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# Upazila Disaster Management Plan

Upazila: Manda District: Naogaon

Plan Developed by

Upazila Disaster Management Committee, Manda, Naogaon

Coordinated by



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Ministry of Disaster Management & Relief



# Preface

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Bangladesh is a disaster prone country in the world. Due to Geographical disadvantage, the environment, losing balance of power, are facing various catastrophe like inundation, Tornados, drought, Erosion of river, earthquake, various cyclone, fogginess, white squall and so on. Bangladesh is river mothered country. The erosion of river for over flow of water, destroy the location of river side and all the inhabitants lose their all sort of livelihood and livestock and took shelter being pauper in the hovel on the high land or roads. Not only that, but also, men and industries' created catastrophe become the bane for calamity and people use to live in alarming plight. And also, by the horrific effect, all sort of assets, lives, livelihood, livestock and other resources of the locality may fall in danger. It does not destroy only the located people, also create obstacle for National and economical resources of the country. Though it is a disaster prone country but long term 'Disaster Management plan' has not been prepared for saving the human being, their all sort of resources, livelihood, animals and other asset, rather have been given importance to rehabilitation and on relief. Recently Government of Bangladesh has taken an initiative on the subject 'Disaster Management Planning' through CDMP 2. To implement the plan in action, primarily has taken an initiative for indication 'Disaster Risk' through conversation with all sorts of local people, Union and Upazila Management Committee. For Preparedness and reducing risk 'Disaster Management Plan' has provided to **Manda** Upazilla by indicating 'local disaster risks' through 'Disaster Management Plan' which will be efficacy for the forthcoming days.

At the time to providing the Plan all classes of people like male, female, cultivator, landless people, aged person, local elite persons, Union and Upazila Disaster Management Committee Members (UzDMC) were congregated. Locally this conspicuous doings have been done by the hard toiling of Shushilan Staffs and related analysis individuals. Disaster Management Committee of **Manda** Upazilla under **Naogaon** District have provided this plan by efficacy toiling and restless endeavor. All kinds of important heart rending calamities as, awareness creation among family members and locality, to take preparation for facing risk would have to use local recourses, replacement of living assets and people to a safety place, rescue impediment people, necessary goods indication, and relief distribution have been included in the Upazila 'Disaster Management Plan'. If that plan come into being all kinds of calamities would be reduce and all sorts of materials of the people would be safe. Not only that, but also have included preparation before and after disaster, mitigation disaster by using Local resources, social assets, safety places, indication the causes of disaster, disaster warning sign, mostly disaster prone location, climate changes and its horrific effect, development sectors and name of the local volunteers as well as organization.

I am giving thanks from my core of heart to those very persons who have taken part and have given advice, like all Government and Non-Government Organizations and local persons to perform the conspicuous act in good manner. I am confident; this Disaster Management Plan which has prepared by the coherent cooperation of local people, Local Governances and other local organizations should help to Disaster Management Committee and other sectors (Government, International and National NGO, as well as Donor) to perform all acts as a overall plan.

## মুখবন্ধ

বাংলাদেশ একটি দুর্যোগ প্রবণ দেশ। ভৌগোলিক অবস্থান, জলবায়ু ও আবহাওয়ার তারতম্যের কারণে স্থানভেদে এদেশে প্রতি বছর বন্যা (নদীবাহিত/বৃষ্টিপাত জনিত), টর্গেডো (ঘূর্ণিঝড়), খরা/অনাবৃষ্টি, ভূমিকম্প, ঘন কুয়াশার মত বিভিন্ন ধরনের আপদ আঘাত হানে। বাংলাদেশ একটি নদীমাতৃক দেশ হওয়ায় প্রায় প্রতিবছর এলাকা ভিত্তিক নদী ভাঙ্গানের শিকার বহু লোক ভিটেমাটি ছাড়া হয়ে নিঃশ্ব হয়ে পড়ে এবং নদী-খাল ভরাট জনিত কারণে এলাকা ভিত্তিক অধিবাসীদের সংশ্লিষ্ট নানা ধরনের আপদের সম্মুখীন হতে হয়। এ ছাড়াও মানব সৃষ্ট ও শিল্প কারখানা জনিত বিভিন্ন ধরনের আপদ প্রতিনিয়ত মানুষকে আতংকগ্রস্ত করে রাখে। এ সমস্ত আপদের প্রভাবে সহায় সম্পদসহ জান-মাল, পশু সম্পদ ও ফসলের ব্যাপক ক্ষতি সাধিত হয়। এর ফলে শুধু আক্রান্ত জনগোষ্ঠী-ই ক্ষতিগ্রস্ত হয় তা নয়, জাতীয় সম্পদ এবং অর্থনীতিতেও ব্যাপকভাবে এর প্রভাব পরিলক্ষিত হয়। দুর্যোগ প্রবণ দেশ হলেও পূর্বে দুর্যোগ ব্যবস্থাপনা পরিকল্পনার মাধ্যমে মানুষের সহায় সম্পদসহ জান-মাল, পশু সম্পদ ও ফসলের ক্ষয়ক্ষতি হ্রাস করার সুদূর প্রসারী কোন পরিকল্পনা গ্রহণ করা হয়নি। সুষ্ঠু পরিকল্পনা ব্যতিরেকে শুধুমাত্র ত্রাণ ও পুনর্বাসনকেই বেশী প্রাধান্য দেয়া হয়েছে। সম্প্রতি বাংলাদেশ সরকার সমন্বিত দুর্যোগ ব্যবস্থাপনা কর্মসূচীর (CDMP-II) মাধ্যমে দুর্যোগ ব্যবস্থাপনা পরিকল্পনা বিষয়ক এক কর্মসূচী হাতে নিয়েছে। এই কর্মসূচীর আওতায় প্রাথমিকভাবে সমাজের বিভিন্ন স্তরের জনসাধারণ, ইউনিয়ন ও উপজেলা দুর্যোগ ব্যবস্থাপনা কমিটির সমন্বয়ে স্থানীয় ঝুঁকি চিহ্নিত করে তা পর্যালোচনার মাধ্যমে দুর্যোগ ব্যবস্থাপনা পরিকল্পনা প্রনয়নের উদ্যোগ নেয়া হয়েছে। দুর্যোগ ব্যবস্থাপনা পরিকল্পনায় স্থানীয় আপদসমূহ চিহ্নিত করে দুর্যোগ পূর্ব প্রস্তুতি গ্রহণ ও ঝুঁকি নিরসনের জন্য মহাদেবপুর উপজেলায় কার্যকরী একটি দুর্যোগ ব্যবস্থা পরিকল্পনা প্রনয়ন করা হয়েছে যা স্থানীয় পর্যায়ে দুর্যোগ ঝুঁকি মোকাবেলায় সুদূর প্রসারী অবদান রাখতে পারবে বলে উপজেলা দুর্যোগ ব্যবস্থাপনা কমিটি মনে করে।

কর্মপরিকল্পনাটি প্রনয়নে এলাকার নারী-পুরুষ, কৃষক-ভূমিহীন, প্রবীণ ও তথ্য প্রদানে সক্ষম অন্যান্য স্থানীয় জনগোষ্ঠীর প্রতিনিধি, ইউনিয়ন এবং উপজেলা দুর্যোগ ব্যবস্থাপনা কমিটির (UDMC) সদস্যবৃন্দ সরাসরি সম্পৃক্ত ছিলেন। বিশেষ করে অত্র এলাকায় কর্মরত সুশীলন' এর কর্মকর্তা ও গবেষকদের নিষ্ঠা ও অক্লান্ত পরিশ্রম স্থানীয় পর্যায়ে পরিকল্পনা প্রনয়নে যথাযথ অবদান রেখেছে। এ কর্ম প্রচেষ্টা ও অক্লান্ত পরিশ্রমের ফলে চট্টগ্রাম জেলার মান্দা উপজেলা দুর্যোগ ব্যবস্থাপনা কমিটি একটি বাস্তবসম্মত দুর্যোগ ব্যবস্থাপনা কর্মপরিকল্পনা প্রনয়ন করতে সক্ষম হয়েছে। অত্র উপজেলায় প্রণীত দুর্যোগ ব্যবস্থাপনা পরিকল্পনায় দুর্যোগ মোকাবেলায় গুরুত্বপূর্ণ বিষয় সমূহ প্রাধান্য লাভ করেছে। তন্মধ্যে উল্লেখযোগ্য হচ্ছে পরিবার ও সমাজ পর্যায়ে দুর্যোগ ঝুঁকি সম্পর্কে গনসচেতনতা সৃষ্টি, স্থানীয় সম্পদ ব্যবহারের মাধ্যমে দুর্যোগ পূর্ব প্রস্তুতি গ্রহণ এবং দুর্যোগ কালীন সময়ে অপসারণ, উদ্ধার, চাহিদা নিরূপণ, ত্রাণ ও তাৎক্ষণিক পুনর্বাসন ব্যবস্থার জন্য স্থানীয়ভাবে প্রণীত পরিকল্পনার অনুশীলন ও প্রয়োগ, দুর্যোগ পরিকল্পনায় অংশগ্রহণ এবং কার্যকর অংশীদারীত্ব যা বাস্তবায়িত হলে আপদ সংশ্লিষ্ট স্থানীয় ঝুঁকি সমূহ অনেকাংশে হ্রাস পাবে এবং জনগণের সহায় সম্পত্তি, জানমাল এবং ফসলের ক্ষয়ক্ষতির পরিমাণ কমিয়ে আনা সম্ভব হবে। পাশাপাশি দুর্যোগ পূর্ব, দুর্যোগ কালীন ও দুর্যোগ পরবর্তী প্রস্তুতি গ্রহণ, দুর্যোগ ঝুঁকি হ্রাসে স্থানীয় অবকাঠামো ও অ-অবকাঠামো, সামাজিক সম্পদ ও নিরাপদ স্থানসমূহের তালিকা প্রনয়ন, ঝুঁকির কারণসমূহ চিহ্নিতকরণ, সর্বাধিক বিপদাপন্ন এলাকা চিহ্নিত করণ, ঝুঁকি নিরসনের উপায় চিহ্নিতকরণ, জলবায়ু পরিবর্তন এবং তার সম্ভাব্য প্রভাব নিরূপণ, উন্নয়ন পরিকল্পনার প্রধান খাত সমূহ চিহ্নিত করণ এবং বিভিন্ন সামাজিক সংগঠন সমূহের স্বেচ্ছাসেবক তালিকা প্রনয়ন করা হয়েছে।

