted.

Since most affected households had not experienced floods for several decades, they were not prepared to respond quickly, which resulted in more loss of life and property. The State also was not prepared to deal with a catastrophe of this magnitude. A large number of households did not wait for the Government or outside agencies to evacuate them to safer places, but used their own means.

The study findings suggest that nevertheless the Government played a significant role in rescue and evacuation operations. Government camps, even with minimal facilities, were seen as important and were appreciated because they provided food and shelter. No discrimination was found in disbursement of relief assistance (foodgrains, cash, medicines, clothes) across social groups, including to Scheduled Castes, Muslims and Other Backward Castes. Likewise, very few instances of corruption were reported during the FGDs. On the whole, Government relief was well targeted and managed.

Both the local economy and livelihoods were severely disrupted, and there was massive damage at both village and household levels. Among villages, the losses were focused on roads, public infrastructure, and electricity and irrigation systems, while at the household level, the losses were more in terms of lives, livestock, agricultural operations and employment opportunities. Ill health also contributed to loss of livelihoods.

Almost all households, across social groups (93 percent), reported income losses of more than 50 percent during the first three months after the floods, a very significant observation given that most of the affected people eke out their living by casual labour and agricultural work. Households across social groups also reported the loss of work implements, household goods, stored food, and other items, rending them completely dependent on the Government for relief and rehabilitation.

The valuation of houses damaged stands at around Rs. 880 crores (US$ 195 million). Enormous amounts of goods were lost, including foodgrains and domestic items worth Rs. 400 crores (nearly US$ 88 million) and Rs. 155 crores (US$ 34 million) respectively.

Table A: Estimated Losses in the Affected Region, due to Kosi Floods

	(Rs. crores)
Value of houses lost	880
Value of foodgrain lost	400
Value of livestock lost	390
Value of domestic items lost	155
Value of agricultural implements lost	75
Value of other losses (crops, trees)	60

Coping and Recovery Strategies

Households adopted several short-term coping mechanisms, including finding temporary shelter, selling assets, withdrawing children from school and engaging them in work (if any), reducing household food portions, using stored foodgrains, and resorting to drinking contaminated water. Short-term migration, particularly to sites outside Bihar, proved a key coping mechanism. Other coping mechanisms dependent on external support included food and cash relief to buy food, chlorine tablets to purify drinking water, attending existing medical facilities, and relief for restoring livelihoods.

Key longer-term recovery strategies identified by affected people included Government support for rebuilding their houses, through Indira Awaas Yojana (IAY) provision of land to the landless for house construction and of loans at cheap interest rates/compensation for house damage; continuation of short-term Government assistance (food or cash); creation of employment; and provision of food at a subsidized price through the public distribution system (PDS). Also suggested were repair of non-functional tubewells and installation of adequate numbers of tubewells with appropriate depth; provision of more healthcare facilities in villages; connecting schools with high-quality roads; provision of midday meals to schoolchildren; and reconstruction or renovation of schools, irrigation and electricity systems, embankments, roads and bridges.

In particular, cultivators suggested the provision of subsidies and moratoriums on payment of debt; effective steps for land improvement though National Rural Employment Guarantee Scheme (NREGS); Government construction/repair of irrigation systems; supply of fertilizers and pesticides at subsidized rates; free distribution of diesel-pump sets; compensation for lost crops, shelter and assets; provision of crop insurance; and waiver of loans for flood-affected farmers. Among labour and artisan households, suggested strategies included reconstruction of destroyed/damaged houses; provision of subsidized loans for establishing small enterprises or shops; encouragement of activities such as piggery, animal husbandry and poultry; life insurance for the poor and landless as well as people with disabilities; encouragement of income generating activities; and extensive, effective implementation of NREGS. For women, suggested strategies included implementation of NREGS on a large scale; provision of debt relief and credit at low interest rates; provision of training for microenterprises; and formation of Self-Help Groups (SHGs).

Chapter 1

Introduction

Chapter 1

INTRODUCTION

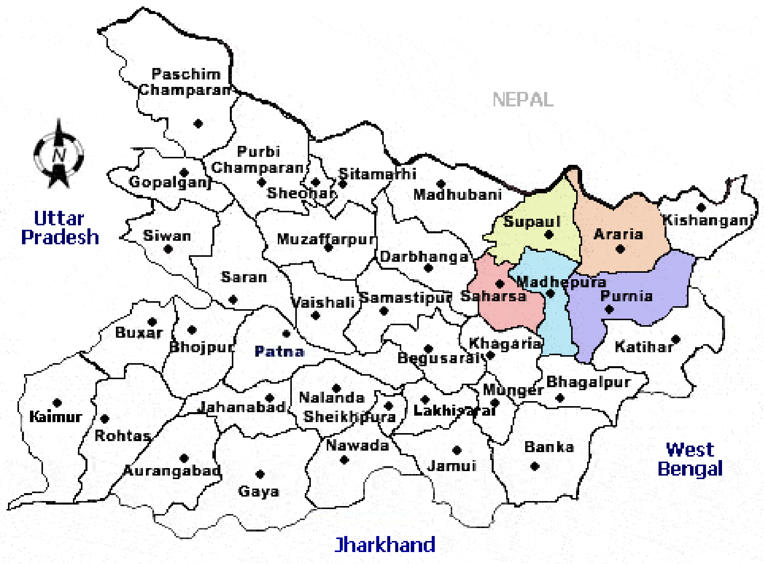
1.1 Context

The massive Kosi floods of 18 August 2008, caused by an extensive breach in the Kosi River, caused unprecedented loss to lives, livelihoods, infrastructure and property in north-eastern Bihar. Although floods have been a recurring feature in Bihar, these floods were not usual. The Kosi River, coming from Nepal in the north, burst its embankments, causing the river to change course and affecting areas of Bihar that had not experienced such floods for at least half a century. The floods caused widespread devastation and displaced more than one million people in the five districts of *Supaul, Madhepura, Araria, Saharsa* and *Purnia*, with the first three districts being most severely affected. Overall, about three million people in 1,000 villages of 35 blocks were affected. Provision of relief for flood victims has been satisfactory, including the setting up of relief camps primarily by the Government; however, apart from loss of shelter and property the floods also have long-term implications for the affected villages, with the fear that vast areas of agricultural land may become infertile for years.

This survey assesses the impact of the floods impact on various aspects of livelihoods and assists in formulating livelihood strategies for recovery and reconstruction of the affected population and locations. In particular, it analyzes the impact on (i) shelter, health and sanitation, and access to food; (ii) means of immediate and long-term employment and earnings, such as cultivable land, livestock, fisheries and businesses; (iii) on the most vulnerable groups, and (iv) coping strategies adopted by affected men and women for recovery.

1.2 Methodology

This survey is based on an extensive survey of over 40 representative villages in the five affected districts. Depending upon the extent of flooding in a district, 10 blocks were selected from a list of affected blocks prepared by the Bihar Government and UNDP personnel; selected blocks were verified by the research team through field visits. Three blocks each were selected in *Supaul* and *Madhepura* (most affected districts), two in *Araria* and one each in *Purnia* and *Saharasa* (partially affected districts). From each block, four villages were randomly selected; out of these, two were chosen for detailed household study and two for FGDs. Detailed village level data and information were collected from all 40 villages. The list of selected blocks and villages is given in Annexure Table 1.



Boundaries of Districts are as per Survey of India Map and are for Indicative purposes only

Photo © UNDP India

The survey adopted three types of survey instruments village schedule, household schedule and checklists for FGDs.

(i) Village Schedule

Major village level information captured in the village schedule includes land use and cropping patterns, labour use patterns, migration structure, loss of village infrastructure and overall impact of floods on the village economy. A pre and post-flood comparison also was made. Most data and information were collected from key informant groups and knowledgeable persons, such as the village *sarpanch* and local teachers, while some came from village and panchayat offices.

(ii) Household Survey

The household survey undertaken in 20 villages (two each from each block) covered 820 households, with 40 to 42 households from each sample village. These households were selected proportionately, on the basis of a circular systematic sampling method, from Above Poverty Line (APL) and Below Poverty Line (BPL) households[1]. In the household survey, a large number of respondents from the sample households were women – 377 women in 820 households. In addition to these households, another 200 randomly chosen people were surveyed from three selected relief camps, one each from *Madhepura* (70 respondents), *Araria* (65 respondents) and *Supaul* (65 respondents) districts. This was done in November 2008, almost at the end of the household survey, when most camps were closing. Major aspects covered in the household survey include employment structure of household members, ownership and loss of assets, borrowing strategy and coping mechanisms. Several sections in the questionnaire contained questions on the situation before and during the floods.

iii) Focus Group Discussions

FGDs were carried out with various groups from 20 villages, where the household survey was not conducted. Groups included agricultural labourers, marginal and small farmers, medium and large farmers, people involved with non-agricultural activities (such as artisans or barbers), and women. Some members of each group also were women. In identifying participants, caution was taken to ensure that they were roughly of the same socio-economic group or had a similar background in relation to issues under investigation. Age and sex composition also were taken into account. Major questions covered diverse areas including shelter, access to food, water and sanitation, health and overall livelihoods. Each discussion explored the impact of the floods, coping mechanisms and recovery strategies. In many cases, it was difficult to segregate different occupational groups, given the multiplicity of occupations within households.

The study particularly emphasized the inclusion of women and vulnerable groups such as Scheduled Castes (SCs), OBCs and minorities. It was ensured that these groups actively participated in FGDs as well as the village schedule. Finally, the stratification of households into APL and BPL, for the purpose of sample selection, also facilitated the inclusion of vulnerable groups in sample households.

1.3 Timeframe and Team Composition

This study was carried out during October and December 2008, with rigorous fieldwork began in November and lasted about a month. A four member research team was constituted supported by 35 field investigators, (including 12 women). These women investigators conducted the interviews and FGDs with women. In addition, six experienced persons supervised the fieldwork.

[1] Based on a comprehensive set of indicators, a census survey of all households by the Government identifies poor and non-poor households as BPL and APL; in order to provide several public services to the poor in rural areas.

1.4 Plan of Analysis

To assess the impact of the floods on households, the analysis has been divided according to social and occupational groups. Social groups include: (SCs), (STs), Other (OBC I); Other Backward Classes II (OBC II), Others (overwhelmingly Hindu dominant castes such as Brahmin, Bhumihar or Rajputs), and Muslims. The first two groups, SCs and STs, are socially and economically the most vulnerable, while in Bihar the OBC I group is more vulnerable than the OBC II group. The first five groups belong to the Hindu community; all Muslims are included in the last category.

The second type of analysis of data is by occupation. In the studied villages, the major occupation of households includes agricultural labour, cultivation, services, and business and artisanal work. As noted above, in many cases it was difficult to categorize a household in a particular occupation because of the multiplicity of occupations pursued by family members. However, based on certain criteria and value judgments, each household has been classified in a specified occupation. The first criteria considered was the occupation of members in the households: If all household members worked in a single trade or occupation, then the household was included in that occupational category. If a household comprised more of than one working member and they were involved in more than one occupation, then the occupation that provided most of the household income determined its occupational group. Broadly, the survey households have been divided into seven occupational groups: casual wage labourers, small and marginal cultivators, medium and large cultivators, salaried households, skilled workers and artisans, self employed in business, and other households. In casual wage labour households, casual labourers working in agriculture, construction and other non-agricultural sectors have been included, along with related labourers in agricultural and non-agricultural sectors. Households were categorized in the second and third occupational categories, on the basis of operational landholdings, those with landholdings of less than five acres were categorized as small and marginal cultivators and those work more than five acres considered large cultivators. All skilled workers like tailors, masons, plumbers, mechanics and electricians, as well as artisans like shoe makers, weavers and basket makers are included as skilled workers and artisans. The remaining are grouped as other households. The study has attempted to take into account gender inequality by disaggregating data by sex, wherever relevant and possible.

A projection of loss for the whole Kosi region has also been attempted for some important items. For estimation, we have considered the total affected families due to Kosi floods for all the 1,000 villages, as reported by the Government of Bihar. The percentages of families that lost different items such as livestock, houses, foodgrains, domestic goods, other goods and agricultural implements and their average values of losses from the household survey have been used for this estimation. The details of estimation are provided in the Note (page 67). Needless to say, these estimates are very rough and only highlight the magnitude, and do not measure the exact amounts of losses.

1.5 Structure of the Report

The report consists of seven chapters. Chapter 1 describes the design and methodology of the study. Chapter 2 provides the socioeconomic profile of the Kosi regions study districts, as well as the villages and households affected. Chapter 3 presents the experiences of the floods as related by the villages in the region, based on the survey. Chapter 4 assesses the impact of the floods on village infrastructure, live and livelihoods. Coping strategies of people and households in meeting the disaster are presented in Chapter 5. Chapter 6 presents the long and short-term recovery strategies identified by the study. Chapter 7 provides the conclusions and policy implications that emerge from the study.

Chapter 2

Socio economic Characteristics of Study Areas and Villages

Chapter 2

SOCIO ECONOMIC CHARACTERISTICS OF STUDY AREAS AND VILLAGES

The river Kosi, originating in Nepal, passes through most of north eastern Bihar. Although about eight districts in north east Bihar are regularly inundated during the monsoon by the Kosi, the floods of 2008 affected five districts (*Araria, Madhepura, Purnia, Saharsa* and *Supaul*). Moreover, the change in the course of the river during the 2008 floods marks an important departure, with many villages flooded for the first time.

2.1 Characteristics of the Study Districts

The five flood-affected districts are among the poorest in India. In 2001, during the last national Census, the total population of the five districts was about 8.3 million. The population is overwhelmingly rural, ranging from 91 percent in *Purnia* and *Saharsa* to some 95 percent in *Araria, Madhepura* and *Supaul* (Table 2.1). A significant proportion of the population is Muslim particularly in *Araria* and *Purnia* (41 and 37 percent respectively). The proportion of people belonging to STs is very small, but the proportion SCs especially in *Madhepura* and *Saharsa*.

Photo © UNDP India

Table 2.1: Population Distribution and Social Composition of Study Districts, 2001

District	Population (lakh)	% Rural Population	Social Composition			
			% SC	% ST	% Hindus	% Muslims
Araria	21.6	93.9	13.6	1.4	58.5	41.1
Madhepura	15.3	95.5	17.1	0.6	88.6	11.4
Purnia	25.4	91.3	12.3	4.4	62.3	36.8
Supaul	17.3	94.9	14.8	0.3	82.3	17.4
Saharsa	15.1	91.7	16.1	0.3	85.5	14.4
Bihar	830.0	91.6	15.7	0.9	83.2	16.5

Source: Census of India, 2001

Average household size varies from 5.2 to 5.7, less than the overall average household size in the state (6.0). The sex ratio is unfavourable for females in all districts. (Table 2.2). All five districts also have extremely loss literacy levels much lower than the average for Bihar, which is itself the lowest in India. The female literacy rate is even cover, with rates of 21 percent in *Supaul* to about 25 percent in *Saharsa*; in all districts, female literacy rates are less than half that of male literacy rates.

Table 2.2: Demographic Characteristics and Literacy Levels of Study Districts, 2001

District	Avg HH Size	Sex Ratio (Females per 1,000 Males)	Literacy (%)		
			Male	Female	Total
Araria	5.2	913	46.4	22.4	35.0
Madhepura	5.7	915	48.8	22.1	36.1
Purnia	5.2	915	45.6	23.4	35.1
Supaul	5.6	920	52.4	20.8	37.3
Saharsa	5.6	910	51.7	25.3	39.1
Bihar	6.0	919	59.7	33.1	47.0

Source: Census of India, 2001

Agriculture, on which about 90 percent of the population is dependent, is largely subsistence, with very low productivity. As Table 2.3 shows, all five districts have higher work participation rates than the average for Bihar; however, this appears to be related to widespread poverty, which pushes people to work even in activities that very low incomes provide.

It is revealing that the proportion of workers engaged in non-agricultural activities ranged from as low as 7 percent in *Madhepura* to 10 percent in *Saharsa* in 2001. Agricultural labourers thus constitute the majority of workers and in *Araria* and *Purnia* comprise two-thirds of all workers (Table 2.3).

Table 2.3: Worker Profile of Study Districts, 2001

District	% Workers to Total Population	% of Total Workers			
		Agricultural Labour	Cultivators	HH Industry	Others
Araria	40.3	64.7	26.2	1.9	7.2
Madhepura	45.5	57.4	34.0	1.7	6.9
Purnia	38.9	66.3	24.0	1.6	8.1
Supaul	42.7	55.9	35.2	1.8	7.1
Saharsa	40.4	54.7	32.9	2.0	10.4
Bihar	34.7	51.0	31.4	3.7	13.9

Source: Census of India, 2001

The vulnerability of these districts is reflected not only in demographic, occupational and other characteristics of the population but also in terms of acute shortages of basic facilities and social infrastructure. For example, *Purnia* has far fewer villages with primary schools than the state average of 62.2 percent; as Table 2.4 illustrates, in 2001 only 53 percent of the villages in *Purnia* had primary schools. Striking gaps also exist with respect to access to industrial and training schools: Only 10 industrial schools existed in all five districts in 2001, with *Purnia, Madhepura* and *Saharsa* having none at all. Health facilities display a similar picture the number of allopathic hospitals per one lakh (100,000) population is very low. Only one primary health centre per one lakh population was found in four districts out of five only in *Madhepura* was the situation in marginally better. At the same time, although irrigation facilities are available for about 50 percent of the cultivable land, the quality of irrigation is poor. Further, on average, 77 percent of villages in these districts did not have electricity in 2001 (Census of India).

Photo © UNDP India

Table 2.4: Villages With Basic Facilities in Study Districts, 2001

District	% Villages Having Primary Schools	% Villages Having Middle Schools	% Villages With Secondary Schools	Number of Industrial Schools	Training Schools	Allopathic Hospitals per Lakh Population	Maternity Homes per Lakh population	Primary Health Centres per Lakh Population	Post Offices per Lakh Population	% Irrigated Area
Supaul	79.9	33.9	8.5	3	1	1.3	0.3	1	10	42.7
Araria	74.4	21.8	0.5	2	0	0.5	0.1	1	9	50.4
Purnia	52.8	15.4	2.3	0	5	0.9	0.2	1	7	50.9
Madhepura	70.7	44.3	8.6	0	0	0.6	0.2	2	11	59.8
Saharsa	79.9	38.0	6.0	0	0	0.4	0.0	1	12	46.7
Total in five districts	67.9	28.4	4.7	5	6	0.7	0.2	1	10	51.4
Bihar	62.2	19.0	4.8	51	65	1.3	0.3	2	11	59.6

Source: Census of India, 2001

Thus, the five flood-affected districts were extremely poor, with low indications human development (income education & health) regard to almost all aspects of human development. Given this acute vulnerability and poverty, it is hardly surprising that every year a very large number of people migrate from the region to other parts of India in search of work.

2.2 Characteristics of Sample Households

Out of 820 households surveyed, about 23 percent people belonged to SCs and 38 percent to OBC II (middle castes); and 17 percent were Muslims. The rest were spread across other caste groups, with 14 percent belonging to OBC I, (who are more vulnerable than OBC II). More than half of the households (about 55 percent), were reported as Below Poverty Line households (BPL), with access to a ration card entitling them to subsidized food grains and other development initiatives. Table 2.5 provides details of characteristics of the households surveyed.

Table 2.5: General Characteristics of Households

Total Households (HHs) Surveyed	820
Socio-Religious Distribution of HHs	%
Scheduled Castes	23.4
Scheduled Tribes	3.5
Other Backward Castes I	13.9
Other Backward Castes II	38.7
Others [2]	3.4
Muslims	17.1
All	100
Distribution by Poverty Groups (%)	
Above Poverty Line (APL)	43.0
Below Poverty Line (BPL)	54.8
Antodaya Anna Yojana (AAY) [3]	1.8
Don't Know	0.4
All	100

[2] Comprises mostly Hindu dominant castes such as Brahmin, Bhumihar and Rajput
[3] Households included in AAY (food security Initiative for the poorest of the poor)

As shown in Table 2.6, which presents land ownership details of sample households, half of all households were landless or near-landless, which is consistent with the acute vulnerability of the people of these districts. Only seven percent of the households reported having between 5-10 acres of land, while fewer than three percent reported more than 10 acres. The rest were small or medium farmers.