২০১৪ সালে সিডিএমপি'র সহায়তায় প্রণীত দুর্যোগ ব্যবস্থাপনা পরিকল্পনাটি প্রনয়নে যে সকল সরকারী এবং বেসরকারী সংস্থা ও ব্যক্তিগত সক্রিয়ভাবে অংশগ্রহণ ও পরামর্শ প্রদান করেছেন তাদেরকে আমি আন্তরিক ভাবে ধন্যবাদ জ্ঞাপন করছি। আমি আশাবাদী, স্থানীয় জনগন, স্থানীয় প্রশাসন ও বিভিন্ন সরকারী বেসরকারী প্রতিষ্ঠানের সমন্বয়ে মান্দা উপজেলায় প্রণীত দুর্যোগ ব্যবস্থাপনা পরিকল্পনাটি দুর্যোগ ব্যবস্থাপনা কমিটি ও সংশ্লিষ্ট সেক্টরের (সরকারী, আন্তর্জাতিক ও জাতীয় এনজিও, দাতা সংস্থা ইত্যাদি) জন্য একটি সার্বিক পরিকল্পনা হিসেবে কাজ করবে।

সভাপতি

  
10-07-14

উপজেলা দুর্যোগ ব্যবস্থাপনা কমিটি এবং

উপজেলা চেয়ারম্যান

মান্দা উপজেলা

নওগাঁ জেলা

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# Chapter One

## Introduction to Local Area

### 1.1 Background

Bangladesh is one of the disaster prone countries in the world map. Each district of this country is affected by disasters more or less. It is one of the countries affected by climate change. It is not proper to say at present that climate change is a matter of future, it now happens around us and signs of future changes are already apparent. It is a real and manifest matter now which affects the social and human development of Bangladesh. The growing devastating cyclones and tidal waves in the southern regions, drought, heat wave and low water level in the southern regions, repeated floods in the northern-east and mid regions, the landslides of the hill tracts and widespread river erosions further jeopardizes this situation. The future effects of these are still unknown and the possible remedies and risk management are uncertain.

It is recommended at the permanent orders of disasters to implement disaster management activity plan including risk reduction and contingency plan in district, Upazilla, municipality and city corporations. CDMP has considered the matter of Disaster Management Activity Plan as greatly important. The stability and effectiveness of the plan depend on the intensive and fruitful working methods, related organizations and the participation of institutions and people. The disaster management plan is designed for 3-5 years.

Manda upazilla of Naogaon district is one of the disaster prone areas. Drought is the main problem in Barind Tracts, whereas flood is the main problem in floodplains. Disasters affect Manda upazilla every year and hamper the lives and livelihoods of the people. Although, each year the upazilla faces various disasters, no reflection of any plan is visible yet. This disaster management plan is implemented for Manda upazilla as a part of the entire disaster management. Drought is one of the major disasters of Manda. Both Atrai and Punarbhaba rivers are peripheral and are renowned as catalyst of climate of Manda as well as the entire Naogaon district. Very low amount of water flows through these rivers during dry seasons. Moreover, the rainfall rate is also very low during then in these regions. Besides, the average annual rainfall in the region is very low, which is between 4 mm to 313.50mm whereas the average rainfall of the entire country is almost 235 cm. So both the shortage of water in the river during the dry season and insufficient rainfall create lack of moisture which has turned this region as a drought prone region of the country. From the 1<sup>st</sup> chapter to 3<sup>rd</sup> chapter of this document provide a brief description of social, economic, natural and infrastructure of Manda upazilla and relevance of strategies, outlines of the underlying causes and potential effects of climate change, different adaptation strategies and a 3-5 year plan of action to increase the capacity in disaster management and to attain prevention ability. 4<sup>th</sup> and 5<sup>th</sup> chapters provide the outline of institutionalization to increase disaster management capacity and to achieve resistance ability through participation of ordinary people, especially the social-political activists and development workers. The Ministry of Disaster Management and Relief has

decided to implement a multipurpose preparatory plan as part of the 'Comprehensive Disaster Management Programme (CDMP) to protect the poor and vulnerable from the adverse effects of climate change and also to maintain the continuation of the country's economic development. As in Upazilla Disaster Management level, implementation of the strategy in socio-economic development, education, health, housing and other infrastructure has been ascertained to fight against the future vulnerability of climate change, therefore it is very important for all to be concerned.

## **1.2 Objectives of Planning**

The type of natural disaster can be change because of Climate change. In order to deal with the disasters related to climate change, any other most effective field level initiative need to be presented nationally at the policy making levels. At present, the Ministry of Disaster Management and Relief under Comprehensive Disaster Management Programme (CDMP) has decided to implement a multipurpose preparatory plan as a part of removing local people's disaster risk. Under this program, Bangladesh government has changed relief and rehabilitation based disaster risk management strategy and taken long-term risk fighting program. The main objectives of this program are-

- To create mass-awareness of the risk of disaster at family and community level, the pragmatic ways of risk reduction at the level of family, community, union administration, upazilla and district commission
- To promote risk reduction and development of process implementation system ensuring the most possible utilization of local assets, practice and implementation of locally prepared plan for exclusion, rescue, need analysis, immediate relief and rehabilitation
- To construct a methodological document for a particular time and place
- To prepare an integrated plan for Disaster Management Committee and all other related sectors (national, international, NGO, donors etc.)
- To provide the participants involved in Disaster Management necessary directions for preparing and implementing plans
- To ensure and persuade the sincere participation, effective cooperation, responsibility and sense of possession in the disaster plan of related community.

## **1.3 Introduction to Manda Upazilla**

Manda upazila of Naogaon district is quite a big upazilla. This upazilla consists of 14 unions. There is a traditional Thakurmanda temple in no.1 Bharso union and Kusumba Jame Masjid in no. 8 Kusumba union of this upazilla.

### **1.3.1 Geographical Location**

The area of Mnda upazilla is 413.97 sq km and 24.37'-24.52' north latitudes and 88.35'-88.51' east longitudes. It is bounded by Manga on north, Baghmara and Mohanpur upazilla of Rajshahi district on south, Nagaon Sadar on east and Niamatpur upazilla on west. This upazilla consists of 14 unions and 126 wards. Manda upazilla pasishad is located near the

bazaar of Prasadpur upazilla which is 30 km far on the south-east corner of Naogaon-Rajshahi highway.

### 1.3.2 Area

Manda upazila consists of 14 unions which has the total area of 413.97 sq km. It is bounded by Manga on north, Baghmara and Mohanpur upazilla on south, Nagaon Sadar, Raninagar and Atrai upazilla on east and Niamatpur and Tanore upazilla on west. There are total 290 Moujas and 293 villages.

Table 1.1: Upazilla, Union and Union wise name of Mouzas

Upazia Name & GO Code No	Union Name & GO Code No	Union wise name of Mouzas
Manda (47)	Valain (12)	Ayapura, Baidiyapura, Beilasing, Banatasara, Bijora, Valain, Cukinagara, Chowkababan, Chowkvhalain, Chowkabinod, Chowkajamadai, Chowksibaramapura, Chowksrikrisno, Ganta, Gorara, Jamadai, Lakkiramapura, Manda Chowk, Manoharpur, Muyai, Tanail, Turakagao
	Bharaso (13)	Aiora Para, Alalapur, Balakhitara, Balish, Bankapur, Biheri, Bharaso, Bill Srikala, Bill Surasuna, Bill Uttarail, Barojapura, Caubariyaghata, Ceragapura, Chottipura, Choyapura, Dehul, Dodayala, Gagra, Harikisor, Hossainpur, Kabulapura, Kaligao Mohammadpur, Kalisapha, Kasba Manda, Khagra, Mohanagor, Mandakahas, Masidpur, Pakuriya, Rajendrabati, Saguniya, Simaladaha
	Bishnupur(20)	Abid Para, Bharatsibanagara, Bilabayara, Bishnupur, Chak Kamdeb, Chowk Rampur, Chowk Seila, Dasapara, Hulibari, Jasapara, Karnabahaga, Kailabari, Khorada Jashapara, Kornobhag, Kailabari, Khorder Bindaikhara, Nhana Kalupara, Pari Tongi, Parsimola, Poshim Pitambor, Fatepur, Rhaimpur, Sahar Bari Shibpur
	Ganesapura(27)	Bangal Para, Bhayabara, Chowk Nandaram, Dosatina, Ganesapura, Kanchan, Mirpur, Parail, Sayedpura Satbaria, Serampore, Surjanarayana
	Kalikapura(33)	Anat Shimla, Banagao, Boro Mulluk, Barbariya, Bethail, Choto Mulluk, Chowk Gauri, Chowk Govinda, Chowk Kalikapura, Chowk Kasoba, Chowk Manik, Chowk Narayan, Chowk Raghunathpur, Chowk Ramakantapura, Chowk Srikrishna, Faridpur, Gopalpur, Jasarai, Kaligao Phatepur, Kalikapur, Kalinagar, Maul, Nalator, Rajnagar, Sajanipura, Silagram
		Basabari, Varot Katiradanga, Chowk Bhawani, Boro Chowk Champak, Choto Chowk Champaka, Chowk Gopal, Chowk