Table 2.6: Land Ownership Details of Households

Land Distribution Categories	%
Landless or near-landless (<0.5 acre)	50.1
0.5 to 1.0 acre	6.1
1.0 to 2.0 acres	13.9
2.0 to 5.0 acres	20.1
5.0 to 10.0 acres	7.1
>10.0 acres	2.7
All	100

Juxtaposing land ownership data with social group data reveals that landlessness largely prevails among people belonging to SCs, STs, Muslims and OBC I households. Among SC households, three in four were landless or near-landless, while among ST and Muslim households, the ratio was about three in five (Table 2.7). This has strong implications for coping and recovery strategies of the flood-affected population.

Table 2.7: Distribution of Households, by Landholdings and Social Groups

Land Size	SC	ST	OBC I	OBC II	Others	Muslims	Total
Landless	58.3	51.7	54.4	19.6	14.3	49.3	39.5
Less than 0.5 acre	16.7	6.9	8.8	9.1	7.1	8.6	10.6
0.5 to 1.0 acre	6.3	0.0	3.5	6.3	17.9	6.4	6.1
1.0 to 2.0 acres	8.9	20.7	9.6	17.7	10.7	15.0	13.9
2.0 to 5.0 acres	7.3	20.7	18.4	30.6	32.1	12.9	20.1
5.0 to 10.0 acres	2.6	0.0	5.3	10.7	7.1	7.9	7.1
>10.0 acres	0.0	0.0	0.0	6.0	10.7	0.0	2.7
Total no. of HHs	192	29	114	317	28	140	820

Occupational patterns in the households by different social groups are summarized in Table 2.8. Most SC and ST households are casual wage labourers (62 and 59 percent respectively), and half the Muslim households also belong to this category. Small and marginal cultivators mainly belong to the category Others (primarily Hindu dominant castes), OBC II, OBC I and STs. One in every 10 households was a medium/large farmer, most belonged to OBC II or Other categories. Skilled workers and artisans hail mainly from Muslim families. Nearly eight percent of the households were salaried and self-employed in small businesses.

Photo © UNDP India

Table 2.8: Occupational Distribution of Households, by Social Groups

Occupational Group	SC	ST	OBC I	OBC II	Others	Muslims	Total	Total no. of HHs
Casual Wage Labour	62.0	58.6	42.1	24.3	14.3	50.0	40.9	335
Small and Marginal Cultivators	22.9	34.5	32.5	37.5	50.0	19.3	30.6	251
Medium and Large Cultivators	5.2	0.0	7.9	19.9	14.3	10.0	12.2	100
Salaried Households	2.1	3.4	1.8	6.3	7.1	5.7	4.5	37
Skilled Workers and Artisans	6.3	3.4	8.8	5.4	7.1	11.4	7.1	58
Self-Employed in Small Businesses	1.0	0.0	6.1	4.7	3.6	2.1	3.4	28
Other Households	0.5	0.0	0.9	1.9	3.6	1.4	1.3	11
All	100	100	100	100	100	100	100	820
Total Number of HHs	192	29	114	317	28	140	820	

Occupational distribution of households by poverty groups (Table 2.9) suggests that casual labourers represent the poorest of the poor, followed by skilled workers and artisans. As many as three-fourths of casual wage labourers and close to three-fifths of skilled workers and artisans live below the poverty line.

Table 2.9: Occupational Distribution of Households, by Poverty Groups

Occupational Group	APL	BPL	AAY*	Don't Know	Total HHs
Casual Wage Labour	20.6	75.2	4.2	0.0	335
Small and Marginal Cultivators	51.8	47.8	0.0	0.4	251
Medium and Large Cultivators	82.0	17.0	1.0	0.0	100
Salaried Households	75.7	18.9	0.0	5.4	37
Skilled Workers and Artisans	41.4	58.6	0.0	0.0	58
Self-Employed in Small Business	50.0	50.0	0.0	0.0	28
Other Households	54.5	45.5	0.0	0.0	11
Total	43.0	54.8	1.8	0.4	820

Again, household level analysis confirms that the five flood affected districts are extremely vulnerable in terms of human development, facing widespread poverty and access to very few basic amenities. A large number of households belong to particularly vulnerable SC, ST, OBC I and Muslim communities, with most households landless or near-landless. Nearly all these households, the vast majority of which are engaged in agricultural labour or cultivation, thus suffer from severe multiple social deprivations. In all, a strong association is observed between social marginalization, resource poverty and income poverty.

Chapter 3

Experiences of the Floods

Chapter 3

EXPERIENCES OF THE FLOODS

Highlighting the intensity of the 2008 flood damage, particularly to croplands and living areas, this chapter reports how women and men experienced floods. It deals with types of accommodation that villagers opted for, their experiences with evacuation, casualties and illnesses, and relief-related issues. Likewise, it surveys villagers experiences in relief camps, including personal hygiene, quality of food, access to drinking water, incidence of disease and protection mechanisms.

3.1 Intensity of Damage: Lands Submerged

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Historically, the flooding of the Kosi River is regarded as an annual bane for the population of north eastern Bihar, particularly those living near the river's banks and accustomed to the its fury during monsoons. But in 2008, for nearly three in four surveyed households the Kosi's severe flooding was a new experience.Critically, no disaster preparedness had been undertaken in villages where floods occurred for the first time, with more than half of villagers receiving no early warning and being forced to arrange their own means for reaching other towns, for safely and relief. Yet, 10 out of the 40 affected villages lacked even a boat; in 14 villages, residents had to flee on foot, in search of shelter.

Crops, infrastructure and other assets were extensively damaged by the floods, and villages remained waterlogged for an average of nearly two months (53 days). The highest and lowest duration of standing water in homestead areas was three months and 10 days, respectively. For agricultural land, waterlogging persisted even longer, for an average of nearly three months, up to a maximum of four months. Roads were the worst hit; in many villages the earthen road was completely washed away. Where the road survived, standing water remained an average of two months.

Photo © UNDP India

In two out of three villages, more than 75 percent of the living area was affected. Nine in 10 villages had at least 50 percent of agricultural land affected, while seven in 10 villages suffered devastation to more than 75 percent of croplands (Table 3.1).

Table 3.1: Intensity of Damage of Living Areas and Agricultural Land in Surveyed Villages

	Extent of Damage	Number of Villages
Extent of Living Area Affected	Less or Equal to 25%	3
	26% to 50%	4
	51% to 75%	8
	76% to 90%	7
	> 90%	18
Extent of Agricultural Land Flooded	< 50%	4
	50% to 75%	8
	76% to 90%	10
	More than 90%	18

Photo © UNDP India

3.2 Dwelling During the Flood

Evacuation and immediate relief were critical for affected households, as shown in Table 3.2. One-third of households shifted to nearby Government camps during the flood, while only four percent took shelter in the camps run by NGOs/charitable organizations. About one in four household made their own arrangements to move out of flood-affected villages. Notably, every ST household reported being forced out of their villages by the floods, with four in five household tak shelter in camps (66 percent in Government camps, 14 percent in NGO camps). On the other hand, one in three SC households made their own arrangements, as did Muslims and other Hindus. Only one in six households did not leave their villages, which is not surprising given that for most households the floods were a new experience.

Photo © UNDP India

Table 3.2: Percentage Distribution of Households by Their Staying Arrangements During Floods, by Social Groups

Staying Arrangement	SC	ST	OBC I	OBC II	Others	Muslims	Total
Village	10.4	0.0	15.8	23.7	14.3	7.9	15.6
Government Camps	38.0	65.5	37.7	26.5	17.9	38.6	33.9
Camps Run by NGO or Charitable Organization	4.7	13.8	6.1	2.8	0.0	1.4	3.8
With Relatives and Friends in Other Villages	6.3	6.9	14.9	26.2	21.4	25.0	18.9
Own Other Arrangements	34.9	10.3	21.1	18.3	35.7	25.7	24.1
Others	5.7	3.4	4.4	2.5	10.7	1.4	3.7
Total HHs	192	29	114	317	28	140	820

If we consider the use of the shelter arrangements during the flood by occupational category, it can be seen that the families of casual wage labourers and skilled workers/artisans took shelter mainly in Government camps.

Table 3.3 suggests that compared to male-headed households (MHHs), a proportionately larger number of female-headed households (FHHs) took shelter in Government camps and houses of relatives/friends. FHHs belonging to SC/ST and Muslim families mainly went to Government camps. On the other hand, MHHs also took shelter in self-arranged facilities and camps run by NGOs or charitable organizations.

Photo © UNDP India

Table 3.3 Percentage Distribution of Households by Their Staying Arrangements During Floods, by Social Group and Head of Household

Staying Arrangement	Male-Headed Households (MHHs)				Female-Headed Households (FHHs)			
	SC/ ST	OBC II & Others	OBC I & Muslims	Total	SC/ST	OBC II & others	OBC I & Muslims	Total
Village	8.7	22.2	11.5	15.4	11.5	33.3	11.1	17.6
Government Camps	41.0	25.3	37.4	33.1	46.2	33.3	44.4	41.9
Camp Run by NGO or Charitable Organization	6.2	2.8	4.0	4.0	3.8	0.0	0.0	1.4
With Relatives and Friends in Other Village	5.1	26.2	18.9	18.5	15.4	19.0	33.3	23.0
Own Other Arrangement	33.8	20.4	25.1	25.3	15.4	9.5	11.1	12.2
Others	5.1	3.1	3.1	3.6	7.7	4.8	0.0	4.1
Total HHs	195	324	227	746	26	21	27	74

About one in four medium and large cultivators and salaried employees stayed back in their villages, perhaps because they possessed houses that were comparatively safe and secure. As relatively better off households, they also may have feared theft; indeed, about 12 percent of households that moved to safer places particularly OBC I and Others reported thefts in their homes (Table 3.4). Although the average value of loss was around Rs. 4,500 (about US$100 at the time), this is a considerable amount given the rural context and the economic vulnerability of households.

Table 3.4: Percentage of Households Experiencing Theft in Their Houses, by Social Groups

	%Reporting Theft	No. of HHs Reporting Theft
SC	12.3	21
ST	3.6	1
OBC I	16.3	16
OBC II	11.4	32
Others	16.7	4
Muslims	9.4	12
Total	11.8	86

Note: *The percentages reported are only for those households that had left their houses during the floods.*

Box 3.1: Struggle for Survival

We got no early warning of the flood and thought that the flood would not hit us. So we had no preparation to protect us from the sudden flood. We stayed in our village for 15 days and then took shelter in the school building of a neighbouring village, called Tulsha. Though initially there was no support from the Government, the villagers of Tulsha came forward to save us. They used to prepare *khichudi*, and we had two meals a day. After a few days, the school was turned to a Government camp, and from then on we started receiving Government relief and three meals a day.

Photo © UNDP India

3.3 Means of Evacuation

Only one in 10 affected households received Government assistance for evacuation and the rest largely left their villages through their own efforts, implying that the Government was unprepared for flooding of this extent. Likewise, NGOs were absent in ensuring immediate evacuation (Table 3.5). This was true for households from all social groups.

Table 3.5: Percentage Distribution of Households by Means of Evacuation, by Social Groups

Evacuation Type	SC	ST	OBC I	OBC II	Others	Muslims	All
Government Assistance	7.0	34.5	11.6	13.6	16.7	4.7	11.0
With Help of NGOs or Other Agencies	1.2	0.0	0.0	2.6	4.2	0.8	1.5
With Own Efforts	91.8	65.5	88.4	83.4	79.2	94.6	87.4
Others	0.0	0.0	0.0	0.4	0.0	0.0	0.1
Total Number of HHs	171	29	95	235	24	129	683

Note: *The other 137 households stayed in their villages during the floods.*

This absence of outside support assumes particular importance for FHHs, which usually require additional support during disasters, to ensure their own safety and that of their children. Yet, the overwhelming majority of households, whether male or female-headed, sought their own means of evacuation from flood-hit villages (Table 3.6). Government support and assistance were higher among FHHs of Muslims and OBC I compared to others, an important finding in view of these households extra vulnerability.

Table 3.6: Percentage Distribution of Households by Means of Evacuation, by Social Group and Head of Household

Evacuation Type	Male-Headed HHs				Female-Headed HHs			
	SC/ST	OBC II & Others	OBC I &Muslims	Total	SC/ST	OBC II & Others	OBC I &Muslims	All
Government Assistance	11.3	13.9	6.0	10.6	8.7	14.3	20.8	14.8
With Help of NGOs or Other Agencies	1.1	2.9	0.5	1.6	0.0	0.0	0.0	0.0
With Own Efforts	87.6	82.9	93.5	87.6	91.3	85.7	79.2	85.2
Others	0.0	0.4	0.0	0.2	0.0	0.0	0.0	0.0
Total No. of HHs	177	245	200	622	23	14	24	61

Interactions with the villagers through FGDs suggest that the evacuation experience of people villages in relatively remote areas was more strenuous and distressing than that of the people in villages closer to towns, where affected people were eventually rescued by Government boats. The survey found several examples where people showed great courage in saving their family members or others. But many people had to wait in marooned villages to be rescued, while villagers near the Indo-Nepal border had no Government boats for evacuation; instead, they had to flee on self-made temporary rafts of oil drums and bamboo or banana plants. In some cases, affected people, including women and made girls, had to wade through water which was nearly a metre deep for distance of three kilometers.

FGD participants from remote villages told investigators that very few local Government officials -Block Development Officer (BDO), Sub-Divisional Officer (SDO), District Magistrate (DM) or Superintendent of Police (SP) - visited during the floods to oversee evacuations. Some NGOs and social welfare societies visited the villages for this purpose, as did officials of the Seema Suraksha Bal (Border Security Force - BSF) who made two or three visits.

In some cases, poor households faced numerous difficulties in evacuation. According to villagers from Bohra in *Purnia* and *Rampur* in *Madhepura*, villagers perceived that Government boatmen charged higher prices (as much as Rs. 500) from people belonging to marginalized groups for transport to safer places. They also reportedly forced villagers belonging to poorer groups to wait up to 10 days in flood affected villages before coming to rescue them.

3.4 Death and Health-Related Issues

The floods threatened the lives and health of many people through food shortages (resulting from crop failure), loss of purchasing power for basic necessities, and the potential spread of water-borne or food deficiency-related diseases (Table 3.7). Some 493 persons (275 men, 218 women) died in the surveyed villages because of the floods. Major casualties were caused by water-borne diseases (diarrhoea, jaundice, gastric diseases), followed by death from drowning. About 11 pregnant women died from lack of emergency health facilities in or near the villages.

Outbreaks of disease were common, with the predominant illnesses reported in the survey encompassing skin diseases, fever, problems related to the stomach, cold/cough, and diarrhoea. About five percent of people in the surveyed villages suffered from skin diseases, the most frequent category, followed by fever (three percent). A significant number of people (about 2.4 percent) also suffered from stomach problems. Findings suggest that both men and women experienced a similar morbidity pattern.

The floods devastation also had a strong psycho-social impact on the people, particularly on the women and children.

Photo © UNDP India

Table 3.7: Number and Percentage of Villagers Suffering Different Diseases Post-Flood

Disease Type	Males		Females		All	
	Number	% of total population	Number	% of total population	Number	% of total population
Cold and Cough	2815	1.4	3240	1.8	6055	1.6
Water-borne diseases	2310	1.2	2899	1.6	5209	1.4
Digestive problem	550	0.3	600	0.3	1150	0.3
Fever	5950	3.0	5514	3.1	11464	3.0
Skin disease	11139	5.6	7681	4.3	18820	5.0
Stomach problem	5490	2.7	3690	2.1	9180	2.4
Others	713	0.4	445	0.3	1158	0.3
Total population*	**200372**		**177688**		**378060**	

* *40 surveyed villages*

3.5 Relief

The Government response to the crisis was swift. The village survey reveals that the Government's direct transfers to flood victims were eventually well-targeted, although immediate relief went mainly to seriously flood-exposed villages. The Government and charitable organizations established camps, where a large number of people took shelter and were provided food and other basic amenities. During the first phase of relief, affected households received grain transfers of one quintal and a cash transfer of Rs. 2,250. Almost all surveyed households received this relief, although it should be noted that household members said they felt that it was too little for their needs.

Photo © UNDP India

An overwhelming majority of households, encompassing all social groups, reported receiving Government assistance of some kind. One reason could be the large number of households that had taken shelter in Government supported camps (Table 3.8); in addition, Table 3.9 shows that a larger percentage of SC/ST households received food and clothes compared to other groups. With regard to cash and grains, differences across social groups were minimal. Table 3.10 also reveals that the proportion of FHHs obtaining relief, such as food and medicine, was higher than for MHHs. The percentage is marginally higher in the case of cash and grains, although a somewhat smaller number of FHHs got clothes. Thus, it appears that Government assistance was well-targeted in favour of the more vulnerable groups.

Photo © UNDP India

Table 3.8: Percentage of Households Receiving Government Relief, by Social Groups

Social Groups	%
SC	96.4
ST	100
OBC I	96.5
OBC II	92.0
Others	92.9
Muslims	97.9
Total	95.0

Table 3.9: Percentage of Households Receiving Different Types of Relief from Government, by Social Groups (Based on Multiple Answers)

Relief Type	SC	ST	OBC I	OBC II	Others	Muslims	Total
Food	40.0	75.9	32.7	25.1	23.1	24.1	31.4
Medicine	43.2	65.5	43.6	32.8	19.2	21.9	35.7
Clothes	14.6	27.6	10.9	9.4	7.7	3.6	10.5
Cash	95.1	82.8	99.1	97.2	100	100	97.0
Grains	94.6	89.7	97.3	98.3	96.2	100	97.2
Government Credit	0.5	0.0	0.0	0.0	0.0	0.0	0.1
Others	3.8	3.4	0.9	1.0	0.0	0.7	1.7
No. of Beneficiaries	185	29	110	287	26	137	774

Table 3.10: Percentage of Households Receiving Different Types of Relief from Government, by Social Groups and Heads of Household (Based on Multiple Answers)

Relief Type	Male-Headed HHs				Female-Headed HHs/			
	SC/ST	OBC II & Others	OBC I &Muslims	All	SC/ST	OBC II & Others	OBC I &Muslims	All
Food	42.6	22.2	27.3	29.1	50.0	28.6	25.9	35.1
Medicine	46.7	29.0	30.8	34.2	30.8	23.8	29.6	28.4
Clothes	17.4	8.3	6.2	10.1	3.8	9.5	11.1	8.1
Cash	89.7	88.6	96.9	91.4	96.2	85.7	96.3	93.2
Food Grains	90.3	88.9	96.5	91.6	96.2	90.5	92.6	93.2
Government Credit	0.5	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Others	3.1	0.9	0.9	1.5	7.7	0.0	0.0	2.7
No. of Beneficiaries	195	324	227	746	26	21	27	74

Apart from Government, NGOs and other agencies also provided relief in the form of food, medicine, clothes, utensils and so forth. Such assistance was reported by about 38 percent of households surveyed (Table 3.11). Thus, although the Government played the most important role in relief operations, civil society's role also was significant. No difference existed across social groups in this respect.

Table 3.11: Percentage of Households Receiving Different Types of Relief from NGOs or Other Agencies, by Social Groups

Relief Type	SC	ST	OBC I	OBC II	Others	Muslims	All
Food	63.5	42.1	45.9	53.6	50.0	50.0	54.0
Medicine	23.5	26.3	45.9	38.2	70.0	31.5	34.3
Clothes	61.2	26.3	21.6	46.4	0.0	51.9	45.7
Cash	8.2	10.5	10.8	11.8	0.0	1.9	8.6
Credit	2.4	0.0	5.4	3.6	0.0	1.9	2.9
Other*	54.1	68.4	51.4	40.0	50.0	35.2	46.3
No. of Beneficiary HHs	85	19	37	110	10	54	315
% of Beneficiary HHs to All HHs	44.3	65.5	32.5	34.7	35.7	38.6	38.4

*Note: *Other assistance includes cooking utensils, mugs, buckets, torches, match boxes etc.*

Besides food support, households across different social groups received relief including utensils, mugs, buckets, torches, match boxes and so forth from NGOs. Table 3.11 shows that members from SC and Muslim families received mainly clothes, followed by OBC II families. Relatively higher proportions of OBC I and OBC II families received credit support from NGOs.

Overall, leakages in the supply of relief items were very small (Table 3.12). It is equally important to note that officials involved with relief operations behaved well-incidents of rude behaviour reported were very few. Further, little discrimination was reported in distribution of relief, although a small percentage of SC households reported encountering discrimination. On the a whole, it appears Government relief was well-targeted and managed.

Table 3.12: Percentage Distribution of Households, by Types of Difficulties in Relief Assistance (All Respondents)

Type of Difficulty	SC	ST	OBC I	OBC II	Others	Muslims	All
Lack of Awareness	34.9	13.8	32.5	30.9	35.7	14.3	28.8
Distance from Relief Centre/Camp	24.0	13.8	24.6	32.2	17.9	12.1	24.6
Discrimination in Distribution of Relief Assistance	7.3	0.0	0.9	6.0	0.0	1.4	4.4
Leakages in Supply in Relief Items	2.1	3.4	1.8	4.1	3.6	2.9	3.0
Rude Behaviour of Relief functionaries	1.0	0.0	3.5	0.3	7.1	0.7	1.2
All	192	29	114	317	28	140	820

During FGDs, however, more villagers shared instances of being discriminated against as well as cheated by Government relief authorities. While it would be difficult to generalize based on such instances, potential discrimination needs to be acknowledged as an issue to be addressed in the future to ensure effective, transparent systems of relief and rehabilitation. Particularly in some of the more remote areas, villagers expressed deep anger about the role of the Government authorities in the lack of coordination during the floods. The survey team also reported some instances of corruption by *panchayat* functionaries and officials involved in relief Nonetheless, the general conclusion was that corruption during the floods was far less than what might be expected.

Box 3.2: Relief Distribution

In getting food support, irregularities are reported. Cash of 2,250 rupees was properly distributed, but grains in each packet were of less weight than stated, and some packets were inedible.

Residents of Dumarbanna village, Araria District

3.6 Camp Experiences

Many families were in camps for several months and faced numerous challenges during their stay. The Survey team gathered information on this issue, so as to be able to confirm measures that can be taken in the future to effectively manage short-term relief.

Photo © UNDP India

Camp experiences were collected from two sets of respondents: those who had stayed in the camps but returned to the villages after the flood waters receded, and those still in the camps at the time of the survey (although most Government camps had already closed). The sample size for these two groups was 292 and 200 respectively. Information in the following sub-sections is supplemented with data gathered through FGDs, with communities that narrated their experiences at camp sites.

3.6.1 Duration of Stay in Camps

The average number of days in relief camps varied from 41 to 60 days across different social groups, reflecting the considerable time it took for floodwaters to recede (Table 3.13). People generally moved back to their villages as soon as they could. The survey team were also informed of a few instances where officials pressurised people to vacate the camp.

Table 3.13: Average Number of Days in Camps, by Social Groups

Social Group	Avg. No of Days
SC	60
ST	53
OBC I	54
OBC II	52
Others	60
Muslims	41
All	53

3.6.2 Personal Hygiene

While most families in camps reported having temporary bathing places near the handpump or well, a significant 35 percent overall reported they had to use open spaces for bathing (Table 3.14); more than 40 percent of SC, ST and Muslim respondents reported bathing in the open. Given hygiene and sanitation conditions and the density of population, lack of proper bathing arrangements led not only to personal discomfort, particularly for women, but also to potential health hazards such as the spread of water-borne and communicable diseases.

Table 3.14: Percentage Distribution of Households, by Bathing Arrangements

Bathing Arrangements	SC	ST	OBC I	OBC II	Others	Muslims	All
Temporary Bathroom in the Camp	5.3	4.3	12.4	13.5	42.9	14.3	11.2
Temporary Arrangement Near Handpump/Well	46.2	39.1	73.6	45.9	57.1	39.8	51.4
Pumps/Rivers	3.8	8.7	0.8	2.7	0.0	1.0	2.4
Open Space	44.7	47.8	13.2	37.8	0.0	44.9	35.0
All	132	23	121	111	7	98	492

Women from Kamp Pashchimi and Kachra villages of Saharsa reported similar constraints to those noted in Box 3.3. Women of Kamp Pashchimi village also reported that sometimes they were forced to use ash on cloth in place of sanitary napkins, since not enough of the latter were available. All this caused Reproductive Tract Infections (RTIs).

Photo © UNDP India

Box 3.3: Experience of Women in Camps

In the relief camps, we particularly women and adolescent girls experienced very complicated situations in terms of personal hygiene. The problem was more acute during menstruation as neither any cloth nor any sanitary napkins were available. "We had hardly any space or usable water to clean ourselves. At the same time, we were lacking clothes to wear. We had to cover our body mainly with a one-yard long cloth, which restrained us from taking regular showers and also caused body odour. We had to wrap our body with the same wet clothes after we showered, which caused skin diseases and irritation."

Women's group, Kusha village, Supaul district

3.6.3 Quality of Food

The vast majority of respondents reported the quality of food distributed at the camps was tolerable (Table 3.15); in conditions of distress, and given the enormity of task, one might assume that food arrangements in camps would be reasonable for consumption. However, one-fourth of Muslim respondents in the camps perceived that the quality of food was very bad.

Table 3.15: Percentage Distribution of Households, by Quality of Food

Food Quality	SC	ST	OBC I	OBC II	Others	Muslims	All
Good	15.9	8.7	12.4	16.2	14.3	8.2	13.2
Tolerable	80.3	82.6	81.0	73.9	85.7	66.3	76.4
Very Bad	3.8	8.7	6.6	9.0	0.0	25.5	10.2
Others	0.0	0.0	0.0	0.9	0.0	0.0	0.2
All	132	23	121	111	7	98	492

3.6.4 Access to Drinking Water

Apart from sanitation and food, drinking water was another important facility at the campsites (Table 3.16). It can be seen that handpumps were the major source of water for those staying in the camps. While the handpump is the traditional source of water for people of the region, the fact that temporary toilets were erected close to the handpumps could lead to poor water quality.

Table 3.16: Percentage Distribution of Households, by Drinking Water Facility in Camps

Sources of Drinking Water	SC	ST	OBC I	OBC II	Others	Muslims	All
Tubewell	2.3	4.3	0.8	5.4	0.0	1.0	2.4
Well	1.5	0.0	1.7	6.3	0.0	5.1	3.3
Handpump	95.5	95.7	95.9	84.7	100	93.9	92.9
Tap Water	0.0	0.0	0.0	0.9	0.0	0.0	0.2
Tanker	0.0	0.0	0.8	0.0	0.0	0.0	0.2
Others	0.8	0.0	0.8	2.7	0.0	0.0	1.0
All	132	23	121	111	7	98	492

3.6.5 Incidence of Disease in Camps

Illness in the camps was also observed, with a number of camp residents reporting bouts of viral fever, dehydration/dysentery and ailments like cough and cold (Table 3.17). Malaria and dehydration/dysentery were observed proportionately more among SC and ST respondents.

Table 3.17: Percentage of Households, by Diseases in Camps*

Disease Type	SC	ST	OBC I	OBC II	Others	Muslims	All
Malaria	8.3	13.0	4.1	4.5	0.0	2.0	5.3
Dehydration							
/Dysentery	44.7	43.5	33.9	28.8	14.3	26.5	34.3
Viral Fever	48.5	39.1	76.0	59.5	42.9	62.2	60.0
Kalazar	2.3	0.0	2.5	2.7	0.0	2.0	2.2
Cough and Cold	50.0	60.9	59.5	45.9	42.9	46.9	51.2
Chickenpox	1.5	0.0	0.0	0.0	0.0	1.0	0.6
Skin Diseases	6.8	0.0	7.4	7.2	0.0	12.2	7.7
All Households	132	23	121	111	7	98	492

**Household that stayed in camp*

3.6.6 Collectivity and Protection Mechanisms in Camps

During the crisis when survival was in question, affected people who hardly knew each other developed close ties to protect themselves. Many private camps were established in open spaces, and the Government could not deploy police at the private camps and was able to do so only rarely in its own camps. In camps in villages such as Jagta, Bela, Manikpur and Dumarbanna under Narpatganj block of *Araria* district, affected people even formulated a self-defence system to ensure their security. Teams of members from affected families in the camps were formed to guard the camp in four shifts. At least two or three people were deployed at each of several checkposts established about 100 metres from the camp. However, it must be noted that field investigators received no major complaints about violence and discrimination, from any of the camps, which indicates that camp residents largely felt secure.

3.7 Conclusions

The following main points emerge from the analysis of households experiences during the floods, based on the sample survey and FGDs:

- For most households, the experience of floods was new and sudden, and hence they were not in a position to respond quickly to evacuate themselves to safer places. This resulted in loss of life as well as property.
- Many households did not wait for the Government to provide evacuation; they used their own means to move out of flooded villages.
- Friends, relatives and other agencies helped the victims, as did the Government.
- Government camps were seen as important locations for the people to reach soon after evacuation.
- Although these camps had minimal facilities, respondents expressed overwhelming appreciation for Government efforts in providing food and shelter, even as many were concerned about health and hygiene facilities.
- Incidence of water-borne diseases in camps and other sites, as well as the practice of using handpumps, were issues of concern.
- No discrimination was found across social groups in terms of disbursement of relief assistance. FHHs appear to have received food and medicines in larger proportions.
- At the same time, some participants in FGDs reported of instances of corruption and discrimination in the disbursement of relief. Though not widely reported, this reflects the need to set up mechanisms for enhanced transparency and accountability.
- Some communities organized themselves for safety and security at the camps, which complemented Government efforts. Largely people appeared to feel secure in the camps.

Chapter 4

Impact of the Floods on Livelihoods

Chapter 4

IMPACT OF THE FLOODS ON LIVELIHOODS

This chapter examines losses due to the Kosi floods at two levels, the village and the household. At the village level, general losses are considered, including damage to village infrastructure, irrigation systems and drinking water sources and sanitation. Damage to infrastructure focuses on the extent to which roads, electricity and telecommunications facilities were affected. Losses at the household level are specific in nature: Crops, livestock, houses, food, and domestic and other goods, as well as disruption in accessing health and education. Finally, the chapter concentrates on livelihoods, employment and income-related losses.

4.1 Losses at Village Level

4.1.1 Damage to Village Infrastructure

The severe floods extensively damaged physical infrastructure such as roads, electricity lines, embankments, bridges and culverts, and telecommunications, hindering efficient relief work and access to basic services. Table 4.1 summarizes the extent of damage with regard to roads. Villages with *katcha* roads were most affected, with six out of seven of these roads seriously damaged or washed away. About 40 percent of semi-*pukka* roads also experienced severe damage.

Photo © UNDP India

Table 4.1: Number of Villages, by Extent of Road Damage

Type of Road	Some Damage	Damaged but Repairable	Seriously Damaged/ Washed Away	All
Pukka	1	6	3	10
Semi-Pukka	3	11	9	23
Katcha	0	1	6	7
Total	4	18	18	40

Other most important village infrastructure facilities that were severely affected included electricity (Table 4.2a) and telecommunications (Table 4.2b).

Electricity was damaged as electric poles were uprooted or wires disconnected by the heavy flow of water. Before the floods, nearly two-thirds of the 40 villages had electricity connections, which fell sharply after the floods by about half (from 25 to 12 villages). Similarly, the number of households with electricity connections declined by nearly half (115 hhs before the floods, 62 hhs afterwards.).

Photo © UNDP India

Table 4.2a: Percentage of Villages With Electricity, by Extent of Damage

Type	Before Floods	After Floods	% Point Change
Villages Having Electricity	25 (62.5)	12 (30.0)	(-32.5)
Villages Not Having Electricity	15 (37.5)	28 (70.0)	(32.5)
All	40 (100)	40 (100)	
Average No. of HHs With Electricity	**115**	**62**	

Before the floods, nearly 90 percent of the villages (35 out of 40) had mobile phone communication links, while just under three in five villages had land the communication systems. In almost all villages with land lines, facilities were badly or partially damaged by the floods. The mobile phone network was also affected, although only to a small extent.

Table 4.2b: Percentage of Villages With Telecommunications, by Extent of Damage

Type	Badly Damaged	Partially Damaged	No Damage	Villages Not Having Such Facilities
Land Line	91.30% (21)	4.35% (1)	4.35% (1)	42.50% (17)
Access to Mobile Network	22.86% (8)	31.43% (11)	45.71% (16)	12.50% (5)

4.1.2. Damage to Irrigation Systems

The floods severely damaged irrigation systems, which are highly dependent on tubewells. About three-fourths of tubewells were severely or completely damaged, and in many cases repair proved difficult; similarly, about 77 percent of canals were severely or completely damaged. This will involve huge expenditures for repair (Table 4.3). The survey also found that around two-thirds of diesel pump sets were severely or completely damaged and one-third were partially damaged.

Table 4.3: Sources of Irrigated Areas, by Extent of Damage

Irrigation Sources	Severely/ Completely Damaged	Partially Damaged	No Damage	All
Boring	74.1	20.7	5.2	100
Canal	77.3	16.4	6.3	100
Others	3.8	0.0	96.2	100
Total	67.1	25.4	7.5	100

4.1.3 Damage to Drinking Water Sources and Sanitation

Flooding caused major deterioration in the quality of households health environment, destroying or damaging toilet facilities and reducing people's access to safe water. Issues in accessing water and sanitation facilities are summarized in Chart 4.1.

Chart 4.1: Issues in Accessing Water and Sanitation During/ After Floods (FGDs with Women's Groups)

Frequently Mentioned	Very few facilities for pure water source Toilet not nearby Long walk (minimum 30 minutes) to fetch water Open defecation Sense of embarrassment and insecurity Use of contaminated water for all purposes
Moderately Mentioned	Infrequent bathing while in camps because of not having extra clothes Long line to fetch water Issues during menstruation
Mentioned a Few Times	Water emitting foul smell because of carcasses of dead animals

Flooding caused enormous damage to drinking water sources, which are dependent upon public and private handpumps. Almost half of functioning public handpumps were damaged, as were one-third of private handpumps. Public and private wells also were severely affected by the floods, with the water easily polluted (Table 4.4).

Table 4.4: Damage to Drinking Water Sources

Type	Total Number	Functioning Before Flood	Functioning After Flood
Public Well	227	100	*
Private Well	408	88.7	*
Public Handpump	4846	94.9	54.1
Private Handpump	32845	99.2	63.3

**Public and private wells are functioning but are not used for drinking purposes now.*

Unsafe drinking water in turn caused numerous water-related diseases. During FGDs, villagers emphasized the significant health impact from sources of water being grossly contaminated. For example, although the iron content in the area's water was normally high, after the floods it became so high that consumption became harmful. Nonetheless, villagers had no option but to drink this polluted water. In the camps, however, access to relatively good-quality water was available, since boring was deeper; tankers with safe water also were provided to camp residents.

Villagers further reported that water changed its colour and taste after its collection. Micro-organisms were found in the water, and the percentage of sand and clay in it was also found to have increased. Villagers main expectation form the Government was that it should immediately provide safe drinking water.

The few tubewells still functioning post-flood have become the main points for water collection. Some are located far from villages, entailing extra effort for women to collect water. In addition, marginalized groups still face discrimination in accessing water points; some villages reported that dominant and middle caste villagers (OBC II) usually did not allow the SC community to use private or public tubewells.

Major damage also occurred to sanitation facilities. In the 35 villages with toilets, in 16 villages nearly half were badly or severely damaged, with the vast majority in the latter category (Table 4.5).

Table 4.5: Number of Villages, by Extent of Damage to Toilet Facilities

Extent of Damage	No. of Villages
Mild Damaged (<=than 25 % of latrine damaged)	6
Medium Damage (26% to 50%)	13
Bad Damaged (51% to 75%)	3
Severe Damaged (>75%)	13
Toilet Not Used	5

4.2 Losses at Household Level

4.2.1. Crops Lost

Damage to the *kharif*-season crops, including paddy, maize, jute and other vegetables, was extensive, as shown in Table 4.6. Aghani paddy, the major crop, was severely/completely damaged in nearly 75 percent of villages and partially damaged in another 20 percent. Similarly, jute and maize have been very badly damaged.

Photo © UNDP India

Damage to vegetables (brinjal, chilli, potato, leafy vegetables), and pulses (*urad, mung*) was equally extensive. The study showed that the prospect of *rabi* crops also was adversely affected: Three-fourths of villages reported no possibility of *rabi* crops, and in the rest, although sowing was possible, production was expected to be low.

Table 4.6: Crop Damage Due to Floods (%)

Crop	Completely/ Severely Damaged	Partially Damaged	No Damage	All
Aghani Paddy	73.8	20.5	5.7	100
Maize	67.8	21.2	11.0	100
Mung	80.7	15.4	3.9	100
Urad	73.1	17.4	9.5	100
Groundnut	81.3	12.3	6.4	100
Sugarcane	75.1	20.3	4.6	100
Vegetables	76.6	19.6	3.8	100
Sunflower	50.0	6.8	43.2	100
Jute	75.8	16.3	7.9	100
Flowers	82.7	12.8	4.5	100

4.2.2. Livestock Lost

More than one in three households reported lost or missing bullocks, cows or goats, with two in five reporting lost or missing buffaloes. Household losses of pigs and poultry were even more extensive.

Table 4.7: Number of Households With Livestock Lost and Average Amount of Loss

Social Groups	No. of HHs Lost Livestock	Avg Value of Livestock Lost (Rs)	Average income lost* (Rs)
SC	110	5011	1341
ST	19	4847	1047
OBC I	63	7000	1451
OBC II	204	9710	2572
Others	20	9915	2644
Muslims	92	6328	2279
All	508	7570	2059

* *Income calculated for approximately three months, from the day of the floods to the day of the survey*

Box 4.1: Case of Desperation

Somehow we managed to arrive in Tulsha village, either on foot or by flat boats made by banana stems or bamboo, but we were not in a position to save our animals. So we had to sell our animals at extremely lower prices; for example, we sold a cow worth Rs. 1,300 at a price of only Rs. 300.

Women from Narayanpur village, Purnia District

Many of the households reporting livestock losses were from the OBC II community, followed by SCs and Muslims (Table 4.7). Values of the lost livestock averaged Rs. 2,059 with individual highs of nearly Rs. 10,000 which has major implications for households income earning opportunities.

From Table 4.7, it can be estimated that the value of livestock lost in the region totaled about Rs. 390 crore [4]. Although villagers may have overestimated their losses, hoping for additional compensation, clearly the overall loss is enormous and much higher than official statistics.

4.2.3 Houses Damaged

Damage to houses was extensive, with data revealing about 37 percent of houses completely/severely damaged and another 40 percent partially damaged. Of thatched houses, which are home to nearly three in four households, only 13 percent were undamaged by the floods. Similarly, more than 96 percent of *katcha* houses were completely or partially damaged. Table 4.8 also details damage to *pukka* and semi-*pukka* houses. For many, houses are also used as work places and quite often this would mean losing work related equipment that gets washed away with the building.

Table 4.8: Percentage Distribution of Houses, by Intensity of Damage

House Type	Severely/ Completely Damaged	Partially Damaged	Not Damaged	Total No. of Houses
Katcha	64.6	32.1	3.3	4280
Pukka	0.3	23.9	75.8	3348
Semi-Pukka	9.3	34.8	55.9	9281
Thatched	53.1	33.7	13.2	42837
Total	37.0	40.4	22.6	59746

[4] See Note on Projected Losses in Kosi Region page 67.

Across all social groups, most households reported damaged houses (Table 4.9), with severe damage in one-third to one-half of all damaged houses. Muslims, the OBC I community and SCs reported comparatively greater damage to their houses than other groups. Respondents across social groups estimated the amount required for house repair/reconstruction to range from Rs. 85,00 to 17,000, with an average of Rs. 15,000. Altogether, estimated costs of repairing the damage to housing amount to Rs. 880 crore (US$ 195 million) in the affected region as a whole [5].