Upazia Name & GO Code No	Union Name & GO Code No	Union wise name of Mouzas
	Kasopara (40)	Ali, Chowk Ramananda, Chowk Sitaram, Gangarampur, Ilasagari, Jaffrabad, Kaibarata Para, Kanaso Para, Katiradanga, Napit Para, Nijkulihar, Pike Para, Par Khulihar, Rangamatiya, Shukti Badal, Tulasiramapura
	Kasab(47)	Sita, Talpatila, Banakura, Chowk Balu, Chowk Haor, Chowk Gauranga, Chowk Kochara, Chowk Sidhessari, Kasab, Kuriyapara, Mayanadanga, Mithapura, Palashbari, Panjabahanga, Tegara, Turag Bariya
	Kusumaba (54)	Boro Bilaladaha, Barapai, Bilakarli, Chottabilaladaha, Chowk Gopar, Chowk Kanu, Chowk Kusumaba, Chowk Syamaraya, Deluyabari, Geihana, Haji Gobindapur, Kirtali, Krishnapur, Kusumaba, Dangapara, Bagadeoyana, Naradanga, Saphapur, Samukakhola, Buridaha
	Mainam (61)	Baradapur, Bhadrasona, Bildhubala, Itakhayer, Lalatipur, Mainam, Mongalapara, Nalakumri, Pirari, Rampur, Raipur
	Manda (67)	Arajinarapur, Badalaghat, Banihari, Bahalam, Bijoypur, Chowk Bhavani, Chowk Manasaba, Dosati, Dosatina Kalikapur, Ghatakayaira, Goradaha, Gosainapura, Jinarapura, Kaibara, Kamarakuri, Kayapara, Khordakhocara, Khagara, Magura, Mirulla, Nalaghaira, Naogaon, Ranahara, Sahapukuriya , Shahapur
	Nurullabad (74)	Bakasa Bari, Barila, Chowk Bholai, Chowk Debiram, Chowk Harinarayana, Chowk Umed, Dodangi, Golamanda, Kadamtali, Kaligrama, Nurullabad, Potapara, Ramnagar, Chowk Udaya Narayan
	Paranapur (81)	Ramnaogoa, Bandaipur, Banisar, Chowk Keshav, Chowk Mandarasana, Chowk Raghunath, Doyail, Gopalpur, Haludaghar, Hatar, Jiyail, Kalachita, Kukarail, Paranapur, Pitagao, Sadalpur, Sisail, Sonapura
	Prasadapur (88)	Beibola, Chowk Khopa, Chowk Rajapur, Dariyapura, Ilanaga, Gharikhitar, Gotagari, Inatapura, Khudiyadanga, Mathagari, Parinathapur, Prasadapur, Pujaghati
	Tentulia (94)	Baluka, Bangara, Bhanatanata, Coja, Chowk Bajida, Chowk Sabai, Candrakana, Dotidaha, Gona, Gosainapura, Jotiisamail, Kaligao Sankarapur, Kaligaotitihari, Kanchanpur, Ktakatal, Keshabpur, Kaligao Jaipur, Kurakuti, Narayanpur, Palashbari, Paniyala, Pirakaira, Pukuria, Ruyai, Saladaha, Satala, Singa, Serampur, Shampur, Tegara, Teilapar, Tepar, Tentulia

**Information source: Census, 2011**

### 1.3.3 Demography

The total number of population of Manda upazilla is 363858 in which male is 180023 and female is 183835 and male-female ratio is 98:100. There are 329592 Muslims, 31791 Hindus, 178 Christians, 1 Buddhist and 2296 from different types of tribal communities like Santals, Banua, Koch and Rajbangsi. The density of population in this upazilla is 0.177 (per square kilometer) and annual population increase rate is 4.76%.

Table 1.2: Union wise Male, Female, Child, Old, Autistic, House hold and Voters

Name of Union	Male	Female	Child (15-0)	Old +60)	Autistic	Total Population	House hold	Voter
Bhalain	11389	11612	9.43	4.15	1.7	23001	6131	34634
Bharso	16996	17324	9.87	3.9	1.7	34320	9025	21478
Bishnupur	9826	9909	10.1	5.1	1.1	19735	5449	19017
Ganeshpur	13385	13800	9.5	4.8	1.3	27185	7095	16469
Kalikapur	11777	11787	9.17	4.15	1.8	23564	6341	12258
Kansopara	12020	12282	9.7	4.35	1.3	24302	6428	10302
Kashab	9691	10456	9.47	4.7	1.1	20147	5367	15182
Kusumba	18437	18752	9.6	4.15	1.5	37190	10074	23900
Mainam	10973	11104	9.37	4.55	1.0	22077	5601	18060
Manda	14501	14935	9.2	4.2	2.2	29436	7954	22097
Nurulabad	13743	13793	9.43	4.4	1.6	27536	7546	20490
Paranpur	12906	13237	9.73	3.85	1.8	26143	7140	20789
Prasadpur	11656	11824	9.1	4.55	1.5	23480	6363	21369
Tentulia	12722	13020	8.33	4.55	1.6	25742	6705	18754
Total	180022	183835	9.43	4.38	1.5	363858	97219	274799

Information source: Upazilla Election Office and Census, 2011

### 1.4 Structural and Non Structural Information

Manda is basically an agriculture based upazilla. The source of income of the majority of people here is agriculture. Therefore, quite a lot agro-based Industries have arisen here. All the wards and Unions are under the coverage of rural electrification. There are some small and cottage industry and large industries. Among these poultry farms, livestock farms, auto rice mill, printing house, Welding Factory, cold storage, brick-kilns and various types of cottage industries are prominent. There are industries, ice mill, flour mill, saw mill too. Trade and commerce have expanded largely because of developed communication systems, including bus terminals and petrol pump.

## **1.4.1 Infrastructure**

### **Embankment**

There are numerous embankments in Manda upazilla. Embankments work as roads as it is a floodplain region. The embankment between Mithapukur and Pathkata by the both sides of river Atrai is one of them. This embankment is 42 km long. Besides, there are 207 embankments like roads around this upazilla which act as strongholds in case of sudden flood.

### **Sluice Gate**

According to LGED, there are 5 sluice gates in Manda upazilla. Being the only way of drainage, all the sluice gates are adjacent to river Atrai. There are 1 gate on the river Atrai in Kashab Union (located between Parkulihat and Paikpara), 2 gates on the river Atrai in Prasadapur union, 1 gate on the river Atrai in Khudiadanga union and 1 gate on the river Atrai in Ganeshpur union which play an important role in dealing with floods. Moreover, the excess water is drained out of the gate.

### **Bridge and Culvert**

There are 486 bridges and culverts of LGED in Manda upazila. There are 20 culverts from Jalchattar to Panjor vanga bazaar, 6 culverts from Deluabari bazaar to Chowbaria bazaar, 9 culverts from Prasadpur bazar to Deluabari bazar, 11 culverts from Deluabari bazar to Chalkgouri bazar, 9 culverts from Satihat bazar to Pathakatha bazar (Mahadebpur), 5 culverts from Choubari bazaar to Kharibari bazaar (Niamatpur), 6 culverts from Satihat bazaar to Singhi-Khatkoir bazaar, 8 culverts from Kalikapur road to Kalamaraghat- Battoli bazaar (Niamatpur) and 17 culverts from Hajigobindpur road to Cheragpur- Battoli bazaar. Another culvert has to be made from Nilkuthi road to Gotgari Hat- Jotbazaar-Damnash bazaar.

### **Road**

There are 207 roads in Manda upazilla which has a total length of 751.83 km. Depending on the type of roads of LGED, from Jalchattar to Panjor Bhangra the road is total 14.21km long. The entire road is paved. From Deluabari GC to Chowbaria GC the road is 7.8 km long. The entire road is paved. From Prasadpur GC to Deluabari GC the road is 6.25 km long. The entire road is paved. From Sutihat GC to Panthakata GC (Mahadebpur) the road is 3.85 km long. Among these 1.34 km is eathen and 2.51 km is paved. From Chowbaria GC to Kharibari GC (Niamatpur) the road is 2.24 km long. The entire road is paved. From Sutihat GC to Katkoir GC via Shingi Hat the road is 11.18 km long. The entire road is paved. From Kalikapur to Bottoli GC (Niamatpur) via Kalamara Ghata the road is 6.8 km long. The entire road is paved. From Hazigobndpur to Bottoli GC (Niamatpur) via Cheragpur the road is 10.4 km long. Among these 4.52 km is earthen and 5.4 km is paved. From Chowbaria GC to Bottoli GC (Niamatpur) via Avurpara the road is 5.69 km long. The entire road is paved. From Bandaikhara GC to Panthakata GC via Panjorbhanga GC the road is 25 km long. The entire road is paved. From Proshadpur GC to Bandaikhara GC via Jothbazar the road is 18.12

km long. Among these 18.02km is paved and .1 is rigidly paved. From Sutihat GC to Katkhoir GC via Panishail the road is 4.7 km long. Among these 2.2 km is earthen and 2.5 km is paved. From Nilkuti via Gotgari hat to Joth Bazar to Damnash GC (Bagmara) the road is 14.58 km long. Among these .5 km is earthen and 14.08 km is paved. From Chowbaria GC to Santa Bridge more the road is 19.8 km long. The entire road is paved. From Sabai hat to Chowbaria GC the road is 8.8 km long. Among these 6.05 km is earthen and 2.28 km is paved. From Narayanpur R&H via Chakgowri hat to Damnash GC (Bagmara) the road is 8.28 km long. Among these 2.18 km is earthen and 6.1 km is paved. From Sonapur to Chattra GC (Niamotpur) the road is 8.6 km long. The entire road is earthen.