Table 4.9: Percentage of Houses Damaged, by Social Groups

Social Group	Total No. of HHs	% Damaged	Of Total Houses Damaged, % of			Avg Amt Needed to Repair (Rs)*
			Slightly Damaged	Severely Damaged	Collapsed	
SC	192	80.7	31.6	36.1	32.3	12555
ST	29	55.2	37.5	37.5	25.0	8563
OBC I	114	81.6	34.4	41.9	23.7	13656
OBC II	317	64.0	24.1	49.3	26.6	17367
Others	28	46.4	38.5	38.5	23.1	17115
Muslims	140	90.0	32.5	46.0	21.4	14501
All	820	73.9	30.0	43.6	26.4	14733

During FGDs with villagers, it was found that villagers from many remote locations were forced to stay in open places for two to three days following the floods. In addition, issues particularly faced by women in accessing shelter are summarized in Chart 4.2.

Chart 4.2: Issues in Accessing Shelter During/After Floods (FGDs with Women's Groups)

Frequently Mentioned	Feeling of sudden homelessness due to house being damaged Shelter taken by families on roof of house to escape floodwaters Lack of privacy
Moderately Mentioned	Walls collapsed
Mentioned a Few Times	Still water standing around house Abundance of insects, mosquitoes, flies and snakes

4.2.4 Food

After the floods, food scarcity became common throughout the affected area, exacerbated by lack of firewood. Three-fourths of households reported losing foodgrains stored for future use. At the same time, according to half of the households, they lost domestic goods like utensils and buckets. This implies a lack of preparedness, arising from no previous flood experience.

Table 4.10 shows the distribution of households according to the extent of loss of foodgrains. It can be observed that this reflects poverty between social groups, with people belonging to SCs showing the least loss and other Hindus the greatest.

[5] See Note on Projected Losses in Kosi Region page 67.

Table 4.10: Percentage Distribution of Households by Foodgrains Losses and Average Value of Loss, by Social Groups

Social Group	Total HH	Foodgrains	
		% HHs Lost	Average Value of Loss (Rs)
SC	192	69.3	4449
ST	29	72.4	5702
OBC I	114	83.3	5415
OBC II	317	76.7	7938
Others	28	89.3	10072
Muslims	140	73.6	5198
All	820	75.6	6358

From Table 4.10, it can be estimated that foodgrains lost to the region totaled about Rs. 400 crore (US$ 88 million) [6]. Meanwhile, households engaged in different occupations also lost foodgrains differ, ranging from 62 percent of skilled workers and artisans to 84 percent of salaried households, again reflecting the low income or asset levels of some groups (Table 4.11).

Table 4.11: Percentage Distribution of Households by Foodgrain Loss and Average Value of Loss, by Occupational Groups

Occupational Group	Total HHs	Foodgrains	
		% HH Lost	Average Value Of Loss (Rs)
Casual Wage Labour	335	76.1	3977
Small and Marginal Cultivators	251	75.7	6202
Medium and Large Cultivators	100	80.0	13386
Salaried Households	37	83.8	8574
Skilled Workers and Artisans	58	62.1	4694
Self-Employed in Small Business	28	67.9	8674
Other Households	11	81.8	8756
All	820	75.6	6358

4.2.5 Access to Health and Education

In disaster situations, minor ailments like viral fever and cough and cold are frequent and extensive. Following the 2008 Kosi floods, in addition to these minor ailments, more than one in three households reported dehydration/dysentery, which is directly related to quality of water as well as hygienic conditions. Responses by community to illness/disease reflect the overall pattern (Tables 4.12a and 4.12b). For men, viral fever (51 percent) was most dominant, followed by cough/cold (42 percent) and dehydration/dysentery (37 percent). Interestingly, the prevalence of diseases in women seemed fewer: 37 percent of women suffered cough/cold, followed by viral fever (33 percent) and dehydration/dysentery (27 percent).

[6] See Note on Projected Losses in Kosi Region page 67.

Table 4.12a: Percentage of Households Where Males Experienced Illness/Disease Post-Flood, by Social Groups (Multiple response)

Disease	SC	ST	OBC I	OBC II	Others	Muslims	All
Malaria	6.3	8.3	4.0	7.6	0.0	2.7	5.7
Dehydration/Dysentery	52.8	29.2	30.0	33.3	36.8	31.0	37.1
Viral Fever	35.2	33.3	54.0	58.6	57.9	56.6	50.9
Kalazar	1.3	0.0	2.0	2.5	5.3	3.5	2.3
Cough and Cold	35.2	37.5	38.0	44.3	52.6	46.9	41.6
Chickenpox	0.0	0.0	2.0	1.7	5.3	1.8	1.4
Skin Diseases	1.9	0.0	1.0	2.1	5.3	4.4	2.3
Other	1.3	0.0	1.0	4.6	0.0	0.9	2.3
HHs Experiencing Disease	159	24	100	237	19	113	652

Table 4.12b: Percentage of Households Where Females Experienced Illness/Disease Post-Flood, by Social Groups (Multiple response)

Disease	SC	ST	OBC I	OBC II	Other	Muslim	All
Malaria	3.8	8.3	4.0	4.2	10.5	0.0	3.7
Dehydration/Dysentery	34.6	37.5	25.0	19.8	31.6	31.0	27.1
Viral Fever	22.0	16.7	46.0	35.0	10.5	41.6	33.3
Kalazar	1.3	0.0	0.0	1.7	0.0	3.5	1.5
Cough and Cold	40.3	33.3	59.0	28.3	47.4	30.1	37.0
Chickenpox	1.3	0.0	0.0	0.4	0.0	0.0	0.5
Skin Diseases	3.1	0.0	3.0	4.2	10.5	10.6	4.9
Other	8.2	4.2	9.0	7.2	0.0	1.8	6.4
HHs Experiencing Disease	159	24	100	237	19	113	652

The response of the Government as well as private agencies in providing health assistance is critical in a disaster situation. As Table 4.13 indicates, across all communities, an overwhelming majority of households reported receiving health assistance during the floods, reflecting Government and private efforts to meet basic health needs as part of relief. Indeed, private clinics played an important role in providing medical support, given that affected people were accustomed to receiving services from small private clinics available in rural areas and catering to the population for minor ailments. Household members in the study sought health support, mainly from mobile/emergency medical teams, followed by private clinics and Government hospitals. Among the most vulnerable, SC and ST families sought support largely from mobile medical teams and the Government.

Table 4.13: Percentage of Households Receiving Health Assistance, by Social Groups

Social Category	Males	Females	Total
SC	84.0	84.6	84.3
ST	92.3	100.0	95.8
OBC I	86.4	92.9	90.0
OBC II	75.2	85.8	80.6
Others	81.8	87.5	84.2
Muslims	95.5	89.1	92.9
All	83.8	87.9	85.7

This study shows that dehydration/dysentery, viral fever, and cough and cold are the most common diseases afflicting households. Among available health services, respondents reported, irrespective of sex of household head, that they sought health support from private clinics, emergency medical teams and Government hospitals (Table 4.14).

During FGDs in the villages, it was reported that Government health services were inadequate during the floods, which made health costs higher and in some cases led to unnecessary casualties (Box 4.2). According to the villagers, even before the floods, health facilities faced severe constraints; for this reason, households opted for private clinics which were expensive. At the same time, many people had to cover long distances to avail of these services. Participants in FGDs who lived relatively closer to towns identified several issues relating to health services in their localities. These included: inadequate health support; irregular visits by doctors; need to go to town for treatment; need to incur high medical costs to see private doctors and conduct other medical tests; and inadequate health support for maternity related cases.

Box 4.2: Floods Made Health More Costly

Doctor came to see us only twice in the first week of setting up the emergency medical camp in Bohra School. We had to come to Purnia to see the doctor in the Government hospital or private clinic. We had to pay Rs. 200 as consultation fees if we saw a private doctor. The costs ranged from 500 to 700 Rupees if some additional tests were included.

Women's groups: SC/ST, Muslim, Landowners, Bohra village, Purnia

A compounder visits the village once in a week for attending to women with maternity problems. But this service is really not sufficient. A nursing home should be set up, within the vicinity of the village.

Women's groups: SC/ST, Muslim, Landowners, Bohra village, Purnia

Due to lack of health facilities, during an emergency situation in the area, we just leave the patient's life in the hands of God.

Soniya Sardar, a woman belonging to an SC family, Sukhnagar village, Supaul District

On the other hand, participants in FGDs from remote villages faced health facilities not within the vicinity of villages; roads to health centres were washed away and there were no suitable means of transport; misbehaviour of doctors and associates; non-availability of medicines; and increased medical costs as Government doctors advised patients to seek their services privately.

Table 4.14: Percentage of Households Seeking Health Services from Different Sources, by Social Groups

Sources of Health Services	Male-Headed Households				Female-Headed Households			
	SC/ST	OBC II & Others	OBC I & Muslims	Total	SC/ST	OBC II & Others	OBC I & Muslims	Total
Mobile/Emergency Medical Team	37.9	17.6	28.2	26.1	15.4	19.0	18.5	17.6
General Health Practitioner	8.2	8.3	6.2	7.6	3.8	9.5	18.5	10.8
Traditional Health Practitioners	2.1	3.4	4.4	3.4	0.0	0.0	0.0	0.0
Government Hospital	32.8	17.6	26.0	24.1	26.9	14.3	14.8	18.9
Private Clinic	27.7	29.9	40.1	32.4	26.9	28.6	40.7	32.4
Others	3.1	6.5	6.6	5.6	0.0	0.0	0.0	0.0
Number of Households	195	324	227	746	26	21	27	74

Health-seeking patterns by occupation also suggest that wage labourers, irrespective of the sex of household head, went to Government hospitals, emergency medical teams and private clinics for treatment (Table 4.15).

Table 4.15: Percentage of Households Seeking Health Services from Difference Sources, by Occupational Groups

Occupational Group	Male-Headed Households				Female-Headed Households			
	Wage Labour	Landed Households	Other Households	Total	Wage Labour	Landed Households	Other Households	Total
Mobile/Emergency Medical Team	33.2	18.6	29.8	26.1	21.7	11.1	10.0	17.6
General Health Practitioner	9.3	5.1	10.5	7.6	10.9	5.6	20.0	10.8
Traditional Health Practitioner	2.1	4.8	2.4	3.4	0.0	0.0	0.0	0.0
Government Hospital	28.4	18.3	29.8	24.1	17.4	16.7	30.0	18.9
Private Clinic	31.8	30.9	37.9	32.4	34.8	27.8	30.0	32.4
Other (Specify)	5.5	5.1	7.3	5.6	0.0	0.0	0.0	0.0
Number of HHs	289	333	124	746	46	18	10	74

4.2.6 Losses of Domestic and Other Goods

Tables 4.16 and 4.17 present the percentage of households (by social and occupational groups respectively) that lost domestic and other goods during the floods, and average values of such losses.

Table 4.16 shows that half of the households lost domestic goods like utensils and buckets; at the same time, 10 percent lost other goods, which may include other consumables and durables. The estimated value of domestic goods lost ranges from Rs. 2,505 (for Muslim households) to Rs. 8,431 (households belong to Others), whereas it is Rs. 2,813 (for SC households) to Rs. 8,813 (for OBC II) in cases of other goods lost.

Table 4.16: Percentage Distribution of Household Loss, by Social Groups

Social Group	Total HHs	Domestic Goods		Other Losses	
		% HHs lost	Average Value Lost (Rs)	% HHs lost	Avg Value (Rs)
SC	192	44.3	2565	7.8	2813
ST	29	51.7	3220	6.9	3250
OBC I	114	58.8	2925	9.6	3936
OBC II	317	46.1	5062	14.2	8813
Others	28	57.1	8431	10.7	7833
Muslims	140	55.7	2505	12.1	4924
All	820	49.6	3763	11.3	6406

Table 4.17: Percentage Distribution of Household Loss, by Occupational Groups

Occupational Group	Total HHs	Domestic Goods		Other Losses	
		% HHs Lost	Avg Amt of Loss (Rs)	% HHs Lost	Avg Amt of Loss (Rs)
Casual Wage Labour	335	53.4	2908	10.7	3406
Small and Marginal Cultivators	251	47.0	3650	10.0	8928
Medium and Large Cultivators	100	50.0	5776	11.0	11182
Salaried Households	37	54.1	6420	21.6	6688
Skilled Workers and Artisans	58	34.5	1840	13.8	3763
Self-Employed in Small Business	28	46.4	7308	10.7	5400
Other Households	11	63.6	4500	18.2	13600
All	820	49.6	3763	11.3	6406

Table 4.17 suggests that a substantial number of casual wage labourers (more than half) lost domestic goods, although the average value of loss was relatively lower (Rs. 2,908). It indicates that total domestic goods lost and other losses would total Rs. 155 crores (US$ 34 million) and 60 crores (US$13 million) [7] respectively.

[7] See Note on Projected Losses in Kosi Region page 67

4.2.7 Livelihood and Employment Losses

Loss of agricultural implements was reported by a large number of households. Although most households are poor, even medium and large farmers found their livelihoods affected by such losses. Overall, about 27 percent of households reported losing agricultural implements (Table 4.18). The table suggests that total loss of agricultural implements would be about Rs. 75 crore (US$ 16 million).

Photo © UNDP India

Table 4.18: Loss of Agricultural Implements and Number of Days of Agricultural Activities

Social Groups	% of HHs Losing Agricultural Implements	Value of Agricultural Implements Lost (Rs)
SC	28.0	1484
ST	23.5	1188
OBC I	22.2	3443
OBC II	26.2	4436
Others	20.0	4700
Muslims	37.2	1959
All	27.3	3259

Households also reported losing potential agriculture working days, which meant loss of income for agricultural and casual labourers alike, along with land owning households. Table 4.19 shows that across social groups, an average 86 days of work were reportedly lost because of the floods.

Table 4.19: Reported Loss of Working Days in Agriculture, by Social Groups

Social Group	Average Number of Working Days Lost
SC	85
ST	86
OBC I	88
OBC II	86
Others	88
Muslims	85
All	86

In terms of income lost during the floods, Table 4.20 reflects the devastating impact of the losses: About two-thirds of all households reported a loss of income between 50 and 99 percent, with another 28 percent reported losses of 25 to 50 percent. While the income losses reported by villagers may be somewhat overstated, clearly they were substantial. Maximum losses were among near-landless and already vulnerable SC communities, of whom nearly three in four lost from half to 99 percent of their income.

Table 4.20: Percentage of Households With Income Loss from Floods

Income Loss	SC	ST	OBC I	OBC II	Others	Muslims	All
Less than 10%	0.5	3.4	4.4	2.5	0.0	2.9	2.3
10 to 25%	1.6	0.0	7.9	4.1	3.6	5.0	4.0
25 to 50%	25.0	31.0	30.7	24.0	35.7	34.3	27.6
50 to 99%	72.9	65.5	57.0	69.4	60.7	57.9	66.1
Total	192	29	114	317	28	140	820

Table 4.21 illustrates a similar pattern of income loss occurring in female and male-headed households, with two-thirds losing more than 50 percent of their incomes. Female-headed households SC/ST families experienced the highest income losses. In addition, Table 4.22 suggests that a larger proportion of female-headed households wage labourers lost their incomes, while Chart 4.3 shows the multiple issues that FGD participated particularly in regaining employment.

Table 4.21: Percentage of Households With Income Loss, by Social Groups

Income Lost	Male-Headed HHs				Female-Headed HHs			
	SC/ST	OBC II & Other	OBC I & Muslim	Others	SC/ST	OBC II & Other	OBC I & Muslim	Others
Less than 10%	0.5	2.5	3.5	2.3	3.8	0.0	3.7	2.7
10 to 25%	1.0	3.4	6.2	3.6	3.8	14.3	7.4	8.1
25 to 50%	27.7	25.3	32.6	28.2	11.5	19.0	33.3	21.6
50 to 99%	70.8	68.8	57.7	66.0	80.8	66.7	55.6	67.6
Total No. of HHs	195	324	227	746	26	21	27	74

Table 4.22: Percentage of Households With Income Loss, by Head of HH

Income Lost	Male-Headed HHs				Female-Headed HHs			
	Wage Labour	Landed Households	Other Households	Total	Wage Labour	Landed Households	Other Households	Total
Less than 10%	2.8	1.2	4.0	2.3	4.3	0.0	0.0	2.7
10 to 25%	3.8	3.0	4.8	3.6	6.5	5.6	20.0	8.1
25 to 50%	31.1	23.1	34.7	28.2	19.6	27.8	20.0	21.6
50 to 99%	62.3	72.7	56.5	66.0	69.6	66.7	60.0	67.6
Total No. of HHs	289	333	124	746	46	18	10	74

Chart 4.3: Problems Regarding Livelihoods

Frequently Mentioned	Women Lost Employment No Income Male-Biased Employment Opportunities
Moderately Mentioned	Loss of working equipment
Mentioned a Few Times	Inability to migrate out of the villages for work because of damaged roads

In sum, the 2008 Kosi floods severely disrupted the local economy and livelihoods of the region. Although all sections of the villagers were affected, the intensity of suffering varied among social and occupational groups. Daily wage labourers were the most severely affected, as their employment and monthly earnings reduced sharply, with a decline in the wage rate by 25-30 percent after the floods. In the FGDs, villagers from different groups also reported that they had been largely unemployed during the three months between the floods and the group discussions, except those who had migrated.

4.3 Conclusions

At the village level, significant losses from the Kosi floods were reported in terms of public infrastructure, including roads, irrigation and electricity systems, and telecommunications. In contrast, at the household level losses were reported in terms of lives, livestock, agricultural operations and employment opportunities.

Most households in all social groups reported losing more than half and up to nearly all of their income. This observation is critical, since the socio economic status of the households even before the floods was precarious, and most people eked out their living by casual labour and agricultural work. Households in all social groups also lost stored food, equipment/ implements, household goods and other consumables, which rendered many of them dependent on the Government for relief and rehabilitation. Lastly, it should be remembered that the floods caused widespread illness among affected people. This, in turn, has constrained their employment capacity and affected their income.

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Chapter 5

Coping Mechanisms

Chapter 5

COPING MECHANISMS

As mentioned above, most of the affected villagers were experiencing severe floods for the first time. Accordingly, they were mentally and physically ill-prepared for the calamity, as illustrated by several indicators of their immediate response. Coping strategies that villagers adopted are discussed below.

5.1 Coping Mechanisms

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Most households across all social groups expressed the need for Government assistance to cope with the floods and their aftereffects. Respondents reported seeking loans from money lenders, using available and old materials for reconstruction of damaged houses, and planning for reconstruction with future earnings.

Dipping into previous savings formed an important coping mechanism, but only for a small number of households. Given the poor economic conditions and occupational profiles of the affected households, they did not have cash savings of enough magnitude to help tide over the calamity. Across social groups, an overwhelming majority of households indicated they would depend on the Government. (Table 5.1). Borrowing turned out to be the second most important coping strategy, with more than 28 percent of households indicating this option; the percentages among some poorer groups (SC, OBC I and Muslims) were even higher.

Table 5.1: Percentage of Households Adopting Various Coping Mechanisms, by Social Groups

Coping Strategies	SC	ST	OBC I	OBC II	Others	Muslims	All
Government Relief	89.6	93.1	89.5	82.6	89.3	82.9	85.9
Other Than Government Relief (NGOs and other Charitable Organizations)	25.0	31.0	16.7	20.5	21.4	12.1	20.0
Relatives' Support	21.9	10.3	16.7	22.4	42.9	15.7	20.6
Own Savings	4.2	17.2	13.2	18.0	10.7	17.9	13.8
Borrowings	30.2	10.3	32.5	27.8	10.7	30.7	28.3
Temporary Employment	11.5	13.8	14.0	8.2	0.0	22.1	12.1
No. of HHs	192	29	114	317	28	140	820

Table 5.2 gives the preferred coping mechanisms by occupational groups, considering the sex of the household head. Although Government relief is most demanded across the groups as a whole, it is important to note that wage labourers are distinctly more dependent on Government relief. Borrowing from others is the second most important coping mechanism for MHHs, whereas it varies for FHHs. While wage labourers and FHHs overall, considered borrowing as their second most important

coping mechanism, landed FHHs considered support from relatives as preferable. Most households, irrespective of sex of the head of household, put less emphasis on their own savings as a coping mechanism. About 35 percent of FHHs, who are wage labourers, indicated borrowing as a coping mechanism (Table 5.2).

Table 5.2: Percentage of Households by Type of Coping Mechanism, by Occupational Groups

Relief Type	Male-Headed HHs				Female-Headed HHs			
	Wage Labour	Landed Households	Other Households	Total	Wage Labour	Landed Households	Other Households	Total
Government Relief	91.3	82.3	83.9	86.1	91.3	72.2	70.0	83.8
Other Than Government Relief (NGOs and Charitable Organizations)	23.2	16.2	22.6	20.0	23.9	16.7	10.0	20.3
Relatives' Support	17.0	25.5	17.7	20.9	13.0	27.8	20.0	17.6
Own Savings	10.4	17.7	14.5	14.3	2.2	11.1	30.0	8.1
Borrowings	24.2	27.9	36.3	27.9	34.8	22.2	40.0	32.4
Temporary Employment	15.9	7.8	12.1	11.7	15.2	27.8	0.0	16.2
Total	289	333	124	746	46	18	10	74

The consequences of floods and the related displacement can be seen through coping strategies adopted by the households, including withdrawing children from school and putting them to work, selling assets, reducing household food stocks and seeking work under the NREGS. Although a significant number of people lost at least some of their stored foodgrains because of the floods, some nevertheless were able to use remaining stores to help them cope with food scarcity. Across social groups, Table 5.3 shows, households reported using stored foodgrains as an important coping mechanism.

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Table 5.3: Coping Mechanisms Undertaken, by Social Groups

Social Group	% HHs Storing Foodgrains	% HHs Selling Assets	% HHs Reducing Food Post-Flood	% HHs Seeking Work from NREGS
SC	22.9	5.2	90.1	10.4
ST	44.8	10.3	96.6	20.7
OBC I	30.7	12.3	90.4	4.4
OBC II	42.6	13.2	83.0	2.2
Other	32.1	39.3	60.7	0.0
Muslim	37.1	12.1	92.9	1.4
All	35.1	11.8	87.1	4.9

During the FGDs, affected groups of men and women alike suggested coping mechanisms that they would like the Government and other agencies to take up in such challenges. They discussed these strategies in terms of shelter, food, water and sanitation, health and education. Chart 5.1 depicts a consolidated picture vis-a-vis coping mechanisms as expressed by agricultural labourers, small and marginal farmers, medium and large farmers, artisans and women. It should be underscored that while some coping mechanisms are immediate in nature, others are longer-term. Participants identified several key mechanisms that are dependent on external support to overcome a dire situation of no food and no drinking water or potable water; these include food and cash relief in accessing food; chlorine tablets for accessing safe drinking water; attendance at medical facilities for disease treatment; and relief support to restore livelihoods.

Chart 5.1: Coping Mechanisms

Area	Coping Mechanisms
Shelter	• Temporary arrangements • Staying on the premises of panchayat office or any other public place • Sharing other villagers shelters
Access to Food	• Food and cash relief • Ate one meal a day • Half-fed at each meal • Compromise on food items • Borrowed foodgrains from others because Government relief inadequate • Ate two meals a day • Did not serve some family members, including children • Fasted
Access to Water and Sanitation	• Used chlorine tablets supplied by NGOs • Drank contaminated water • Drank less water each day • Drank boiled water (very rare) • Defecated in open places • Defecated in others toilets
Access to Health and Education	• Attended medical facilities, if existing • Visited traditional healers in the vicinity • Took patients to nearby blocks/towns if emergency • Abstained from seeking health support
Livelihoods	• Migrated • Took credit at very high interest rates • Leased land • Accepted relief assistance

FGDs with women revealed the multiple issues they faced in meeting the disaster, particularly with regard to shelter, food security, health, water and sanitation, and livelihoods. Details are provided in Chart 5.2, summarized according to the frequency with which they were mentioned.

Chart 5.2: Issues for Women and Coping Mechanisms Adopted

Access to Food	Coping Mechanisms
Frequently Mentioned	• Ate one meal a day • Half-fed at each meal • Compromised food items • Borrowed foodgrains from others because Government relief inadequate
Mentioned a Few Times	• Ate two meals a day • Some family members, including children, not served
Mentioned a Very Few Times	• Fasted
Access to Water and Sanitation	
Water	
Frequently Mentioned	• Used chlorine tablets supplied by NGOs • Drank contaminated water
Mentioned a Few Times	• Drank less water each day
Mentioned a Very Few Times	• Drank boiled water
Sanitation	
Frequently Mentioned	• Defecated in open places
Mentioned a Few Times	• Defecated in others latrines
Livelihoods	
Frequently Mentioned	• Took credit at very high interest rates • Leased land • Migrated • Accessed relief assistance
Mentioned a Few Times	• Child labour

Women were also concerned about the lack of warm clothes to protect themselves from the coming winter. The floods had claimed all their warm clothes, so receiving woollen clothes and blankets was a necessity.

> " The winter season has already come. We have lost everything in the floods. We do not have any woollen clothes and blankets. How will we protect ourselves and our children from the cold? "
>
> **Uma Sardar, 25, SC, Sukhnagar village, Pratapganj block, Supaul District**

5.2 Resources for Recovery and Rebuilding

All social groups, relatives and friends, as well as money lenders, were the main sources of borrowing following the floods. Table 5.4 suggests that about 30 percent of households reported they had taken loans from various sources. Informal sources, though timely, also demand high interest rates, which results in further indebtedness and dispossession of assets for most poor and marginalized households. Informal money lenders represent the main source of borrowing for both MHHs and FHHs, followed by relatives and friends (Table 5.6).

Table 5.4: Percentage Distribution of Households Borrowing from Different Sources, by Social Groups

Borrowing Sources	SC	ST	OBC I	OBC II	Others	Muslims	All
Relatives and Friends	25.6	50.0	27.3	31.6	33.3	29.1	29.2
Moneylenders	69.2	50.0	72.7	65.8	66.7	65.5	67.4
Cooperative Banks and Microfinance	5.1	0.0	0.0	2.6	0.0	5.5	3.4
Total HHs Borrowing	61	4	39	93	3	46	246
% of Households With Any Loans	31.8	13.8	34.2	29.3	10.7	32.9	30.0
Total No. of HHs	192	29	114	317	28	140	820

Table 5.5: Percentage of Households, by Borrowing Type and Head of Household

Source of Borrowing	Male-Headed HHs		Female-Headed HHs	
	Number	%	Number	%
Relatives and Friends	49	22.2	8	32.0
Moneylenders	169	76.5	17	68.0
Cooperative Banks and Microfinance	3	1.4	0	0.0
All	221	100	25	100
% HHs Borrowing	29.6		33.8	

As Table 5.6 indicates, householders own savings and bank loans do not figure in the list of long-term coping mechanisms, possibly because of the poor economic conditions of the households and their inability to access formal lending institutions. At the same time, the table also shows the willingness of some affected groups (particularly SCs and STs) to repair their houses by future savings.

Table 5.6: Percentage Distribution of Households by Major Ways of Getting Resources for House Reconstruction/Repair, by Social Groups

Sources of House Reconstruction	SC	ST	OBC I	OBC II	Others	Muslims	All
Own Savings	5.8	31.3	8.6	13.3	15.4	14.3	11.4
Borrowing from Relatives/ Friends	9.0	0.0	11.8	6.4	15.4	8.7	8.4
Moneylenders	25.8	12.5	17.2	18.7	0.0	19.0	19.8
Using Old/Available							
Building Materials	9.7	6.3	15.1	15.3	30.8	16.7	14.2
Government Assistance	38.7	37.5	38.7	37.9	30.8	31.0	36.6
Banks and Financial Institutions	0.0	0.0	1.1	1.5	0.0	2.4	1.3
Through Own Future Savings	10.3	12.5	6.5	5.9	0.0	7.1	7.4
Others	0.6	0.0	1.1	1.0	7.7	0.8	1.0
Total no. of HHs	155	16	93	203	13	126	606

For most households about 55 percent resuming agriculture was not an immediate option (Table 5.7). This is significant and highlights that floodwaters remained in villages and fields for a considerable period, so that farmers will have to undertake extensive land development before cultivation.

To resume agriculture, the overwhelming majority of affected households were expecting Government support, which is not surprising given the affected population's socioeconomic conditions. Borrowing from informal sources such as moneylenders, local traders and larger farmers also was used to meet working capital and other immediate consumption needs and to resume livelihoods.

Table 5.7: The Future of Agriculture - Can It Be Resumed Immediately?

Social Group	Can Resume	Can't Resume	Can't Say	No. of HHs With Land
SC	12.9	54.8	32.3	93
ST	29.4	41.2	29.4	17
OBC I	15.9	60.3	23.8	63
OBC II	13.0	60.7	26.3	262
Others	12.0	32.0	56.0	25
Muslims	35.9	42.3	21.8	78
All	17.1	55.0	27.9	538

5.3 Migration as a Coping Mechanism

Migration was widespread in the region, even before the floods. The survey found that more than 30,000 persons from the 40 villages used to migrate seasonally pre-flood, to other states in India. Most work at the destination is casual agricultural labour, construction labour, rickshaw pulling or hawking.

The 2008 Kosi floods had a substantive impact on migration, both out-migration and return. In nearly two-thirds of villages (27 out of 40), villagers reported that they found hardly any work within or near the village post-flood (Table 5.8), and out-migration increased in three-fourths of villages. Interestingly, the flow of female migrants was either the same (in 23 villages) or less than before the floods (in four villages). This may be either because females are more involved in resettling their households while males go out in search of jobs, or because the massive damage to roads has reduced their mobility for outside work.

Photo © UNDP India

At the same time, return migration has been substantial, with a large percentage of out-migrants from most villages returning to enquire about their families and loss of assets and property.

Table 5.8: Reported Migration in Affected Villages

Items		No. of Villages
Possibility of Finding Work Outside the Village Post-Flood	Yes	13
	No	27
Flow of Male Out-Migrants Post-Flood	More than before the flood	31
	Less than before the flood	7
	Same	2
Flow of Female Out-Migrants Post-Flood	More than before the flood	13
	Less than before the flood	4
	Same	23
Villagers Staying Outside Return to Villages Post-Flood	Yes	34
	No	6
Average Number of People Returning to Village		370

Although out-migration as a whole increased, it did so moderately at the household level. With the increase in migration, most households reported short-term migration and destinations outside Bihar, at least for males (Tables 5.9 and 5.10).

Table 5.9: Flow of Migration Before and After Floods, by Social Groups

Social Group	Total no. of HHs	% HHs Migrating Before Flood	Of the total HH migrating before flood		Of the total HH	Total Migrant HH (Migrating and New Additions)	Migrant HHs to Total HHs (Migrating and New Additions)
			% Migrating Post-Flood	% Not Migrating Post-Flood			
SC	192	28.6	23.6	76.4	2	57	29.7
ST	29	24.1	28.6	71.4	2	9	31.0
OBC I	114	28.1	46.9	53.1	7	39	34.2
OBC II	317	29.3	31.2	68.8	6	99	31.2
Others	28	14.3	75.0	25.0	0	4	14.3
Muslims	140	45.0	19.0	81.0	1	64	45.7
All	820	31.0	29.1	70.9	18	272	33.2

Table 5.10: Percentage Distribution of Household Migration, by Nature and Destination

Social Group	Total No. of HHs	No. of HHs Migrating	Male Migration by Nature (%)		Male Migration by Destination (%)	
			Short-Term	Long- Term	Other Districts of Bihar	Outside Bihar
SC	192	55	73.6	26.4	3.8	96.2
ST	29	7	85.7	14.3	0.0	100
OBC I	114	32	68.8	31.3	0.0	100
OBC II	317	93	71.0	29.0	8.6	91.4
Others	28	4	50.0	50.0	25.0	75.0
Muslims	140	63	82.5	17.5	3.2	96.9
All	820	254	74.2	25.8	5.2	94.9

5.4 Conclusions

Most households expressed their reliance on Government relief measures as an important coping mechanism to meet short-term needs for food and shelter. Dependence on Government of wage labourers in particular is even higher than for other groups. By contrast, very few households reported reliance on their own savings or reserves, underscoring that households resource base is very low and losses are difficult to recoup with only their own assets.

A key coping mechanism was provided by migration, already a tradition in the region. More households that lost livelihoods appear to have moved to other places, particularly outside Bihar, in search of work. This increased incidence, although not significantly higher than the pre-flood scenario, is nonetheless important to count as a strategy for survival. Thus, creating livelihoods within villages or in surrounding areas before the next disaster assumes greater importance, since households need to rebuild their lives around where they live.

An important suggestion emerging from affected communities, irrespective of gender or social group, involves expanded support from Government and NGOs for livelihood activities, given that most affected people would like to work and enhance their earnings. Other suggestions focused on Government providing additional basic services health, education, and water and sanitation facilities in rural areas so that healthy living is more feasible.

Chapter 6

Recovery Strategies

Chapter 6

RECOVERY STRATEGIES

Recovery strategies are medium to long-term in nature and should focus on restoring secure life and livelihoods. This chapter focuses on villagers preferred assistance for recovery as well as their willingness to relocate. Key discussions regarding proposed recovery strategies identified by different groups through FGDs are given in the final section.

6.1 Willingness to Relocate

Relocating to new areas following the floods, although preferred by relatively few affected people, represents an important recovery strategy, because many households in severely affected villages have limited hopes for new livelihood generating opportunities. In such situations, one option may be to relocate (Table 6.1). Reasons for relocation include concerns about safety of existing locations, possibility of frequent flooding in the future, and loss of arable land.

Table 6.1: Percentage Distribution of Households, by Willingness to Relocate

Social Group	Total No. of HHs	% Like to Relocate	% HHs by Reasons for Relocation		
			Village Rendered Unsafe for Continued Habitation	Frequent Flooding	Loss of Land
SC	192	13.5	38.5	26.9	34.6
ST	29	34.5	50.0	20.0	30.0
OBC I	114	15.8	16.7	55.6	27.8
OBC II	317	11.4	25.0	44.4	30.6
Others	28	17.9	0.0	20.0	80.0
Muslims	140	10.7	6.7	46.7	46.7
All	820	13.4	25.5	39.1	35.5

6.2 Preferred Assistance for Recovery

Another household recovery strategy focuses on receiving assistance for livelihood restoration. SC and ST households prefer long-term provision of foodgrains and support to agricultural inputs (Table 6.2a). For these households, compensation for crop loss and access to credit at low interest rates are their third priority, and starting NREGS works on a large scale also garners significant support.

Table 6.2a: Priorities of SC and ST Households Among Types of Assistance (Up to First Three Priorities)

Type of Assistance	First Preference	Second Preference	Third Preference
Agricultural Input Support	17.6	13.1	7.7
Provision of Foodgrains	38.5	24.9	17.2
Assistance for Crop Losses	12.2	16.7	14.0
Starting NREGS Works on Large Scale	6.3	20.4	13.6
Small Grants for Business Recovery	2.3	2.7	5.4
Access to Cheap Credit	12.7	12.2	20.8
Skills Training	1.4	2.3	3.2
Debt Relief	6.3	3.1	8.6
Others	2.7	2.6	9.2
Total	100	100	100

For households other than SC and ST, the situation is similar yet a bit different. Such households also prefer assistance to agricultural inputs, provision of foodgrains and assistance for crop losses, but provision of credit at low interest rates is not as highly preferred albeit still noteworthy.

Table 6.2b: Priorities of All Households Other than SC and ST Among Types of Assistance (Up to First Three Priorities)

Type of Assistance	First Preference	Second Preference	Third Preference
Assistance for Agricultural Inputs	22.5	20.2	18.7
Provision of Foodgrains	34.2	22.4	14.9
Assistance for Crop Losses	18.2	19.2	17.2
Starting NREGS Works on Large Scale	2.3	10.9	5.3
Small Grants for Business Recovery	3.2	3.7	3.3
Access to Cheap Credit	10.0	11.5	20.2
Skills Learning	2.5	3.0	4.5
Debt Relief	1.0	2.5	5.7
Others	5.3	5.0	3.7
No Response	0.5	1.3	6.0
Total	100	100	100

6.3 Recovery Strategies: Key Points from FGDs

In FGDs, agricultural labourers, small and marginal farmers, medium and large farmers, artisans and women have expressed views on several long-term recovery strategies. Important strategies supported include creation of employment for women, expanded education, skills development, land development and reclamation, improving rural infrastructure (roads, irrigation), and credit support. These views provide valuable insights in formulating long-term strategies for recovery.

6.3.1 Restoration and Building of Infrastructure

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Among FGDs with all groups, restoring and building rural infrastructure emerged as an important priority. Major suggestions included the following:

- Construct/repair of irrigation systems
- Construct embankments to protect villages from future floods
- Repair and construct roads and bridges to connect villages to other places as well as different hamlets inside villages.
- Restore electricity connections and electrify villages without such facilities pre-flood

6.3.2 Restoration and Enhancement of Livelihoods

Perhaps the most important challenge arising from the 2008 Kosi floods is to restoration and enhancement of livelihoods of the affected people and this emerged as the major concern of all groups. Suggested strategies for livelihood restoration and enhancement include:

Cultivators

- Provide subsidy and moratorium on debt payment
- Take effective steps to improve land, including removal of sand from cultivable lands, though NREGS and other measures
- Construct/repair irrigation systems
- Supply fertilizers, pesticides at subsidized rates
- Distribute free diesel pump-sets to all farmers
- Compensate for lost crops, shelter and assets
- Encourage activities like plantation and fisheries
- Provide crop insurance
- Waive loans for flood-affected farmers

Labour and Artisan Households

- Reconstruct destroyed and damaged houses
- Subsidize loans for establishing small enterprises or shops
- Encourage activities such as piggery, animal husbandry and poultry
- Provide Government life insurance for the poor and landless, and for people with disabilities
- Encourage jute-based industries, agarbatti making and carpet making at the village level to supplement households income
- Widely and effectively implement the NREGS

Some affected people also demonstrated commendable initiative in starting new livelihoods, as illustrated in Box 6.1.

Box 6.1: Initiative for Reviving Livelihoods

Naresh Kumar Jha of Bhattabari village, a Brahmin, is now back from the relief camp. The floodwaters have receded, but they swept away his shelter. All the crops on his lands were damaged. All his farm lands are now water-logged, some of them being prey to erosion by the Sursari River, which has widened its course after the floods. But despite being homeless, Naresh did not give up. With nominal capital, Naresh started a tea stall. Now he has in a new identity the owner of a small business.

6.3.3 Shelter

Among the FGD groups, agricultural labourers were most concerned about precautions to be taken against future floods, since their shelters were more prone to disaster. As part of long-term recovery strategies, they suggested proper maintenance of dams to avert such events and recommended that villagers be given advance flood warnings via radio or television.

During FGDs, all occupational groups except medium and large farmers said they expected Government support for rebuilding their houses, through IAY. Agricultural labourers showed an inclination to construct *pukka* houses with such support, and many sought land from the Government on which to build houses. Non-agricultural labourers said they were willing to construct their new houses on elevated land to protect against inundation in the future.

Both agricultural and non-agricultural labourers suggested that bank loans at very low interest rates for reconstruction would be beneficial, while medium and large farmer groups showed a willingness to receive low-interest, mid or long-term Government loans to rebuild their houses. Unlike the labourer households, farmer groups demanded compensation for damage to their houses.

Three population groups marginal and small farmers, non-agricultural labourers and women expressed their interest in improving household facilities like electricity and latrines, if Government or private support was provided.

6.3.4 Access to Food

To meet food requirements after the floods, FGD participants emphasized the need for Government assistance through food or cash support.

Agricultural labourers in particular stated that the Government should provide food relief every month at least for one year, whereas marginal and small farmers felt that such relief was appropriate for six to eight months, either from the Government or from other organizations.

For their part, medium and large farmers suggested that the Government provide food relief of at least 50kg wheat and 50kg rice, per household per month, for five to six months, as well as food at a subsidized price through the PDS for six to eight months. They emphasized that food relief should be extended until agricultural production is assured. They also expected cash assistance from the Government for such production.