Table 1.3: Length of road types

Types of road	Number	Length (km)	Pavement( km)	Earthen (km)	HBB
Upazilla Road	18	186.15	128.38	57.78	0.1
Union Road	34	178.05	76.25	101.80	0.96
Village Road A	81	237.33	16.48	220.85	1.44
Village Road B	74	150.3	1.25	149.05	0.65
<b>Total</b>	<b>207</b>	<b>751.83</b>	<b>222.36</b>	<b>529.48</b>	<b>3.15</b>

Source: LGED, 2014

### Irrigation System

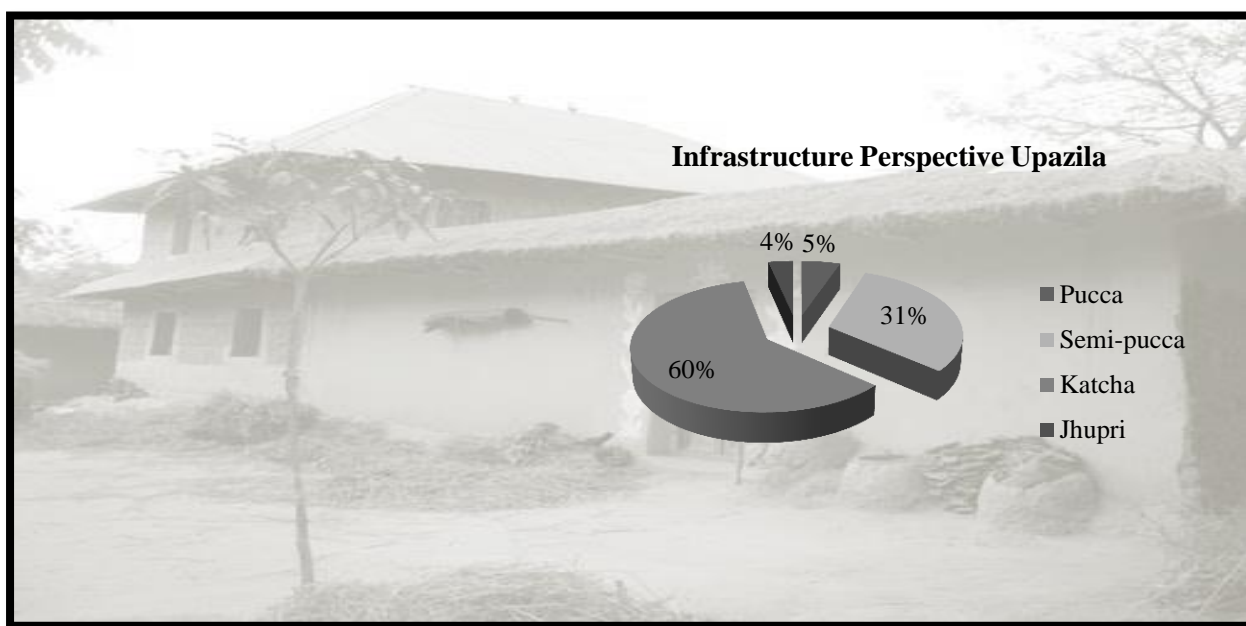
Total land of agriculture based Manda upazilla under irrigation system is 28725 hectares. The lands need ample irrigations in the dry season as it is geographically in Barind Tracts. So, 588 deep tubewells, 6210 shallow tubewells, 448 power pump are used for proper irrigation and fills the demand of water. Even when the level of underground water is down in the dry season, the demand for fresh water is filled too.



Picture 1.1: Irrigation system of Manda upaziila Barind Tracts

## Hat Bazaars/ Markets

Although Manda upazilla is agriculture based, there are some industries here. Among them auto rice mill, printing house, Welding Factory, cold storage, brick-kilns, ice mill, flour mill, saw mill are notable. There are 27 Bazars to export agricultural products. Among these Chowbaria, Sabai, Dekuabari, Sutihat and Pradpur Bazaar are prominent. Huge amount of rice, paddy, watermelons, sugarcanes, bananas, papayas, onions, garlic etc are exported from these markets. Besides, there are 37 goldsmiths, 67 blacksmiths, 383 porters, 17 welders and 265 labor of cane industry.



## 1.4.2 Social Assets

### Household

Being under the Barindra tracts, the soil of this upazilla is sticky, hard and red coloured for which dihedral earthen houses have been made from ancient times. The structure of houses of this upazilla is different from that of other upazillas due to the different vision and strategic framework of indigenous people. Structure of houses was made such to protect grown crops and to get relief from extreme weather. The houses of Manda upazilla are usually made of soil, straw, bamboo, palm trees, tiles, tin, and bricks. According to Consensus, 2011, in Dhamoirhat upazilla, 3.4% of these houses are made of concrete, 31.1% are half-concrete, 60.2% earthen and 5.3% are *jhupries* (thatched houses).

### Water Sources

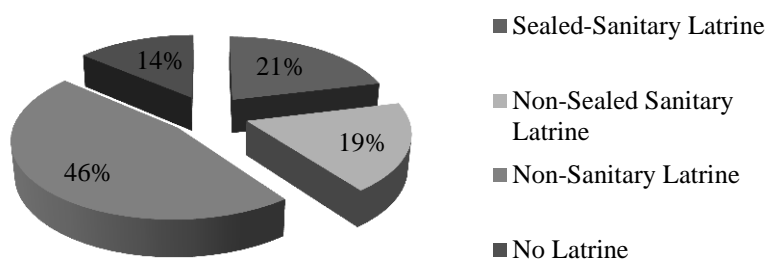
In the dry season, the underground water level goes down due to geographical location of Manda upazilla which leads to a shortage of drinking water. Under Barind multipurpose project, irrigation is done through 588 deep tube wells in this region along with supplying drinking water through pipes from many tanks in different places. Besides, the demand of drinking water is met from 93.22% Tube-well, 0.37% tap, 0.21% pond and 6.2% others sources.



### Sanitation System

13.8% people of Manda upazilla use water-sealed sanitary latrine, 18.6% non water-sealed latrine, and the rest of 46.5% non-sanitary latrine and 21.2% people are deprived of any kind of sanitation system. So, in order to establish proper sanitation and reduce health risk, Public Health Engineering Department of Manda upazilla, bear the cost of repairing the tube with respect to the purchase of spare parts, sells/supplies the ring slab at the government set prices, tests Arsenic level of water (limited), supply water through pipelines to upazilla headquarters, provides advice to the public to build sanitary latrines, operate collaborative activities with local authorities during disasters.

### Sanitation System in Upazila



**Graph 1.2: Users of different sanitation system**

**Information source: Consensus, 2011**

### Educational Institution/ Libraries

There are 12 colleges, 1 High school & College, 53 high schools, 14 secondary schools, 29 madrasas (4 Fazil, 7 alim, 16 dakhil, 2 kamil) and 178 primary schools in Manda upazilla. The literacy rate of this upazilla is 65%, of which 68% is male and 62% is female. The name of educational institutions, number of students, location and use as shelter are attached as Attachment 8.

### Religious Institution

Manda upazilla is under Barind tracts. The antiquities built in the first Muslim architectural period (1202-1575 AD) which are found, Kusumba Shahi Mosque is one of them. It is located on the western banks of the huge tank of 8 no. Kusumba Union. This mosque built with square black and ash stone and a terracotta brick is a unique and brilliant example of the Muslim architecture which was built in Sultanate period of Bengal. Geometrically designed motif style of terracotta works, different flowers, foliage, chains and lovely designs are delightful combination of Muslim architecture. Kusumba Mosque is located on the south-west side of the river Atrai and three miles away from Kusumba police headquarter. The mosque is on the western bank of huge Kusumba tank covering 25.83 acres located on

western side of Rajshahi-Naogaon highway. 4 octagonal towers stand as attentive guards on the 4 corners of Kusumba Mosque and there are 6 domes above. Besides, there are 980 mosques in this upazilla. According to sources of information, young king named Choto Raja during the reign of king established Thakur Manda temple. Moreover, there are 22 temples, 3 churches and 1 shrine.



**Picture 1.2: Artistry of Muslim architectural pattern of Manda upazilla, Kusumba Mosque**

#### **Religious Place (Eidgah)**

There are 26 eidgahs in Bharso, 12 in Bhalain, 12 in Poranpur, 1 in Manda, 30 in Ganeshpur, 13 in Mainam, 21 in Prasadpur, 24 in Kusumba, 16 in Tetunlia, 1 in Nurullabad, 25 in Kalikapur, Kansopara, 11 in Kashab and 18 in Bishnupur.