Both non-agricultural labourers and women's groups wanted the Government to continue relief (Rs. 2,250) and foodgrains to the household) for an indefinite period of time. At the same time, women's groups thought that the Government should offer differential relief support according to family size. They also sought long-term food support from the Government, especially for small children.

All groups, except medium and large farmers, stated that the massive floods had left them jobless and urged the Government to create employment opportunities that could help them meet their food requirements. In particular, poor women expressed the willingness and need to become involved in different activities under NREGS, so that they can earn and purchase food. Similarly, both agricultural and non-agricultural labourers highlighted effective implementation of NREGS, as necessary to improve their access to food.

6.3.5 Access to Water and Sanitation

All FGD groups mentioned that water purification tablets should be used to make polluted water safe for drinking. Notably, women's groups also knew the name of the chlorine tablets and bleaching powder used for this purpose.

Medium and large farmers suggested that water purifying tablets be distributed to all flood affected households, while non-agricultural labourers suggested the use of plastic buckets with covers for maintaining water quality. Agricultural labourers suggestions focused on cleaning of local rivers, ponds and well, and on repair of non-functional tubewells.

Installing an adequate number of new tubewells also marks an important step in recovery, according to the FGD groups. Likewise, adequate depth for new tubewells was considered critical for access to fresh water. According to medium and large farmer groups, depth of the boring hole should be at least 45 or 50 feet, instead of the current 25 feet. In particular, women's groups sought the construction of more water points in villages, so that they can fetch water without travelling a great distance; they also expressed the need for tap water at the household level. Women's groups were also knowledgeable on hygiene-related issues, and they suggested constructing *pukka* latrines at the household level.

6.3.6 Access to Health

Access to health care was considered critical by all groups, and they suggested increased health care facilities in villages. Agricultural labourers, in particular, suggested that free medical care be offered. Distribution of free medicine was supported not only by this group, but also by medium and larger farmers and women; in contrast, non-agricultural labourers suggested the availability of good-quality medicine at, reasonable prices.

The unavailability in villages of Primary Health Care Units and of doctors concerned several groups, and the suggestion was that doctors be made available at least once a week.

Women's groups highlighted numerous areas such as antenatal and post-natal care, child care, women's health, hygiene education and support, health facilities required and special programmes for girls and women. Proposals included:

Antenatal and Postnatal Care

- Provide facilities for institutional deliveries
- Organize facilities for vaccination for newborns and pregnant women

Child Care

- Distribute nutritious food to children
- Provide arrangements for children's health checkups

Women's Health

- Distribute important medicines to women
- Appoint doctors to look into women-specific diseases
- Distribute vitamin tablets amongst villagers, particularly to women
- Arrange a camp to treat infectious diseases
- Increase awareness among women about treatment for infectious diseases

Hygiene

- Provide training on personal hygiene
- Provide required materials (such as sanitary pads) for maintaining cleanliness, particularly during menstruation

Health Facilities

- Deploy sub-centre or mobile medical teams in most affected villages
- Make weekly visits by medical teams compulsory

Special Programmes

- Initiate health programmes with special emphasis on girls and women

6.3.7 Access to Education

Access to education was strongly linked to infrastructure, with all groups except non-agricultural labourers, pointing out that connecting each school with a *pukka* road from the village might improve educational levels by encouraging continued enrollment. Both agricultural labourers and women's groups, suggested effective provision of midday meals to schoolchildren; the latter groups also suggested reconstructing or renovating school buildings damaged in the floods and the re-distribution of educational materials, since many children had lost these in the floods.

Among some groups, there still appeared to be little appreciation for education. For example, landless and agricultural labourers of Kusha village in Supaul District, expressed their reluctance by stating that education was not useful unless a job was guaranteed after completion of studies.

Establishing Government high schools in or near villages was found to be a priority for all groups. Women's and farmer's groups also suggested increasing the number of Anganwadi centres; going further, women's groups urged the use of these centres for basic information dissemination and proposed implementing special back-to-school programmes. Like women's groups, medium and large farmer groups seemed concerned about girls' and women's education, and suggested increasing/improving educational facilities.

6.3.8 Recovery Strategies for Children and Elderly

Male and female respondents in FGDs also focused on health and education in suggesting recovery strategies for flood-affected children. Both sexes emphasized organizing special psycho-social counselling initiatives for these children, to help them deal with the trauma. They also suggested children's immunization programmes. Female respondents added two more important strategies: distributing milk and other basic nutrients, and conducting regular health checkups for all children.

Regarding education, both men and women expected school management to schedule extra classes to cover children's education losses during and after the floods. They recommended free distribution of school uniforms, books and stationery to enable a smooth re-starting of schooling.

Turning to the elderly, options for recovery strategies focused mainly on health, finances and other support. Free health facilities for the elderly, irrespective of socio economic status or religion, were suggested, by both men and women FGD participants. Male respondents hold that moral support to sick and disabled elders should be given through special initiatives.

A financial safety net was viewed as essential after a certain age, since income virtually ceases. Providing pensions to all aged persons also was suggested, regardless of social group or poverty status.

Free Government bus/train passes for the elderly were also recommended. Other economic support suggested by male respondents included free ration facilities, through the PDS, while female respondents suggested that clothes and other necessary items be provided, more cheaply in a support package.

Lastly, focus was given to the vulnerability of the elderly, arising from the lack of a place to stay. Both male and female respondents suggested that the Government provide housing support not only to the elderly but also to people with disabilities. In addition, women said arrangements should be made for social welfare units for the elderly, at the panchayat level, and for pensions for entertainment of the elderly.

6.4 Conclusions

Strategies for medium to long-term recovery were of prime concern to affected people. Across social and occupational groups, households strongly expressed the priority need for enhancement of their livelihoods, with Government support, particularly through creating employment and restoring agricultural activities. Social infrastructure such as health and education also figured in long-term recovery but were lower-priority areas, while cheaper credit, debt relief and rebuilding of physical infrastructure were widely perceived as extremely important livelihood strategies. Given the extensive damage to houses, Government support to repair and rebuilding was emphasized by all, particularly by poor households.

Women in particular, expressed the need to improve both health and livelihood activities, and suggested the need for antenatal and post-natal care, hygiene and child-related support. They also expressed need for implementing of NREGS.

Chapter 7

Conclusions and Policy Implications

Chapter 7

CONCLUSIONS AND POLICY IMPLICATIONS

Photo © UNDP India

The Kosi floods have caused unprecedented loss to lives, livelihoods, infrastructure and property in north eastern Bihar. This study brings to light the nature and extent of suffering of the people, as well as the effectiveness of public action in mitigating the impact. Critically, it suggests strategies for short and long-term planning for recovery of livelihoods and avoiding such disasters and specifically addresses people-centred aspects of the floods and devastation.

The study reveals that most affected households had not experienced any floods for at least 50 years; this experience was, therefore, especially devastating and traumatic. Neither the State, nor the households were prepared to respond quickly to the deluge. As a result, a large number of affected households did not wait for Government or private assistance in evacuating to safer places, using their own means to move out of flooded villages, as soon as possible.

7.1 Experiences and Impact of the Floods

Experiences of the Floods

The Kosi flood was a new experience for nearly three in four households, even as remaining households reported that they experienced floods almost annually. In villages where floods came for the first time, no preparedness existed, including boats for evacuation or early warning systems. As noted above, most households moved to safe areas through their own efforts.

On average, villages remained waterlogged for nearly two months (53 days), with some experiencing standing water in household areas for 90 days. For agricultural land, the average duration of standing water was nearly three months. Even village roads remained waterlogged for more than six weeks.

In two-thirds of villages, more than 75 percent of the living area was affected, while in about 70 percent of villages, more than 75 percent of agricultural land was affected, indicating the massive power of the floods.

One-third of households shifted to nearby Government camps and about one-quarter made their own arrangements by moving to other places. Government assistance appeared to be geared toward the most vulnerable, targeting groups such as female headed households of Muslims and OBC I families.

Across all communities, an overwhelming majority of households reported receiving health assistance during the floods.

The Government's direct relief to flood victims was well targeted, with the vast majority of households receiving Government assistance (100 kgs rice and Rs. 2,250 per household). Female headed households received food and medicines in proportionately larger numbers. Overall, reported leakages in the supply of relief items were low, and no major complaints of discrimination in the distribution of relief were reported.

Families stayed in Government camps for between six weeks to two months. Although they faced difficulties in the camps, including overcrowding, lack of proper bathing arrangements and the location of drinking water points being near toilets, satisfaction was generally reported on functioning and management of relief camps. In some camps, meanwhile, communities developed self-defence mechanisms to ensure safety and security.

Impact of the Floods on Livelihoods

The Kosi floods caused extensive damage at both village and household levels. At the village level, losses were reported in terms of roads, embankments, bridges, culverts, public infrastructure, and irrigation and electricity systems. Because roads were severely damaged or destroyed, this became a hindrance to efficient relief work and provision of basic necessities. Electricity and telecommunications were very badly affected, and about three-fourths of tubewells, a major source of irrigation, were severely damaged.

At the household level, losses were in lives, livestock, agricultural operations and employment opportunities. The floods destroyed or damaged the overwhelming majority of people's homes, reduced their access to safe water, and destroyed or damaged toilet facilities. About 40 percent of houses were completely/severely damaged and another 40 percent partially damaged. Vulnerable groups such as Muslims, OBC I and Scheduled Castes reported more damage to their houses than others. Almost half of functioning public handpumps and one-third of private handpumps were affected, resulting in difficulty in obtaining safe drinking water.

Damage to Kharif-season crops, including Aghani paddy (the major crop), maize, jute and other vegetables, was extensive, and massive livestock losses occurred, particularly among the OBC II community, SCs and Muslims.

Nearly every household lost agricultural implements, affecting their livelihoods, and an average of nearly three months of work has been lost. Shortage/unavailability of food and firewood became common problems, as three-fourths of households lost stored foodgrains and half lost domestic goods.

Maximum income losses by social group were found in SC communities, ranging from 50 to 99 percent of incomes. At the same time, two-thirds of FHHs lost more than 50 percent of income; FHHs from SC/ST families experienced the highest losses. Among occupational groups, daily wage labourers were the most severely affected, with both employment and monthly earnings falling sharply after the flood by up to 30 percent.

In estimating the losses to the region (1,000 villages) from the floods, the investigators found estimated losses to be far higher than official statistics. These are summarized in Table 7.1.

Table 7.1: Projected Losses in Kosi Region

Table 7.1: Estimated Losses for the Whole Region due to Kosi Floods	Rs crore
Value of loss of houses	880
Value of food grain loss	400
Value of livestock lost	390
Value of domestic items lost	155
Value of loss of agricultural implements	75
Value of other losses (trees, crops etc.)	60
Total	1960

7.2 Coping Mechanisms and Recovery Strategies

Households adopted several short-term coping mechanisms, including selling assets, withdrawing children from school and engaging them in work (if any), reducing household food (such as having one meal a day or not serving some family members), and using stored foodgrains to cope with the food scarce situation.

For shelter, temporary arrangements were made by the Government, while some households stayed in public facilities such as the panchayat office or in other villagers houses. Most households had no option but to drink contaminated water or to take less water per day. Defecation occurred either in open places or in others' toilets, if available. Significant coping strategies for livelihoods included migrating, taking credit at very high interest rates and leasing land.

Villagers themselves identified some preferred coping mechanisms that are dependent on external support, including food and cash relief for food, using chlorine tablets and purifying drinking water, attending existing medical facilities, and obtaining relief for restoring livelihoods. All groups particularly wage labourers expressed reliance on Government relief measures as an important coping mechanism to meet short-term needs for food and shelter. Borrowing and migration represented other key coping mechanisms, with migration outside Bihar becoming even more deeply embedded in the social fabric of the region than it was before the floods.

Critically, in wide-ranging FGDs villagers also offered numerous insights into suggested medium and long-term strategies for recovery, including:

Shelter: Properly maintaining dams to avert such a disaster; ensuring Government support for rebuilding houses through IAY; constructing *pukka* houses, also with due support; donating land to the landless for constructing houses; providing loans at cheap interest rates; and providing compensation for damage to houses.

Food: Continuing Government assistance (food or cash); creating employment, so that there is income to buy food; and providing food at a subsidized price through a public distribution system.

Water and Sanitation: Cleaning local rivers, ponds and wells; repairing non-functional tubewells; installing an adequate number of new tubewells, and with due depth; constructing more water points in villages; performing regular water quality testing; and constructing pukka latrines.

Health: Ensuring expanded healthcare facilities in villages; making good quality medicines available at reasonable prices; making doctors available at least once a week in villages; providing support for antenatal and post-natal care for pregnant women; and providing additional support for childcare and women's health.

Education: Connecting each school with a *pukka* road; introducing effective provision of midday meals to schoolchildren; reconstructing or renovating destroyed or damaged schools; establishing Government high schools in or near villages; increasing the number of Anganwadi centres; and implementing special back to school and other programmes.

Restoring/Building Infrastructure: Constructing/repairing roads, bridges, irrigation systems and embankments; restoring electricity connections; and electrifying villages not yet connected to the electricity grid.

Cultivators: Providing subsidy and moratorium on debt payments; taking effective steps for land improvement, including removal of sand from cultivable lands, though NREGS; constructing/repairing irrigation systems; supplying fertilizers and pesticides at subsidized rates; distributing free diesel-pump sets; compensating for lost crops, shelter and assets; encouraging activities such as plantations and fisheries; providing crop insurance; and waiving loans for flood-affected farmers.

Labour and Artisan Households: Reconstructing destroyed/damaged houses; providing subsidized loans for establishing small enterprises or shops; encouraging activities such as piggery, animal husbandry and poultry raising; providing Government life insurance for the poor, landless and people with disabilities; expanding income generating activities at the village level, including agarbatti making, basket making and carpet making; and effectively and extensively implementing NREGS.

Women: Implementing NREGS on a large scale; providing debt relief and credit at low interest rates; providing training for microenterprises; and forming Self-Help Groups.

Children: Organizing special psycho-social counselling initiatives for flood-affected children to help them recover from the trauma; expanding immunization programmes; distributing milk and other basic nutrients; ensuring regular health checkups; scheduling extra classes to cover education losses; and distributing books, stationery and other educational assets to replace materials damaged in the floods.

Elderly: Providing free health facilities for the elderly, irrespective of socioeconomic status or religion; providing moral support to sick and disabled elders; providing financial safety nets, pensions and free rations through the PDS; and providing housing support for all aged people.

7.3 Policies [8] for Recovery and Livelihood Enhancement

Although the prevailing situation is one of great inequality, all groups seem to have been reached fairly by relief operations. In fact, a disaster such as these floods can be an opportunity to ensure that the benefits of future development are more evenly shared, because it is possible to apply new criteria and build new programmes. It will be important to ensure that all new development programmes respect criteria of inclusion and equality, with respect to both gender and socio-religious groups.

Considering this, policy recommendations are grouped under three broad categories: short-term recovery measures, longer-term development of livelihoods and welfare, and the over arching question of water control and management.

Short-Term Recovery Measures

Short-term relief after the floods worked reasonably well but needs to be maintained for up to a year, because it takes time for people to recover and for damaged infrastructure and housing to be repaired. Elements needed here are:

[8] Policy recommendations provided by IHD

- Public-sector creation of employment, especially locally. NREGS, may be in an expanded form will be a major policy instrument that should be used intensively, since it contributes to reconstruction.
- A special IAY may be introduced in the affected villages under which all the damaged houses are covered. All the BPL households may be provided legal entitlement to homeshead lead, in case they do not have such entitlements. Universal old age pension for BPL and female headed households may be introduced in all the affected villages.
- Repair to damaged infrastructure (also contributing to employment creation).
- Offering of cheap credit to support replacement of tools and livestock.
- Financing of restoration of damaged land, as well as seeds and inputs for the next crop.
- Continued grain distribution and relief payments, increasingly focused on households that have lost family members; include vitamin tablets.
- Management of the flow of migrants to ensure there is no exploitation.
- Stimulation of public health and education systems to resume normal functions, with particular attention to antenatal and post-natal care, and more local facilities. Immunization and provision of nutritious food to children; distribution of sanitary pads to women.
- Special Mid-Day Meals should be started for all children, regardless of whether they are going to school.
- An extended NREGA may be introduced in the affected villages with waiving of restrictions on number of working days and number of persons for family as well as introducing wages for working on rebuilding their own houses, and de-silting or reclaiming their own fields.
- Stationing of adequate medical personnel in Primary Health Centres in flood-affected areas.
- Restoration of safe drinking water through deeper and more tubewells, cleaning of local rivers, distribution of water purification tablets, provision of buckets and tanks, and regular testing.
- Strengthening of Government systems to ensure that relief funds continue to be used efficiently and with minimal corruption.
- Redistribution of materials needed for school, including books, uniforms and stationery, that were lost during the floods.
- Extended counselling services to children to help them deal with the psycho-social impact of the floods.

Longer-Term Development of Livelihoods and Welfare

- Expanded investments in health and education.
- Development of new high-value crops.
- Restoration and development of irrigation systems, including free distribution of diesel pump sets to cultivators.
- Offering of crop insurance.
- Debt moratoriums, where appropriate, and/or subsidized loans.
- Investment in training and extension services.
- Opportunities for non-agricultural activities, particularly micro-enterprises in services and agricultural processing.
- Programmes of repair/reconstruction to support longer-term development (for example, telecommunications and electricity services can be upgraded in the reconstruction process).
- Imparting of skills training for livelihoods regeneration to women through formation of SHGs.
- Effective and efficient maintenance of dams.
- Delivery of flood warnings in advance.

Water Control and Management

- Massive investment in a State strategy for water control and harvesting.
- Expanded research into how to limit the adverse effects of smaller-scale, frequent flooding. Consider location of housing (building up of higher ground), investment in *pukka* houses that can withstand floods better, and the channeling of rivers.
- Development of new economic activities and new crops that can take advantage of abundant water (aquaculture, paper production,).

Given the perceptions of the people, the State needs to rethink its strategies to protect the people permanently from the scourge of floods, through scientific management of river water and effective protection of embankments from erosion. Public goods such as health, sanitation and education services may be taken up on a wide scale by the Government. Apart from repairing damaged schools, the State should install a sufficient number of hand pumps and construct community toilets in the affected villages. Health care specific to women and children should be given due priority. The building of infrastructure, particularly roads and power and irrigation systems, needs to form an important agenda. Effective strategies should be formulated in partnership with donors and private sector.

Considering the scale of the devastation, restoration and enhancement of livelihoods in affected villages will need to be largely carried out by only the Government. Building on the recommendations above, specific important measures required include:

- Lump-sum grants and technical support for rebuilding and repair of houses.
- Removal of sand from fields, land improvement, support for agricultural credit at subsidized rates, and provision of cheap credit are necessary for revitalization of agricultural activity. An important step in this direction should be the free provision of one diesel pump set to each cultivator household. Moratoriums on the payment of loans and some debt relief measures also can be considered, as appropriate.
- Subsidized loans for establishing small enterprises or shops should be provided to non-agricultural and artisan households. It also is important to provide technical support and skills training for such activities.
- Support to activities such as plantations, fisheries, piggeries, animal husbandry and poultry for various groups of people, as per their aptitude and expertise, should be pursued by the Government.
- Employment generation through public investment is of utmost importance. Comprehensive and effective implementation of NREGS for all those seeking work is accordingly the most important need of the waged workers. NREGS can be an important instrument in land improvement and development, provision of public goods, building of infrastructure and even construction and repair of houses.
- Provision of food items by the Government until people's livelihoods are restored.
- Appropriate and adequate training and extension services may be provided for scientific agriculture, horticulture and aquaculture.

With sustained commitment and effort, such recommended policy measures can ensure that those affected by the devastating 2008 Kosi floods do not face a disaster of this magnitude again, and that their overall human development is supported for years to come.