#### **Health Service**

As Manda upazilla is under floodplains, the areas are like islands and remote. Although health care is inadequate compared to the size of the area and total population, there are 1 fifty-bed government hospital in Prasadpur with union wise 12 public health and family welfare centers and 43 community clinics.

#### **Bank**

There are 11 banks in Manda upazilla as a medium of money transaction. Among these there are 1 branch of Sonali Bank, 2 branches of Agrani Bank, 4 branches of Janata bank and 4 branches of Rajshahi agriculture development bank.

#### **Post and Telecommunication**

There is a head post office including 23 branch offices and 2 telephone exchanges in Manda Upazilla. These are used as the fast and major medium of communication of sudden flood and disasters.

## Club/Cultural Centre

There are 157 clubs, 1 cultural center, 41 sports clubs, 4 theatres and 146 sport fields in Manda upazilla. If a sudden disaster occurs, major volunteer groups come from these clubs and cultural centers.

## NGO/ Voluntary Organizations:

There are 26 local NGOs working in Manda upazilla. Brac, ASHA, CCDB, TMMS, CAP, BLMF, PSF, Moushumi-Loan, RIC, Fundamental rights development center, ASOP, Asroy, National Welfare Organization, ASOD, BURO Bangladesh, Karitas, JRDM, Damien foundation, Polli Sree, Wave foundation, Angeekar Human welfare center, Abash Community are notable. Besides, there are 28 multipurpose co-operative associations, 40 farmers' co-operative associations, 59 deprived men's co-operative associations, 66 female co-operative associations, 26 fisheries co-operative associations and 15 other co-operative associations in Manda upazilla.

## Play Grounds

There are 164 play grounds in Manda upazilla. Among these Kalikapur, Kalitola, Bharso, Prasadpur etc comparably high and large. These fields are used as the alternative disaster shelters. These fields are also used in various celebrations.

## Graveyards/ Crematorium

The funeral procedures are different based on different public beliefs. The union wise number of graveyards and crematoriums are given below:

Table1.4: Union wise graveyards and crematoriums

Sl No.	Union	Graveyards (Public and Private)	Crematoriums ( Public and Private)
1	Bhalain	6	4
2	Bharso	14	7
3	Bishnupur	07	10
4	Ganeshpur	1500	1
5	Kalikapur	50	2
6	Kansopara	11	1
7	Kashab	33	4
8	Kusumba	400	3
9	Mainam	117	2
10	Manda	3	1
11	Nurullabad	1	3
12	Paranpur	30	5
13	Prasadpur	1	1
14	Tentulia	19	4
	<b>Total</b>	<b>2192</b>	<b>48</b>

Information Source: Union Council, Manda, 2014

## **Communication and Transportaion**

Manda upazilla lies 350 km. away from district sadar. Rajshahi divisional city is 65 km away from Manda upazilla. Here prevails improved communication system with upazilla sadar and nearby district sadar. Each of the union of Manda upazilla has paved roads. All Union Council has direct connection to Upazilla sadar through pavements. As a result, bus, van, rickshaw, tempo run on roads and for transporting trucks and tractors, Lorries etc are used. Besides, there are some traditional vehicles like palanquins and equine Bogey which are almost extinct. There are total 751.83 km roads in Manda upazilla. Among these 18 are upazilla roads of total 186.15 km, 34 Union roads of total 178.05 km, 81 Village roads A of total 237.33km and 74 village roads B of total 150.3 km. Moreover, there are 486 bridges and culverts and 3 rivers in this upazilla.

## **Forest and Plantation**

There are no natural forests in Manda upazilla. However, there are many mango orchards owned by private sector and individuals. Besides, there are social forests under private enterprise. There are social forests on the both sides of roads and rivers.

### **1.4.3 Weather and Climate**

The annual average rainfall of this upazilla is below 45 inches. Nevertheless, this rate is changeable. It will not be overstated if this area is called the ideal tropical monsoon area because of extreme warm weather, excess humidity, medium rainfall and seasonal variation. Summer starts from April and May. Then the maximum temperature remains 90 degree fahrenheit and the minimum temperature remains 65 degree fahrenheit. The highest temperature remains within April, May and the first half of June and the lowest temperature remains within January. The average maximum temperature is 76 degrees Fahrenheit and the minimum average temperature is 30 degrees Fahrenheit.

#### **Rainfall**

According to BRDB, average rainfall of Manda upazilla in 2013 was 1345mm. The highest rainfall of 2013 was in August which was 313.50 mm and the lowest rainfall was 24mm in February. The year wise rainfall of Manda upazilla indicates that rainfall gradually goes down to the lowest and then again starts to rise. Rainfall usually is the maximum and minimum every three years.

#### **Temperature**

The weather of Manda upazilla is comparably rough than plain lands as it is included in Barind Tracts. So, there is extreme heat in summer and extreme cold in winter. The average temperature is 8-10° Celsius in December and January, and the temperature prevails in April-May is highest 42 degree Celsius.

Table 1.5: Average highest and lowest temperature of 31 years

Year	Highest Temperature (Degree Celsius)	Lowest Temperature (Degree Celsius)	Year	Highest Temperature (Degree Celsius)	Lowest Temperature (Degree Celsius)
1979	31.8	21.1	1995	31.2	20.6
1980	31.2	20.9	1996	31.5	20.5
1981	30.5	20.5	1997	30.5	20.2
1982	31.7	20.3	1998	30.9	20.1
1983	30.9	20	1999	31.6	20.1
1984	30.9	20.2	2000	30.7	20.6
1985	31.3	20.3	2001	31.2	20.5
1986	31	20.1	2002	31	20.6
1987	31.5	20.5	2003	30.8	20.7
1988	31.4	20.4	2004	31.1	20.7
1989	31.4	19.4	2005	31.3	20.9
1990	30.9	19.6	2006	31.7	21
1991	31.3	19.8	2007	32	21.1
1992	31.6	19.7	2008	32.2	21.2
1993	31.1	20.1	2009	32.5	21.3
1994	31.1	20.4			

**Information Source: Bangladesh Meteorological Department, 2014**

### **Ground Water Level**

Manda Upazilla is an ideal upazilla of Naogaon district. The ground water level in this upazilla was highest in April 12.95 m and was lowest in November 6.92m. The information on annual ground water level based on the position of well by BRDB are shown below by the following table:

Table 1.6: Month wise ground water level by Manda BMDA

Location of well	Year	Average ground water level of Manda											
		January	February	March	April	May	June	July	August	September	October	November	December
Barind-42, Mouja Baidopur JL no-4, Mark no-	2010	11.61	11.92	12.32	12.72	12.74	12.65	-	-	-	-	-	-
Barind-54, Mouja Paroil JL no-, Mark no-	2010	7.9	9.63	11.75	9.13	8.46	8.25						
Barind-59, Mouja Kittoli JL no-216, Mark no-106	2010	10.05	10.4	13.52	12.33	13.12	11.97	-	-	-	-	-	-
Barind-42, Mouja Baidopur JL no-4, Mark no-303	2011	9.01	12.3	12.74	13.08	13.01	12.77	12.6	12.86	10.41	10.04	9.61	8.56
Barind-54, Mouja Paroil JL no-, Mark no-	2011	8.25	11.88	12.5	11.12	9.02	7.82	7.82	7.87	4.32	4.73	5.25	5.41
Barind-59, Mouja Kittoli JL no-216, Mark no-106	2011	9.32	12.96	14.57	13.75	-	-	-	-	9.57	9.56	9.07	8.56
Barind-42, Mouja Baidopur JL no-4, Mark no-303	2012	-	-	-	13.08	-	13.4	12.6	12.86	10.41	14.85	9.61	8.56
Barind-54, Mouja Paroil JL no-, Mark no-	2012		10.59	9.66	6.59		8.93	7.82	7.87	4.32	4.73	5.25	5.41
Barind-59, Mouja Kittoli JL no-216, Mark no-106	2012	10.39	17.45	14.08	13.74	-	-	-	-	9.45	9.56	9.07	8.56
Barind-42, Mouja Baidopur JL no-4, Mark no-303	2013	-	-	-	-	-	-	12.6	-	-	-	-	-
Barind-54, Mouja Paroil JL no-, Mark no-	2013	-	-	-	12.34	11.45	9.82	9.46	9.53	8.42	7.81	6.85	6.96
Barind-59, Mouja Kittoli JL no-216, Mark no-106	2013	-	-	-	14.68	14.54	-	13.83	12.42	-	11.76	11.25	-
Barind-42, Mouja Baidopur JL no-4, Mark no-303	2014	-	-	-	-	-	-	-	-	-	-	-	-
Barind-54, Mouja Paroil JL no-, Mark no-	2014	9.39	10.59	10.23	-	-	-	-	-	-	-	-	-
Barind-59, Mouja Kittoli JL no-216, Mark no-106	2014	12.06	14	14.77	-	-	-	-	-	-	-	-	-

Information Source: Manda Barind multipurpose development project, 2014

## 1.4.4 Others

### Land and Use of land

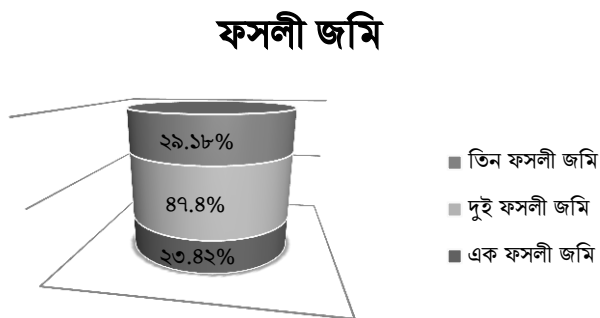
The entire land of this upazilla is under Barind regions. Although most of the land is under Barind regions, it is suitable for growing rice, jute and wheat as well as corn and vegetables. The per capita cultivable land of this upazilla is 0.09 hectares. Among these 26% are cultivated by landless farmers and 11% are cultivated by rich farmers. Besides, the market price of land per 0.01 hectars is approximately 7500BDT. The total land of Manda upazilla is 41400 hectares. The neat agricultural land is 31548 hectares of which total agricultural land is 71.744 hectares. 23.42% of the agricultural land is one-crop land, 47.4% is two-crop land and of 29.18% is three- crop land.

### Agriculture and Food

The total land of Manda upazilla is 41400 hectares. The neat agricultural land is 31548 hectares of which total agricultural land is 71.744 hectares. 23.42% of the agricultural land is one-crop land, 47.4% is two-crop land and of 29.18% is three- crop land.



Picture 1.4: Amount of agricultural land of Manda upazilla based on production



Graph 1.3: Production of crops

**Information Source: Upazilla Agriculture office, 2014**

Rice, wheat, mustard, potatoes, sweet potatoes, beans, sugarcane, cataract, red onion, garlic, oil, corn, turmeric, sesame, Kalai, khesari, pepper, corn etc winter crops grow in Manda upazilla. Moreover, extinct or nearly extinct plants like barley, flax, cajanus cajanand grow here. The main fruits of this upazilla are mango, litchi, jackfruit, papaya, guava etc. There are 4 fish farms, 3 hatcheries, 78 dairies in this upazilla.

### **River**

Manda upazilla is located on the bank of river Atrai. Although it is a flowing river, still in the dry season, navigability is absent in some places and the river dries completely. There are 3 rivers in this upazilla. The 3 rivers are- Atrai, Shiva and Fokirni.

**Atrai:** This River enters Naogaon district at Shimltoli of Dhamoirhat upazilla via Balurghat of west Dinajpur. It flows southwards to Patnitala, Manda and Manda upazila center; then it flows south-westwards from Nurullabad High School of Manda and mingles with the waves of Jamuna coming from north of Atrai thana. It flows along the Atrai rail station (Ahsanganj) and upazilla center and divides at Temukh at the south-east corner of the district and enters Natore. Here, the river flows northwards to Bogra and joins with the flow of Nagor River flowing over Patishar, the place with the memories of Rabindranath. Then it crosses Chalan bil and joins with the collaborated flow of Atrai and Korotoa. Atrai attains the glory of being the longest river of this district by passing the longest distance in the most aslant way. This river has comparably much navigability. This river flows over Dhamoirhat, Patnitala, Manda, Atrai upazilla of Naogaon district. It is 269km long.

**Shiva:** This river descents from Atrai River in Bhalain upazilla of Naogaon district and falls in Barnai River in Nawhata municipality of Paba upazilla of Rajshahi district. It is 71 km long.

**Fokirni:** This river descents from Atrai River in Prasadpur union of Manda upazilla of Naogaon district and falls in Barnai River in Ganipur union of Bagmara upazilla of Rajshahi district. It is 31 km long.



Picture 1.5: the Rivers of Manda upazilla



## **Pond**

As Manda upazilla is a floodplain and drought prone area, there are small and big ponds under public and private ownership to meet the demand of drinking water. The number of ponds in this upazilla is 5805 (Including public and private).

## **Canal**

Manda upazilla has 2 canals. The first one is 20 km long which is from Pathkatha via Shurjanarayanpur, Kanchanpur, Sutihat to Kholshikurihat. The second one is 2 km long which is from Goalkanda sluice gate of Nurullabad union via Kalikapur, Baduldhaowa to Anis Sattar's house at Goalkanda.

## **Bil**

There are 22 small and big bils in Manda upazilla. These are- Utrail (Bharso), Hilna (Tetunlia), Chakormakanta (Kalikapur), Manda (Paranpur), Chalk Siddheshwari (Chalk Siddheshwari), Chalk Kashba (Chalk Kashba), Kurkuchi (Kurkuchi), Borail (Kaligaon Titihari), Jalangi (Napitpara), Gangarampur (Gangarampur), Mandakula Harinagachi (Boro Bilaldah), Pana (Badalghata), Mahanagar (Mahanagar), Chalk Rajapur (Chalk Rajapur), Jamna Ghoradah (Badalghata), Buri Jalkar (Napitpara), Pabani (Kaligaon, Shankarpur), Chalk Raghunath (Chalk Raghunath), Kauabeni (Gobindpur), Torigari (Gobindpur), Shishugari (Chalk Debiram) and Andasura (bakapur).

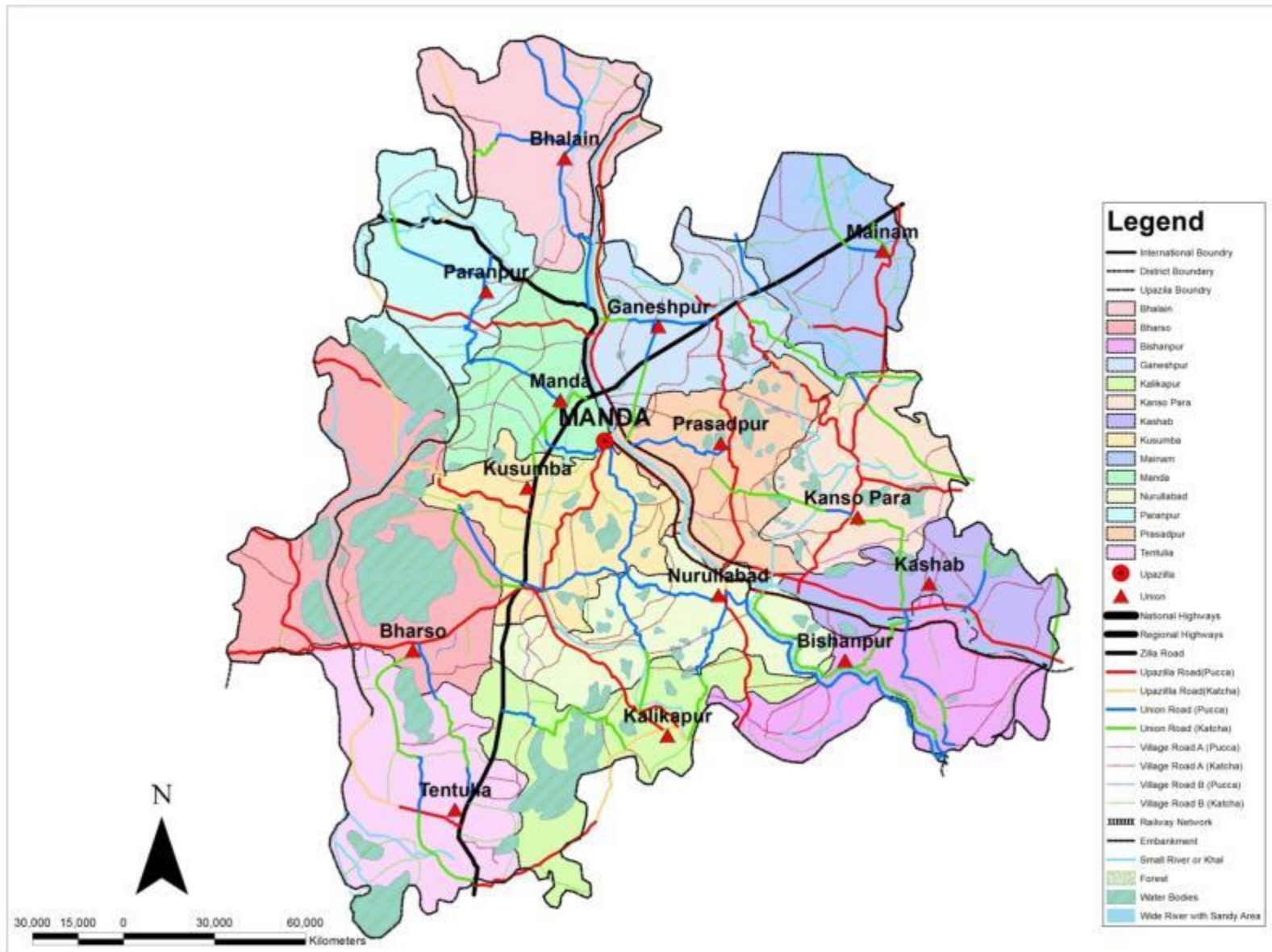
## **Salinity**

Salinity is found in deep water of 100-110 feet in 2 tube wells of Kashab union and 5 tube wells nearby Kashopara union of Manda upazilla.

## **Arsenic Combination**

Arsenic level in this upazilla is 0-20%. Different tests of tubewell water like arsenic level, chlorid, iron, manganese, PH level, electric conductivity and other biological tests can be served in return of certain fees in the local laboratories. Besides, some free basic tests of water sources are executed with field kits.