Note on Projected Loss in Kosi Region

Note on Projected Losses in Kosi Region

The total loss of items such as food grains, livestock, domestic goods, other goods and houses have been estimated from the household data collected from 20 villages. The total number of household suffering a particular loss has been first estimated by multiplying the ratio of such households in the samples by the total number of affected households (839,335)officially acknowledged (http://disastermgmt.bih.nic.in/Downloads/Flood-Impact-Report-1.pdf). Having thus estimated the total number of households suffering a particular loss, the total loss has been obtained by multiplying average loss suffered by each household in the sample, by the number of such estimated households. Detailed methods of calculation for each variable follows:

1. The percentage of affected households or families in the villages surveyed has been used to estimate the total number of affected villages as follows
Estimated number of affected households=% of affected households in sample/100*839335

2. Valuewise loss of all other items such as houses, food grains, livestocks etc=Average amount of loss per household in the sample*estimated number of affected households. In case of houses, value lost has been taken to be equal to the cost of repair as projected by the respondents.

Projection of Value of Loss of Various Types for the Flood Affected Kosi Region (Rs)

Items	Total households affected in the region	% of Households lost	Projected number of households who loss	Average amount loss per households	Total loss in the region (in crore)	Rounded value of total loss (in crore)
1	2	3	4	5	7	8
Livestock	839335	62.0	519978	7570	393.6	390
Houses	839335	75.0	629501	14000	881.3	880
Food grains	839335	75.0	629501	6358	400.2	400
Domestic goods	839335	49.6	416310	3763	156.7	155
Other goods	839335	11.3	94845	6406	60.8	60
Agricultural implements	839335	27.3	229138	3259	74.7	75

Notes :
Column 2 : Government website: (http://disastermgmt.bih.nic.in/Downloads/Flood-Impact-Report-1.pdf).
Column 3 : taken from household schedule (except houses which are taken from village schedule)
Column 5 : Taken from household schedule

Annexure I

Names of Village Surveyed

ANNEXURE I

Names of Village Surveyed, with Survey Instrument

District	Block	Gram Panchayat	Village	Survey Instrument		
				Village Schedule	Household Schedule*	FGD
Madhepura	Shankerpur	Jirba Madheli	Jirba	√	√	
		Rampur Lahi	Garha Rampur	√	√	
		Sonbarsa	Balwa	√		√
		Parsa	Parsa	√		√
	Murliganj	Raghunath Pur	Raghunath Pur	√	√	
		Rajni	Rajni	√	√	
		Jargawan	Jargawan	√		√
		Rampur	Rampur	√		√
	Gwalpara	Sahapur	Sindhuyari	√	√	
		Biswari	Rajpur sarsandi	√	√	
		Pir Nagar	Shyam	√		√
		Gwalpara	Nohar	√		√
Supaul	Pratapganj	Tekuna	Tekuna	√	√	
		Bhawanipur South	Islampur	√	√	
		Sukhanagar	Sukhanagar	√		√
		Suryapur	Suryapur	√		√
	Chhatapur	Chunni	Chunnimal	√	√	
		Gheewha	Gheewha	√	√	
		Daharia	Daharia	√		√
		Jhakhargarh	Bhattabari	√		√
	Triveniganj	Latauna (South)	Shivnagar	√	√	
		Daparkha	Hemantnagar	√	√	
		Kusaha	Musa Kusaha	√		√
		Mirjawa	Mirjawa	√		√
Araria	Narpatganj	Raj Bela	Bela	√	√	
		Pathraha	Patharha	√	√	
		Manikpur	Manikpur	√		√
		Babuaan	Dumarbanna	√		√
	Raniganj	Vistoria Domariya	Domariya	√	√	
		Bagulaha	Barhara	√	√	

		Kharsahi	Jagta	√		√
		Kalabalua	Kalabalua	√		√
Purnia	Banmankhi	Chandpur Bhangha	Chandpur Bhangha	√	√	
		Sahuria Subhai Millick	Sahuria Sabhai Millick	√	√	
		Naulakhi	Naulakhi	√		√
		Bahora	Bahora	√		√
Saharsa	Saur Bazar	Suhat	Bhabtia	√	√	
		Kamp East	Gauravgarh	√	√	
		Karahia	Kachra	√		√
		Kamp West	Kamp Gonth	√		√

Note : From each village, 40 households selected for detailed interview

Annexure II

List of Field Supervisors and Investigators

ANNEXURE II

List of Field Supervisors and Investigators

Field Supervisors and Research Associates

- Ramashray Singh
- Ashwani Kumar
- S. D. Choudhary
- Vijay Prasad

Field Investigators and Research Associates

- Mukesh Kumar
- Murlidhar Choudhary
- Anupam Kumari
- Niranjan Kumar
- Satish Kumar
- Prabhat Kumar Gautam
- Neeraj Roy
- Prakash Kumar
- Vinita Kumari
- Ashish Kumar Thakur
- Pooja
- Niraj Kumar
- Dilip Kumar
- Gautam Kumar
- Anjali Prabha
- Samir Kumar
- Veebhesh Anand
- Vijay Narayan Singh
- Ram Shankar Singh
- Ravi Shankar
- Kanchan Kumari
- Bablu Kumar
- Pooja Verma
- Amita Kumari
- Someshwar Sharma
- Vimal Prakash
- Rafat Masood
- Pratibha Kumari
- Ankita Roy
- Neha Sinha
- Rajesh Kumar
- Praful Kumar Priyardhi
- Anugya Kumari
- Manisha Kumari
- Rakesh Ranjan
- Subodh Kumar
- Sarvesh Kumar

Annexure III

Village Level Questionnaire

ANNEXURE III

Village Level Questionnaire

1. State:	
2. District:	
3. Block:	
4. Gram Panchayat:	
5. Village:	
6. Respondent's Name:	
6. Investigator's Name:	
7. Investigator's Signature:	
8. Date:	

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BASIC CHARACTERISTICS OF AFFECTED VILLAGES

I. Basic Population Data

a. Population of the Village

Sl. No.	Category	2001*	At present (2008)**
1.	No. of Households		
2.	No. of Males		
3.	No. of Females		
4.	No. of Literate Males		
5.	No. of Literate Females		
6.	No. of Scheduled Castes		
7.	No. of Scheduled Tribes		
8.	Total Population		

** To be constructed from census records*

*** From village records and documents*

b. Religion /Social Class Distribution of Households (Number)

Sl. No.	Communities	Number of Households
Religious Category		
1.	Hindus	
2.	Muslims	
3.	Other (specify)	
Social Groups		
1.	Dominant Castes	
2.	OBC	
3.	Scheduled Castes	
4.	Scheduled Tribes	
5.	Other (Specify)	

II. Socioeconomic Base

a.Land Use

Type of Land	Area in Hectares
1. Forest	
2. Uncultivable	
3. Non-Agricultural Uses	
4. Cultivable Waste	
5. Pasture/Grazing	
6. Orchards, Etc.	
7. Other Fallow Land	
8. Current Fallow Land	
9. Net Area Sown	
10. Area Sown More Than Once	

Source: Village Records from the Block Office

b.Crop-Related

1. What are the main crops grown in the village and damaged due to the floods?

a. For Rabi Season (2008 Before the Floods)

Sl. No.	Main Crops	Area (Ha)	Yield in Normal Period (Quintal/Acre)
1.	Wheat		
2.	Pulse		
3.	Mustard		
4.	Beans		
5.	Vegetables		
6.			
7.			
8.			

b. For Kharif season (2008)

Sl. No.	Main Crops	Area (in Approx. Acres)	Yield in Normal Period (Quintal/Acre)	Whether Damaged (Yes – 1, No – 2)	Extent of Damage*
1.	Garma Paddy				
2.	Aghani Paddy				
3.	Maize				
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					

* *Completely Damaged – 1, Moderately Damaged – 2, Not Damaged - 3*

3. Is there any prospect of Rabi crops (2009)?
No possibility – 1, Possible to Sow but Produce Low – 2, Normal – 3, Better than Usual - 4

4. How can agriculture be revived in the village?

i) ______________________________

ii)______________________________

iii)______________________________

c. Employment in Agricultural and Non-Agricultural Activities

1. Main Agricultural Activities

	Type of Activity	Number of HHs Engaged
1.	Owner-Cultivator	
2.	Sharecropper	
3.	Agricultural Labour (tied)	
4.	Agricultural Labour (casual)	
5.	Fisherman	
6.		
7.		
8.		
9.		
10.		
11.		
12.		
13.		
14.		
15.		

2. Main Non-Agricultural Activities

	Type of Activity	Number of HHs Engaged
1.	Small Shop	
2.	Construction	
3.	Tailor	
4.	Barber	
5.	Teacher	
6.		
7.		
8.		
9.		
10.		
11.		
12.		
13.		
14.		
15.		

3. Prevailing Wages (During Normal Season)

Activities	Wages (INR)	
	Male	Female
Agricultural Activities		
Harvesting		
Construction		
Other Non-Agricultural Unskilled Activities		

d. Commuting and Migration

1. How many villagers regularly migrate seasonally for work? ☐

Type of Work	Where*	Number	
		Male	Female

** Within District-1; Other District-2; Out of State-3; Other-4.*

2. How many villagers have regular wage work outside the village, where they go on a daily or weekly basis?

Male - ☐

Female - ☐

B.Infrastructure

a. Roads

1. What types of roads are there in the nearest market towns? ☐
   Pukka–1, Semi-*Pukka*–2, *Katcha*–3

2. What is the extent of damage of the roads due to the floods? ☐
   Some Damage-1; Damaged but Easily Repairable– 2; Seriously Damaged/Washed Away – 3

3. How far is the nearest market town from the village? ☐

4. If roads are damaged, how are you reaching the nearest market town? ☐
   Not Going to the Town–1, By Boat–2, On Foot–3, Other–4

5. What are your suggestions to revive the situation?

   ………………………………………………………………………………………

   ………………………………………………………………………………………

   ………………………………………………………………………………………

b. Telecommunications

Type	Whether in the Village Yes – 1, No - 2	Extent of Damage*
Telecommunications: Land Line		
Telecommunications: Access to Mobile Line		

**Badly Damaged–1, Partially Damaged–2, Not Damaged-3*

c. Electricity

1. Did you have electricity in the village before the flood? ☐
   (Yes – 1, No – 2)

2. Do you have electricity in the village after the flood? ☐
   (Yes – 1, No – 2)

3. How many houses are connected with electricity? ☐

Before the Flood (Number of HHs)	After the Flood (Number of HHs)

C. Facilities

a. Health

Type of Health Facilities	Within the Village Yes – 1, No - 2	Distance (km) If Not in the Village	Type of Approach Road*	Extent of Damage**
1. Primary Health Sub-Centre				
2. Primary Health Centre				
3. Hospital/ Dispensary				
4. Chemist/ Medicine Shop				

**Type of Approach Road: Pukka – 1, Semi-Pukka – 2, Katcha – 3*
*** Completely Damaged–1, Partially Damaged–2, Not Damaged-3*

b. Education

Type of Education Facilities	Within the Village Yes – 1, No - 2	Distance (km) If Not in the Village	Type of Approach Road*	Extent of Damage**
1. Primary School				
2. Middle School				
3. High School				
4. Anganbadi				
5. Other (specify)				

**Type of Approach Road: Pukka–1, Semi-Pukka–2, Katcha–3*
*** Completely Damaged–1, Partially Damaged–2, Not Damaged-3*

1. Have there been any interim arrangements for education in the village after the floods? ☐
   Yes – 1, No - 2

2. How would you like the interim school arrangements to continue? ☐

   i)______________________________
   ii)______________________________
   iii)______________________________

c. Irrigation

1. What are the irrigation systems available in the village? ☐
   Canal – 1, Tubewell – 2, Electric Pump Set – 3, Diesel Pump Set – 4, Boring – 5, Other (specify) - 6

Types of Irrigation Facilities	Area Irrigated (in Hectares)	Extent of Damage*

**Completely Damaged–1, Partially Damaged–2, Not Damaged–3*

d. Water and Sanitation

I. Drinking Water

Type	Total No.	Functioning (Number)	
		Before Floods	After Floods
1. Public Well			
2. Private Well			
3. Public Hand Pump			
4. Private Hand Pump			
5. Public Tubewell			
6. Private Tubewell			
7. Public Stand Post			
8. Tap Water Inside House			
9. Tank/River			
10. Other (specify)			

1. Has drinking water been contaminated by the floods? [ ]
   Yes – 1, No - 2

2. What needs to be done to improve the supply of clean water to the villagers as part of the recovery programme? [ ]

   i)____
   ii)____
   iii)____

II. Toilet Facilities

1. How many households are using any type of latrines? [ ]

2. What is the extent of damage to these latrines due to floods (in percentage terms)? [ ]

D. Extent of Flooding

1. How frequently do the villages face flooding? [ ]
   Annually–1, Biannually–2, Once in 5 Years–3, Once in 10 Years–4, No memory–5, Others–6
2. Did the villagers get any early warning before the floods? [ ]
   Yes – 1, No – 2
3. If yes, when did the villagers come to know about the floods? [ ]
   6 Hours Before–1, 12 Hours Before–2, 24 Hours Before–3, 48 Hours Before–4, More Than 48 Hours Before–5, A Week Before–6, Other (specify)–7
4. Did they get any Government assistance with evacuation? [ ]
   Yes – 1, No – 2
5. How much of living areas are affected by floods (in percentage terms)? [ ]

6. What is the extent of agricultural land flooded (in percentage terms)? [ ]
7. What was the duration of the floods in the village?

Areas	Whether Flooded Yes – 1, No - 2	Duration of Standing Water (Days)
1. Homestead Areas		
2. Agricultural Lands		
3. Nearby Pukka Roads		
4. Earthen Roads		

E. Overall Impact of Floods

I. Life and Health

1. How many people in the village died because of the floods?
   During the floods: [ ]

   After the floods: [ ]

2. What were the reasons for deaths?

Reasons	Number of Dead	
	Male	Female
Drowned or Missing		
Fever		
Due to Water-Borne Diseases (diarrhoea, jaundice, gastric)		
Lack of Emergency Facilities for Pregnant Women		
Miscellaneous Unknown Diseases		
Total		

3. Has there been any outbreak of disease since the floods? [ ]
   Yes – 1, No – 2

4. What were common diseases that villagers suffered from since the floods?

	Common Diseases	Number of People Suffered From	
		Male	Female
1.	Diarrhoea		
2.	Skin Diseases		
3.	Fever		
4.			
5.			
6.			

5. Did the villagers receive any health assistance from health centre/hospital/mobile medical teams during the floods? [ ]
   Yes – 1, No – 2

II. Habitat and Housing

1. How many houses were affected by floods? ☐

2. What kind of damages have most houses in the village suffered (in percentage terms)?

Type of House	Total number of HHs	% Damaged by Floods		
		Completely Damaged	Partially Damaged	Not Damaged
Katcha				
Pukka				
Semi-Pukka				
Huts/Thatched				

III. Land (Degradation)

1. How much of the land cultivated has been lost or damaged?

Type	Damaged/ Lost (in Acres)
Destroyed	
Siltation	
Waterlogging	
Others	

IV. Livestock/Fisheries/Poultry

1. What is the status of non-crop resources?

a. Livestock

Type	Number	
	Before the Floods	Lost Due to Floods
Livestock		
Buffalo		
Bullock		
Cow		
Goat		
Pigs		
Poultry (% lost)		

b. Fisheries

Type	Whether Damaged Yes – 1, No - 2	Extent of Damage*
Fish Ponds		
Orchards		

**Completely Lost–1, Partially Lost–2, Not Lost-3*

c. Access to Common Property

Type	Whether Accessible After Floods Yes – 1, No - 2	Extent of Damage*
Fishing from Rivers/Canals		
Collection of Fuel wood		
Grazing Lands		

** Severely Affected–1, Partially Affected–2, Not Affected-3*

V. Employment

Type	Days Lost Due to Floods
Agricultural Worker	
Non-Agricultural Wage worker	
Fishermen	

Badly Affected–1, Partially Affected–2, Not Affected–3

VI. Migration

1. Was it possible to find work outside the village after the floods? ☐
   Yes – 1, No - 2

2. What was the flow of male out-migrants after the floods? ☐
   More Than Before the Floods–1, Less Than Before the Floods–2, Same–3

3. What was the flow of female out-migrants after the floods? ☐
   More Than Before the Floods–1, Less Than Before the Floods–2, Same–3

4. Are some villagers staying outside for work (out-migrants) now returning to the village? ☐
   Yes – 1, No – 2

5. If yes, how many? ☐

F. Relief and Other Support

1. Did villagers receive any relief for meeting their emergency needs?
   (Yes - 1, No - 2)

   If yes, continue:

2. Who received the relief?

	Relief Received by			
Responses by Men				
Responses by Women				

** Household Head – 1, Spouse – 2, Son/Daughter – 3, Brother/Sister – 4, Father/Mother – 5, Father-in-Law/Mother-in-Law – 6, Other (specify) - (7)*

3. What sorts of relief?

	Types of Relief*			
Responses by Men				
Responses by Women				

**Food -1, Medicine-2, Clothes-3, Cash-4; Grain-5; Government Credit-6, Other (specify) -7*

4. Which organizations/agencies extended cooperation for providing relief?

5. How many households took shelter in the camps during the floods and returned to the village after the floods?

HH Category	Types of Shelter						Returned to the village (#)
	1	2	3	4	5	6	
OBC							
Scheduled Caste							
Scheduled Tribe							
Hindus							
Other Hindus							
Muslims							
Other (specify)							

Code for Camps: Government Camp-1; Camp Run by NGOs/Charitable Organizations-2; Other Informal Camps-3; Other (specify) – 4

G. Can you tell us your Opinions about the Various Strategies for Recovery?

(a) Response of Men

(i) What actions are required for recovery of the village economy?
(ii) What are the main needs for recovering situations for children?
(iii) What are the main needs for recovering situations for women?
(iv) What are the main needs for recovering situations for elderly people?

(b) Response of Women

(i) What actions are required for recovery of the village economy?
(ii) What are the main needs for recovering situations for children?
(iii) What are the main needs for recovering situations for women?
(iv) What are the main needs for recovering situations for elderly people?

H. Overall Assessment of the Investigators about the Impact of Floods & Recovery Strategies

Annexure IV

Household Level Questionnaire

ANNEXURE IV

Household Questionnaire

A. Basic Information

1. District .... 2. Block ....

3.Village ....

4. Name of the Household Head ....

5. Name of the Respondent ....

6. Sex (Male-1, Female-2) [ ]

7. Religion [ ]
[Hindu – 1, Muslim - 2, Other (specify) - 3

8. Caste Category [ ]
[SC - 1, ST - 2, OBC I - 3, OBC II – 4,Other Caste–5,Others (specify)–6)]

9. Land Ownership Category [ ]
[Landless - 1; Less than 0.5 Acre - 2; 0.5 -1 Acre-3; 1 to 2 Acres - 4; 2 to 5 Acres – 5; 5-10 Acres - 6; More than 10 Acres - 7]

10. Poverty Group: (APL – 1, BPL – 2, Antodaya-3, Do Not Know -4)

11. Do you/your household own any ration card? [ ]
(Yes – 1, No – 2)

12. Do you have any voter ID? [ ]
(Yes – 1, No – 2)

Investigator's Name ....

Signature and Date ....

Supervisor's Name ....

Signature and Date ....