## The Map of Manda upazilla



## Chapter Two

### Disaster, Hazard and Vulnerability

#### 2.1 History of Disaster

Not much severe effect of disasters is seen in Manda upazilla. Every year; this area gets affected by either one or another disaster. Different types of hazards including Drought, low Water Level, Seasonal Storm, River Erosion, Flood, Cold Wave Heavy Mist Pest Attack and Low Rainfall. The pressure of water descending hamper normal way of life and cause huge damage of asset from Indian hills flows away the banks of river Jamuna through canals and other inland waterways and causes flood. As the river is shallow, it causes drought in the dry season. Owing products and settlement get heavily damaged and a lot of to Seasonal Storm, both agricultural people lose shelter too. River Erosion also spoils human lives damaging agricultural products, accommodation and infrastructure. Cold Wave and Heavy Mist cause a massive destruction for winter crops But, the hazard which affects most to lead this upazilla to fatal crisis is too low water level. It is the most affecting hazard for the people of Manda upazilla. This upazilla may be affected by any disaster because of deforestation and rapid growth of population environmental imbalance. The level of damage, year of disasters and affected sectors are shown in a table below

Table 2.1: Name of Disaster, Year, Damage and Sector

Disaster	Years	Damage	Affected Sectors/ Elements
Flood	1981, 1988, 1998	Maximum	Agriculture, Fisheries, Livestock, Human Resource, Infrastructure, Plantation
	1986, 1991, 1995,	Moderate	Agriculture, Fisheries, Livestock,
River Erosion	,1981 1986, ,1987 ,1988 ,1998 ,2005 2006	Maximum	Agriculture, Fisheries, Livestock, Human Resource, Plantation
	,2000,2004 ,1999 ,1995	Moderate	Structure, Human Resource,
Draught	1976, 1979, 1992, 1996,	Maximum	Agriculture, Fisheries, Livestock, Human Resource, Plantation
	1989, 1999, 2004	Moderate	Livestock, Human Resource, Plantation
Hail Rain	1988, 1997,	Maximum	Agriculture, Fisheries, Livestock, Human Resource, Plantation



15. Unplanned  
Infrastructure  
Establishment

17. Paddy wastes  
emitted from rice mills

*Source: field Visit, Manda, 2014*

## **2.3 Different types of Hazards and its present, future illustration**

### **1. Flood**

Manda upazilla is an extremely flood prone area. Flood prevails here from June to October. Consequently, agriculture, fisheries, infrastructure, households, education, communication and other sectors get heavily affected by flood. Though it happens each year, the floods in 1986, 1987, 1988, 1990, 1992, 1995, 1998, 2002, 2003, 2007 were the most terrific ones.

### **2. Drought**

Drought commonly occurs in February, March, April and May. The acuteness and duration of drought are gradually increasing. It has not been raining even in June and July for last several years. As a result, damages are increasing because of drought. If this situation continues, severe environmental disaster would appear in near future. In context of Manda upazilla, low water level is the most severe hazard which affects each sector of life and accelerates drought. People of this area have to fight continuously for the most basic need of life, water. This hazard affects every development sector of Manda upazilla every year. Native people of here think that immediate government interference and private aid is necessary to remove this hazard.

### **3. River Erosion**

River erosion is a part and parcel in the lives of people of Manda upazilla. It is increasing day by day. The citizens believe that low navigability causing a raise of water and a fall of current speed and water capacity consequently leads to river erosion. They stated that it would further make people suffer devouring a lot more areas if this situation goes on.

### **4. Cold Wave**

Cold Wave occurs every year in Manda upazilla. It appears here so much because of close proximity to the river Chhota Jamuna. As a result, it affects common lives and ruins the production of mango, lichee, pees and other winter crops.

### **5. Heavy Mist**

As a result of a variety of human-made reasons and climate change, heavy mist has been observed as a frequent occurrence in Manda upazilla as well as nearby areas. Usually, heavy mist happens in November, December, January and February. As a result, it affects every sphere of life causing damage in agriculture and health sector and increasing street accidents.

### **6. Hail Rain**

According to the denizens of Manda upazilla, a drastic change in rainfall is observed in this area. Hail rain occurs quite frequently. It seems like a negative effect in the weather pattern. It makes a huge damage in agriculture.

## **2.4 Vulnerability and Capability**

Vulnerability is the possibility of a population or parts of it to be affected by hazards and the level of possible damage to common lives and society due to the hazard. It has come into light through field meeting and analysis of various information and data that two-third of the population of Manda upazilla are vulnerable to hazards like flood, river erosion, drought and cold wave. Moreover, animals, fisheries and infrastructures are not out of vulnerability. The objectives of removing hazards are to identify the possibility of a hazard, when a hazard will occur, how much area will be affected. Therefore by measuring the severity of a hazard and vulnerability, they are trying to achieve capability by adopting their own ways.

In which area is vulnerable for which reasons are shown below:

Table 2.3: Hazard based vulnerabilities

<b>Hazards</b>	<b>Vulnerabilities</b>	<b>Capabilities</b>
Flood	<ul style="list-style-type: none"> <li>• It ruins agricultural products.</li> <li>• Graveyards go under water.</li> <li>• It harms human resource.</li> <li>• It damages infrastructure.</li> <li>• It washes away fisheries.</li> <li>• It causes lack of safe drinking water.</li> <li>• It destroys livestock.</li> <li>• It extremely endangers children, the pregnant, the disable and the old.</li> </ul>	<ul style="list-style-type: none"> <li>• There are 96 high graveyards.</li> <li>• There are 28 tanks of pure drinking water.</li> <li>• There are 10 (158 hectares) effective embankments and cross dams.</li> <li>• There are 4 sluice gates.</li> <li>• There are 588 high based tubewells.</li> </ul>
Drought	<ul style="list-style-type: none"> <li>• It ruins agricultural products.</li> <li>• It harms human resource.</li> <li>• It washes away fisheries.</li> <li>• It causes lack of safe drinking water.</li> <li>• It destroys livestock.</li> </ul>	<ul style="list-style-type: none"> <li>• There are 358 deep tubewells.</li> <li>• There are 1 health complex and 5 upazilla health and family welfare centers.</li> <li>• There is a 20 k.m. canal for irrigation purpose.</li> <li>• There is a veterinary hospital.</li> </ul>
River Erosion	<ul style="list-style-type: none"> <li>• It ruins agricultural products.</li> <li>• It hampers communication.</li> <li>• It harms human resource.</li> <li>• It damages infrastructure.</li> </ul>	<ul style="list-style-type: none"> <li>• There are 10 (158 hectares) effective embankments and cross dams.</li> </ul>

Hazards	Vulnerabilities	Capabilities
	<ul style="list-style-type: none"> <li>• It ruins fisheries.</li> <li>• It destroys livestock.</li> </ul>	
Cold wave	<ul style="list-style-type: none"> <li>• It ruins agricultural products.</li> <li>• It destroys livestock.</li> <li>• It harms human resource.</li> <li>• It extremely endangers children, the pregnant, the disable and the old.</li> </ul>	<ul style="list-style-type: none"> <li>• There are 1 health complexe, 20 community clinics and 5 upazilla health and family welfare centers.</li> <li>• NGO responses</li> <li>• There is a veterinary hospital.</li> </ul>
Heavy Mist	<ul style="list-style-type: none"> <li>• It ruins agricultural products.</li> <li>• It destroys livestock.</li> <li>• It harms human resource.</li> <li>• It extremely endangers children, the pregnant, the disable and the old.</li> </ul>	<ul style="list-style-type: none"> <li>• There are 1 health complexe, 20 community clinics and 5 upazilla health and family welfare centers.</li> </ul>
Hail Rain	<ul style="list-style-type: none"> <li>• It ruins agricultural products.</li> <li>• It destroys livestock.</li> <li>• It harms human resource.</li> <li>• It destroys forest resources.</li> </ul>	<ul style="list-style-type: none"> <li>• There are 1 health complexe, 20 community clinics and 5 upazilla health and family welfare centers.</li> <li>• NGO responses</li> </ul>

Source: field Visit, Manda, 2014

## 2.5 Most Vulnerable Areas

Due to geographical location, lack of water is seen in Manda upazilla in dry seasons. So, all the fields and lands dry up and all the people, fisheries, animals and infrastructure become vulnerable. Again, farmlands and infrastructures submerge into water while water flowing down from hills causes sudden flood. Sometimes, people living nearby riverbanks become homeless because of river erosion. Vulnerability and causes of vulnerability are not the same for everywhere of the upazilla. So, most vulnerable areas and vulnerable population based on hazard are shown by the following table:

Table 2.4: most vulnerable areas, Reasons of Vulnerability and vulnerable population:

Hazards	Most Vulnerable Areas	Reasons of Vulnerability	Vulnerable Population
Flood	Areas adjacent to rivers	Many a piece of agricultural land are being swallowed by flood in these areas.	127600 (Tentative)
Drought	Entire upazilla	Drought may cause a huge damage in	169772



Hazards	Most Vulnerable Areas	Reasons of Vulnerability	Vulnerable Population
		the agriculture of these areas.	(Tentative)
River Erosion	Areas adjacent to rivers	For long 10 years, a lot of cultivated lands have been consumed by river erosion that makes many people helpless. Besides, it also ruins agriculture, fisheries and human resource.	127600 (Tentative)
Cold wave	Entire upazilla	Cold wave may harm to agricultural products, livestock and human resource. It is also endangering for children, the pregnant, the disable and the old.	169772 (Tentative)
Heavy Mist	Entire upazilla	This areas of Manda grows the maximum amount of mangoes that may get spoiled by the Heavy Mist. It is also a threat for human resource.	169772 (Tentative)
Hail Rain	Entire upazilla	Hail Rain may cause a great harm to agriculture and human resource.	169772 (Tentative)

*Source: field Visit, Manda, 2014*

## 2.6 Main Development Sectors

Manda upazilla depends in agricultural production. Economy of this area depends on agriculture. So, although importance is given on agriculture in development planning, importance should be given on fisheries, livestock, health, livelihood and infrastructure to reduce hazard and risk.