INSTITUTE FOR HUMAN DEVELOPMENT
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B. Household Details

ID No.	Name	Sex (Male-1, Female-2)	Age (in Complete Years)	Marital Status **	Educational Level ***	Occupation****	
						Main	Subsidiary
1	2	3	4	5	6	7	8
1.							
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							

** Unmarried - 1, Married-2, Widow/Widower-3, Divorced/Separated-4, Others (specify)-5
*** Illiterate-1; Below Primary or Informal Education - 2; Primary - 3; Middle - 4; Management/ Commercial School Course (Vocational) - 5; Matric/High School/Secondary - 6; Higher Secondary/Pre-University/Intermediate - 7; Technical Diploma or Certificate Below Degree - 8; Technical/Professional Degree (Medical, Engineering, Law, Management, etc.) - 9; Graduate Degree (General) - 10; Post-Graduate Degree (General) - 11; Other (specify) – 12
****

Cultivators-1

Casual Labour (CL) in Agriculture-2; CL in Construction-3; CL in Other Non-Agricultural Work-4; Long-Term Attached Labour in Agriculture-5; Long-Term Attached Labour in Non-Agriculture Work-6; Own Business Based on Agriculture and Allied Activities (animal husbandry, poultry, aquaculture, etc)-7; Fishermen/women and Related Workers-8; Own Small Business/Trade/Construction-9; Big Business /Trade/Construction-10; Personal Services (caste occupations such as carpenter, blacksmith, potter, barbers, etc.)-11, Shoemakers and Other Leather Workers-12; Tailors and Related Workers-13; Bidi and Other Tobacco Processing Workers-14; Salaried Workers - Clerical and Above-15; Salaried Workers – Below Clerical Level-16; Domestic Work Only-17; Domestic Work but Also Engaged in Free Collection of Goods and Fodder/Cutting Wood -18;	Unemployed (Willing to Work, but Work Not Available)-19; Carpenter-20; Mason-21; Blacksmith-22; Potter-23, Plumber-24; Electrician-25; Welder-26; Mechanic-27; Weaver-28; Craft-29; Mechanical Equipment Operator-30; Brickmaker-31; Basketmaker-32 Driver-33; Beggars etc.-34, Retired/Pensioners/Very Old-35; Disabled/Handicapped/Sick-36; Student -37; Too Young -38 Others (specify)...............- 39

C. Experience of Impact of Current Floods

I. Experience of Current Floods

1. How frequently do you get floods generally? [ ]
   (Annually - 1; Biannually-2; Once in 5 Years-3; Once in 10 Years-4; No Memory-5)
   (If code 5, skip question 2)

2. Where did you stay during the floods? [ ]
   Village-1; Government Camp-2; Camp Run by NGOs/Charitable Organizations-3; Other Informal Camps-4; With Relatives and Friends in Other Village/Place-5; Other Own Arrangements-6

   [If the answer is 1 (i.e., village), then skip to Question 9, otherwise continue]

a. If answer is code 2 or 3, then the distance from the village (km) [ ]

b. If own arrangement (code 6), what type of arrangement? [ ]

3. How did you get evacuated? [ ]
   Govt assistance-1; With the Help of NGOs/Other Agencies-2; With Own Efforts-3, Others (specify)____

4. If own efforts (code 3), what arrangements did you undertake for evacuation? [ ]
   On Foot-1; By Boat-2; Swimming - 3; Others- 4

5. If you were not in your house, was anything stolen?
   Yes-1; No-2

5a. If yes, value of estimated theft? (INR) [ ]

6. How many days did you live in the camp/any other arrangement?
7. How many members of your family were in the camp/any other arrangement?
   (a) Male [ ] (b) Female [ ]

8. Did you get any relief from the Government? (Yes-1, No-2) [ ]

8a. If Yes, please mention the type of relief assistance (in order of ranking) [ ]
   Food -1, Medicine-2, Clothes-3, Cash-4; Grain-5; Government Credit-6, Others (specify) -7

9. Did you get any help from NGOs or other agencies? (Yes-1, No-2) [ ]

10. If yes, what kind of help? (in order of ranking) [ ]
   Food -1, Medicine-2, Clothes-3, Cash-4, Government Credit-5, Others (specify)-6

11. Did you experience any corruption in accessing relief? (Yes-1, No-2) [ ]

12. Did you experience any discriminatory experience in accessing relief? (Yes-1, No-2) [ ]

12a. If yes, what type of discrimination did you experience?
(Caste-Based-1; Religion-Based-2; Gender-Based-3)

II. Separation from the Family and Health Problems

1. Did you get separated from the family? (Yes -1, No -2)

2. How long were you separated? (Number of days)

3. Are you now united with the family? (Yes-1, No-2, Partially-3)

4. Did you or your family members experience any illness/diseases since the floods? (Yes-1; No-2)
5. If yes, what types of diseases did you or your family members experience since the floods?

5a. Male 5b. Female
* (Malaria-1; Dehydration/dysentery-2; Viral fever-3; Kalazar-4; Cough and Cold-5; Chicken Pox-6; Skin Diseases-7; Other (specify)-8}

6. Did you or your family members get health care assistance? (Yes-1, No-2)
If yes, continue

7. Where did you get these health services? (Multiple answers)
[Mobile/Emergency Medical Team-1; General Health Practitioner-2; Traditional Health Practitioner-3; Government Hospital-4; Private Clinic-5; Other (specify)-6]

III. Loss of Habitat and Housing

1. What kind of house did you have before the flood?
[Pukka-1, Semi-Pukka-2, Katcha-3, Thatched-4, Others (specify)--5; Don't Own Any House-6]

2. If own house, can you please tell us something about your housing condition?

2a. Water
(i) What are the most important sources of drinking water at your house?
[Tubewell-1; Well-2; Handpump-3; Tap Water-4; River/Pond-5; Others (specify)-6]

(ii) Were those sources of drinking water affected due to the floods?
(Yes-1; No-2)

2b. Latrine
(i) Do you have any latrines? (Yes-1; No-2)

3. Did your house suffer any damage during the floods? (Yes-1; No-2)

3a. If yes, how serious are these damages?
(Slightly Damaged-1, Severely Damaged-2, Collapsed-3)

4a. If there is any damage to your house, then how much money would you require to build similar house/s? (in INR)

4b. How would you get money for rebuilding/repairs? (in order of ranking)
(Own Savings-1, Borrowings from Relatives/Friends-2, Moneylenders-3, Using the Old/ Available Building Materials-4, Government Assistance-5, Bank and Financial Institution-6, Through Own Savings in Future-7; Other-8)

5. Have you lost the following during the floods?

Items	Yes-1; No-2	Estimated Loss (INR)
a. Domestic household articles and goods, appliances, furniture, consumer durables and other domestic possessions		
b. Jewellery		
c. Grain Store		
d. Others (Specify)		

6. If you would like to relocate to a new place, what are the reasons?
[Village Unsafe for Continued Habitation-1, Frequent Flooding-2, Loss of Land - 3, Migration of Relatives - 4, Better Opportunities Elsewhere – 5, Other (specify)- 6]

IV: Livelihood Losses

a. Livestock Losses

1. Have you lost livestock during the floods? (Yes-1, No-2)
2. If yes, what is the estimate of all the livestocks lost? (in INR)
3. What would have been the approximate income from animal husbandry (including sale of milk and milk products) that you have lost during the floods? (INR)
4. If you have lost cattle, how would you purchase new ones?
(With Own Resources-1, With Borrowings-2, Not Purchase-3)

b. Cultivators, Fishermen, etc.

1. Do you own agricultural land? (Yes-1, No-2)

1a. If yes, how much agricultural land did you have before the floods? (in acres)

2. Are you an agricultural tenant/sharecropper? (Yes-1, No-2)

2a. How much agricultural land do you lease or sharecrop?

3. How much of the land you (own/tenant) cultivated has been lost due to floods?
   a. Temporary (in acres) [ ]

   b. Permanently (in acres) [ ]

4. Do you think you would be able to resume agriculture in the next season? [ ]
   (Yes-1, No-2, Can't Say-3)

5. What is the value of crops you have lost in the floods, including cost of cultivation? (in INR)

6. Would you be able to get credit for starting agricultural operations? [ ]
   (Yes-1, Yes, but at Higher Interest-2, No-3, Can't Say-4)

7. Have you lost your agricultural implements and tools? (Yes-1, No-2) [ ]

7a. What is their approximate value (INR)? [ ]

7b. If yes, how would you replace them? [ ]
   (Purchase With Own Resources-1, Borrow From Others-2, Not Purchase-3)

8. What is the approximate number of days you could not work in your agriculture and related work because of floods? (No. of days)

9. If you are a fisherman, have the floods affected the fishing activity and sale of fish? [ ]
   (Yes-1, No-2) [ ]

10. What is the estimated income that you have lost in fishing because of floods? [ ]
   (in INR)

c. Local Agricultural Labourers

1. How many days were you involved as agricultural labourers in the last month?
   1a. Male [ ] 1b. Female [ ]

2. What was the daily wage in the last month (in INR) ?
   2a. Male [ ] 2b. Female [ ]

3. How many days did you not work because of floods?
   3a. Male [ ] 3b. Female [ ]

4. What is the estimated loss of income because of not getting employment (in INR)?
   4a. Male [ ] 4b. Female [ ]

5. Are you looking for more work now? (Yes-1; No-2) [ ]

6. If you are not working now, how are you planning to?
   6a. Male [ ] 6b. Female [ ]
   (Work in Other Trades / Professions Such as Construction-1, Work in Urban Centres Such as Hotels, Workshops, Etc. -2, Seek Work on the National Rural Employment Guarantee Scheme (NREGS)-3, Migrate to Other States-4; Others (specify) - 5]) [ ]

d. Local Non-Agricultural Labourers

1. How many days were you involved in non-agricultural work in the last month?
   1a. Male [ ] 1b. Female [ ]

2. What was the daily wage in the non-agricultural work in the last month (in INR) ?
   2a. Male [ ] 2b. Female [ ]

3. How many days did you not work in the non-agricultural work because of floods?
   3a. Male [ ] 3b. Female [ ]

4. What is the estimated loss of income in non-agricultural work due to not getting employment (in INR)?
   4a. Male [ ] 4b. Female [ ]

5. Are you looking for more work now? (Yes-1; No-2) [ ]

6. If you are not working now, how are you planning to?
   6a. Male [ ] 6b. Female [ ]
   (Work in Other Trades / Professions Such as Construction-1, Work in Urban Centres Such as Hotels, Workshops, Etc. -2, Seek Work on the National Rural Employment Guarantee Scheme (NREGS)-3, Migrate to Other States-4; Others (specify) - 5])

7. Did you lose any working instruments or equipment or suffer damage to business premises during the floods? (Yes-1, No-2, Partially-3) [ ]

8. What is the estimated loss because of this? (in INR)

e. Shopkeepers / Traders / Vendors / Hawkers

1. Have the floods damaged your shops / business premises / stalls / business? (Yes-1, No-2) [ ]

2. Have you stopped your business in the wake of floods? (Yes-1, No-2) [ ]

3. If no, has the business been affected in terms of sales? (Yes-1, No-2) [ ]

4. How many days have you been away from your business due to floods? [ ]

5. How much income did you lose as a whole because of floods? (INR)

f. Home-Based Work/Handicrafts

1. Are/were you involved with any home-based work? (Yes-1, No-2)
   If yes, 1a. Male (no.) [ ] 1b. Female (no.) [ ]

2. In what sort of home-based work were you and your family members engaged?
   2a. Male [ ]   2b. Female [ ]
   (Sewing/Stitching – 1, Tailoring – 2, Pottery – 3, Grocery Shop - 4, Making Dry Foods (such pickle, homemade cakes, etc.) - 5 , Other ……… - 6)

3. Did you lose any tool or equipment during the floods? [ ]
   (Yes-1, No-2, Partially-3)

4. How have the floods affected your home-based work? [ ]
   (Fully-1, Partially-2, Not affected at all-3)

5. If fully or partially affected, how many working days of employment did you lose? (no. of days)
   5a. Male [ ]   5b. Female [ ]

6. What is the estimated loss of income because of this flood (in INR)?
   6a. Male [ ]   6b. Female [ ]

g. Other Losses

1. Can you recollect if you have lost anything because of floods that we have not listed above? [ ]
   (Yes-1; No-2)

2. If yes, what are those?

Sl. No.	Items	Value (Rs.)
1.		
2.		
3.		
4.		
5.		

VI. Migration

1. Have you or any of your family members been migrating to other places? (Yes-1; No-2) [ ]

2. If yes, please give the following information

Sex	Nature of Migration*	Place of Migration**
Male		
Female		

** Commuters-1; Short-Term Migration (3-8 Months)-2; More than 8 Months-3*
***Within the District-1, Other Districts of Bihar-2, Outside Bihar-3, Outside India-4*

3. Did you or any of your family members migrate after the floods? (Yes-1; No-2) [ ]

4. If yes, please give the following information

Persons	Nature of Migration*	Place of Migration**
(i)		
(ii)		
(iii)		

** Commuters-1; Short-Term Migration (3-8 Months)-2; More than 8 Months-3*
***Within the District-1, Other Districts of Bihar-2, Outside Bihar-3, Outside India-4*

5. If not migrating, what are the reasons for not migrating?
(No Money to Go Elsewhere-1; No Time -2, Take Care of Family-3; Others-4)

D. Coping Mechanisms, Recovery and Livelihood Diversification

1. What is the loss of your daily income due to the floods?
(Less than 10% - 1, 10-25% - 2, 25-50% - 3, 50-99% - 4, 100% - 5)

2. How are you coping with the situation?
(Govt. Relief-1, Other than Govt. Relief (NGOs/International Aid-2, Relatives' Support-3, Own Savings-4, Borrowings-5, Temporary Employment-6)

2a. If your answer is 4, how do you save?
With Banks-1, Members of Self-Help Groups-2, Post Office/Cooperatives-3, Other- 4

2b. If your answer is 5, what are your sources of borrowings after the floods?
(Relatives/Friends - 1, Moneylenders - 2, Cooperative Banks/Microfinance Institutions - 3)

3. Are you aware of the relief assistance being made available through the Government?
(Yes-1, No-2)

4. Did you get ex gratia relief assistance from the Government? (Yes-1, No-2)

5. What kind of difficulties do you face in accessing relief assistance?
(Lack of Awareness-1, Distance from Relief Centres/ Camps-2, Discrimination in the Distribution of Relief Assistance - 3, Leakages in Supply of Relief Items - 4, Rude Behaviour of Relief Functionaries – 5, Not Enlisted in the Relief Beneficiary List - 6)

6. Did you have to withdraw children from schools? (Yes-1, No-2)

7. Did you store food grains / savings? (Yes-1, No-2)

8. Did you have to sell your assets to cope with the floods? (Yes-1, No-2)

9. Did you have to reduce food/other essential consumption? (Yes-1, No-2)

10. Did you seek any employment on the NREGS works? (Yes-1, No-2)

How many days did you get employment on the NREGS works (no. of days)?
10 a. Male [ ] 10 b. Female [ ]

11. If you got employment on NREGS works or any other employment programme, what wages did you receive per day? (INR) [ ]

12. Would you like to get more employment through the NREGS? (Yes-1, No-2)

13. What kind of assistance would you need for recovery? (Rank the priorities)

1. Assistance for agricultural inputs [ ]
2. Provision of foodgrains [ ]
3. Assistance for crop losses [ ]
4. Starting NREGS works on a large scale [ ]
5. Small grants for business recovery [ ]
6. Access to cheap credit [ ]
7. Skills learning [ ]
8. Debt relief [ ]
9. Other (specify) [ ]

This section for respondents still staying in the camps

E. Exclusive Experience of Camp

1. Please tell us about the following aspects of the camp [ ]
   (a) Bathing arrangements
   [Temporary Bathroom in the Camp-1; Temporary Arrangement Near Handpump/Well-2; Pumps/Rivers -3; Open Space -.4; Other (specify)—5]

   (b) Availability of food [ ]
   (Good-1; Tolerable-2; Very Bad-3; Others (specify)-4]

   (c) Source of drinking water [ ]
   (Tubewell-1, Well-2; Handpump-3; Tap Water-4; Tanker-5; Other (specify)-…6]

   (d) Facilities for defecation [ ]
   (Pukka Toilet - 1; Katcha toilet - 2; Open Space/Field - 3)

2. Are the women/young girls safe and secure in the camp? (Yes – 1, No – 2) [ ]

3. (i) Did you suffer from any illness/disease in the camp? Yes-1, No-2] [ ]

   (ii) If yes, what kind of illness/disease? [ ]
   (Malaria-1; Dehydration/Dysentery-2, Viral fever-3; Kalazar-4; Cough and Cold-5; Chickenpox-6; Skin Diseases-7; Other (specify)-8]

(iii) What were the health services available in case of illness/disease?
[Mobile/Emergency Medical Team-1; General Health Practitioner-2;
Traditional Health Practitioners -3; Government Hospital-4; Private Clinic-5; Other (specify)-6]

4. Was there any discrimination in the camp (in terms of caste and religion) in accessing facilities in the camp? (Yes-1; No-2)

4a. If yes, type of discrimination
(Caste-Based-1; Religion-Based-2; Gender-Based-3)

5. What is your overall assessment about the camp life?
(Good-1; Satisfactory-2; Tolerable -3; Very Bad-4]

Annexure V

Focus Group Discussion

ANNEXURE V

Focus Group Discussion

The focus of the FGDs was to find out, in free-flowing discussions, the requirements for early recovery. In identifying participants, it was ensured that they were roughly of the same socioeconomic group or had a similar background in relation to the issue under investigation. At least 50 percent of discussions were women.

The FGDs were conducted in villages where the household questionnaire was not canvassed. Groups for FGDs were based on occupational groups, including agricultural labourers, cultivators and those in non-agricultural occupations such as artisans. Men and women both were included. A separate group discussion was conducted with women, who were predominantly employed (including women engaged in home-based work).

Questions dealt with in the FGDs are given below:

General Issues

1. Are men and women, girls and boys affected differently by the floods? Did people belonging to the marginalized groups face extra difficulties? Who, according to you, are the worst affected?
2. Do you think the way men and women responded to disaster was different?
3. This flood was unexpected, so how did you cope up? How do you think you will prepare yourself for floods or any other natural disaster in the future?
4. From where did you get the most help – Government, NGO, other?
   Did you find coordination prevalent among different agencies (Government/NGO/other) during the emergency response?
5. What are your immediate priorities, and how do you intend to address these?
   Which recovery mechanisms will be more appropriate to the different affected groups?
6. What challenges do you foresee in resettlement/rehabilitation? Suggest solutions.
7. Do you think the compensation norms are fair? If not, why? Suggest solutions.
8. Are you aware /part of any community-led initiative to cope with floods? (Find out if people are using natural resources as coping mechanisms to supplement normal forms of income, and identify detrimental coping mechanisms such as child labour etc.)

Special Issues

Shelter

9. What is your plan for rebuilding houses?
   What would help increase your access to shelter/lands?
10. In what ways do you intend to improve the housing conditions – such as separate place for animals/ bathroom within house/ washing place within house/ toilets within or adjacent to house?

Access to Food

11. Are you able to meet your/your family's food requirement? How?
12. What would help increase your access to food?

Access to Water and Sanitation

13. How are you meeting your current requirements? Please tell us methods and time spent in water collection.
14. What can be done to increase access to safe and potable water?
15. What role can women and men play in operation, maintenance and distribution of water services?
16. Are water points safe? Can users (especially women and children) access them safely?

Health and Education

17. In what ways do you think you can have an increased access to services such as health care and education and can contribute to maintaining these services? What are your suggestions for improving the quality?
18. Do people belonging to marginalized groups face discrimination in accessing these services? What kind of obstacles?
19. What types of common diseases have you been suffering from? Are people here also suffering from any more serious/complicated diseases (such as typhoid, jaundice)? What about HIV? (Check for awareness.)
20. Do you feel secure in your village? If no, why? What can be done to increase your security ? (SPECIFICALLY ASK THIS QUESTION IN ALL WOMEN FGDs)

Livelihoods

21. Do you think the activities performed by men and women before and after the floods have changed or remained the same? [Explore the division of labour by sex.]
22. Have women and men from different social groups been affected differently in relation to livelihoods and loss of employment?
23. What are the different support mechanisms that the Government/assistance agencies are using in rebuilding livelihoods?
24. Are women/different social groups involved in decision making when decisions are being taken in relation to rebuilding livelihoods?
25. Do women have equal access to resources, land and financial assistance, skills training in rebuilding livelihoods?
26. What are the prevailing attitudes, religious and cultural norms, practices and prejudices that affect women's ability to contribute to and benefit from engaging in livelihood activities?
27. Which population groups will require social security provisions because of lack of employment?
28. Views on migration
    What, according to you, should be the priorities area for road connectivity?

SUMMARY

As part of the United Nations Development Programme's (UNDP) contribution to disaster risk reduction and recovery endeavours in India, this report is a primary survey about the views and perceptions of the people affected by floods in the eastern Indian state of Bihar during 2008. The report also attempts to capture some of coping strategies they employed and their needs.

UNDP is on the ground in 166 countries, working with governments and people to help them build their own solutions to global and national development challenges.

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