It is discussed by the following table:

Table 2.5: Combination with Development Sector and Disaster Risk Reduction

Main Sectors	Detail Description	Adjustment with Disaster Risk Reduction
Agriculture	In Manda upazilla, 150614 metric tons of crops are produced in total 23856 hectares of land. Meeting the local demand, Manda has a surplus of 103311 metric tons which brought great success for the economy of this area. As a result of new initiatives in agriculture, farmers will come forward in cultivation. So in Manda upazilla,	In Manda upazilla, 90% of people are depended on agriculture (50% day-laborers, 25% petite farmers, 10% middle class farmers and 5% are affluent farmers). 78.66% income comes from agriculture. A change in climate causing drought, heavy rainfall, hail storm, cold wave, heavy mist and flood may cause severe



Main Sectors	Detail Description	Adjustment with Disaster Risk Reduction
	agriculture is considered as one of the main sectors of development plan.	financial loss damaging agricultural products. So, more modification and advancement is needed in agricultural sector to cope up with DRR.
Fisheries	There are total 3443 ponds wherein 590 are public ponds. In this upazilla, annual fish production is 1267.24 metric tons and demand 1949.74 metric tons. There are four public wet lands covering 225.27 acres of area that is capable of fish production and helps people achieve financial success as well as livelihood. As a result, many people will be interested in fish cultivation that can bring huge progress in this upazilla. So in Manda Upazila, fisheries can be considered as one of the main sectors of development plans.	A change in climate causing heavy rainfall and flood may harm agriculture severely. In that case, fisheries can serve with instant financial safety and solvency. So, fish cultivation is effective in DRR.
Livestock	20-25 years ago, almost every family used to have cattle in Manda upazilla. Currently, because of lack of cow-food and pasture lands, livestock has decreased considerably. At present, there are 60 cattle farms, 30 broiler chicken farms and 30 hybrid chicken farms, which make people self-reliant and contribute to the economy of this area.	A change in climate causing heavy rainfall and flood may harm fisheries and agriculture severely. In that case, livestock can serve with instant financial safety and solvency. So, rearing livestock is effective DRR.
Health	There are an upazilla health complex, 5 upazilla health and family welfare center and 20 community clinics. These institutions help continue the usual activities of people of Manda upazilla ensuring health services.	In Manda upazilla, many diseases bring out in disaster period. Therefore, more advancement in health service is needed to be connected with disaster risk reduction.
Livelihood	In Manda upazilla, 90 % of people are involved in agriculture (50% day-laborers, 25 % petite farmers, 10% middle class farmers and 5% are	When disasters like flood, drought, river erosion, heavy rainfall, low rainfall etc. occur in Manda Upazila, livelihood of common people gets

Main Sectors	Detail Description	Adjustment with Disaster Risk Reduction
	<p>affluent farmers). Among the people involved in other sectors, there are 2.52% in non-agricultural labor, 0.86% industry, 8.01% trade, 2.91% transport and communication, 0.09% religious service, 0.07% remittance and 3.25% others. There are also 10% jobholders. In Manda upazilla, financial system is quite prosperous because of varied livelihoods. Most of the people are reliable because they are mostly engaged in any kind of dependable profession. Thereby lives of the people of Manda go on improving.</p>	<p>affected by seriously damaged agriculture, fisheries and livestock. But, if people manage to alternative occupations, immediate recovery from disasters can be possible. It also help keep solvency in disaster period. So, alternative livelihood is effective in disaster risk reduction.</p>
Plantation	<p>Manda upazilla has considerable reputation for mango cultivation. In this Upazilla, there are many mango farms that keep this region filled with greenery. There are plenty of akashmoni, mango, rain-tree, water apple, eucalyptus, arjun, akasiya, babla and plum trees. According to official record, in Manda, there are 10 hectares of plantation that plays a special role in the economy of this area.</p>	<p>Agriculture, fisheries, livestock are seriously damaged when disasters like flood, drought, river erosion, heavy rainfall, low rainfall etc. occur in Manda Upazila. Apart from this, many houses, roads and other structures are smashed in storms, which affect lives and livelihoods of people as well as environment. Plantation has no alternative to prevent this. So a movement with a slogan like “Plant trees, save environment” can play role in disaster risk reduction.</p>
Infrastructure	<p>In Manda upazilla, there are plenty of structural assets including 10 (158 hectors) embankments, 459 bridges and culverts, an overall total of 932.17 km. of upazilla, union and village roads and currently 358 deep tubewells and 11630 tubewells for irrigation purpose. There are also 24 hats/ bazaars meeting the needs of people by providing the basic necessities of goods. These assets of</p>	<p>When disasters like floods, droughts, river erosion and heavy rainfall happen in Manda upazilla, a variety of structural assets helps in many ways. The dams located on the banks of the river Jamuna protect the upazilla from river erosion. During floods and heavy rainfall, the culverts are used for communication and water supply. It also would benefit a</p>

Main Sectors	Detail Description	Adjustment with Disaster Risk Reduction
	this area play leading role in economics as well as development activities in Manda.	lot in agriculture. The tubewells are used for water supply in irrigation during drought and thus help produce agricultural products. Roads connect different areas and develop communication. Bazaars are also essential for the people during disasters providing their necessary elements. Infrastructural resources play important role in coping with the disasters. So there is no alternative but strengthening infrastructural resource to reduce risks of disasters.

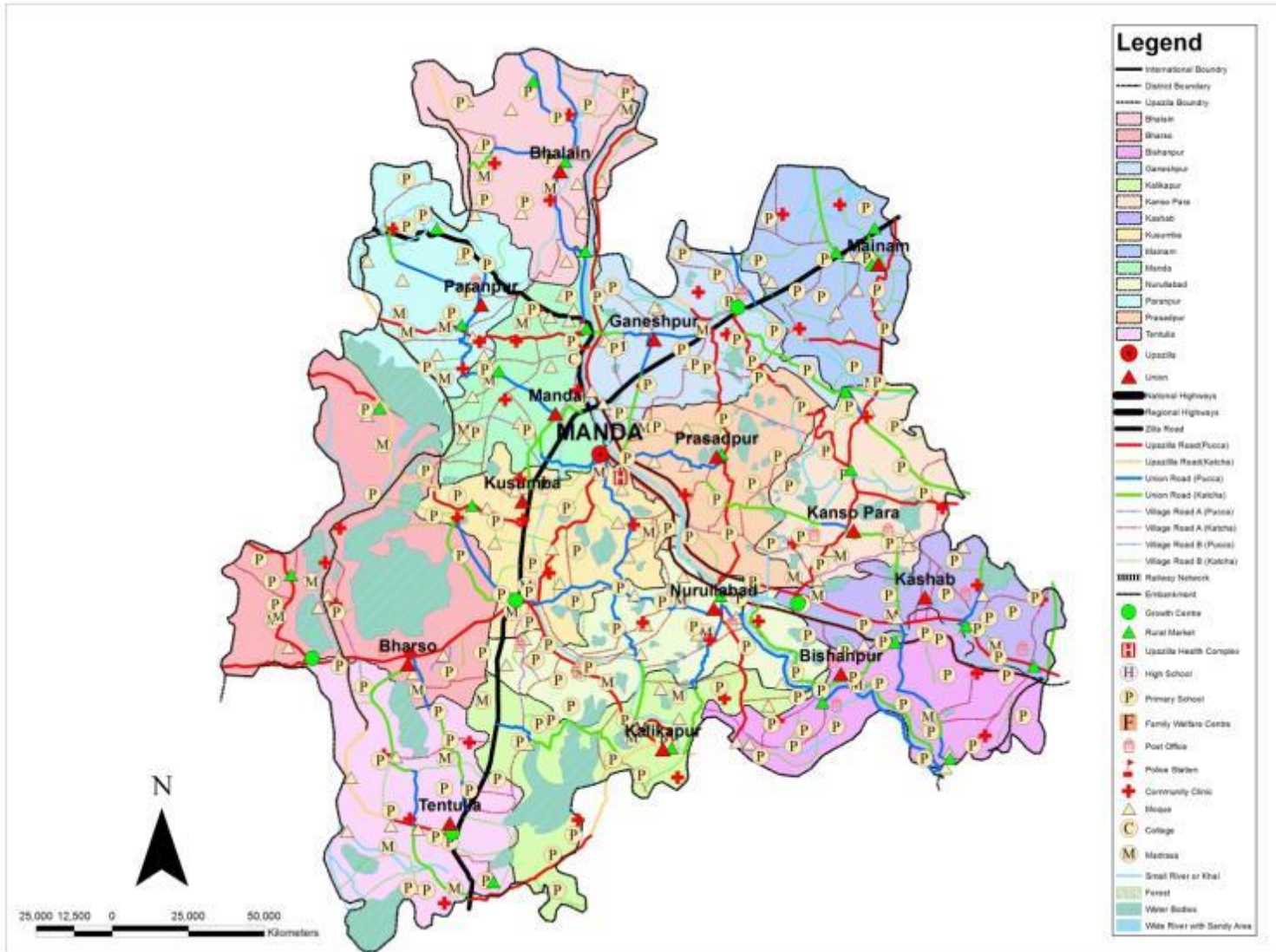
*Source: field Visit, Manda, 2014*

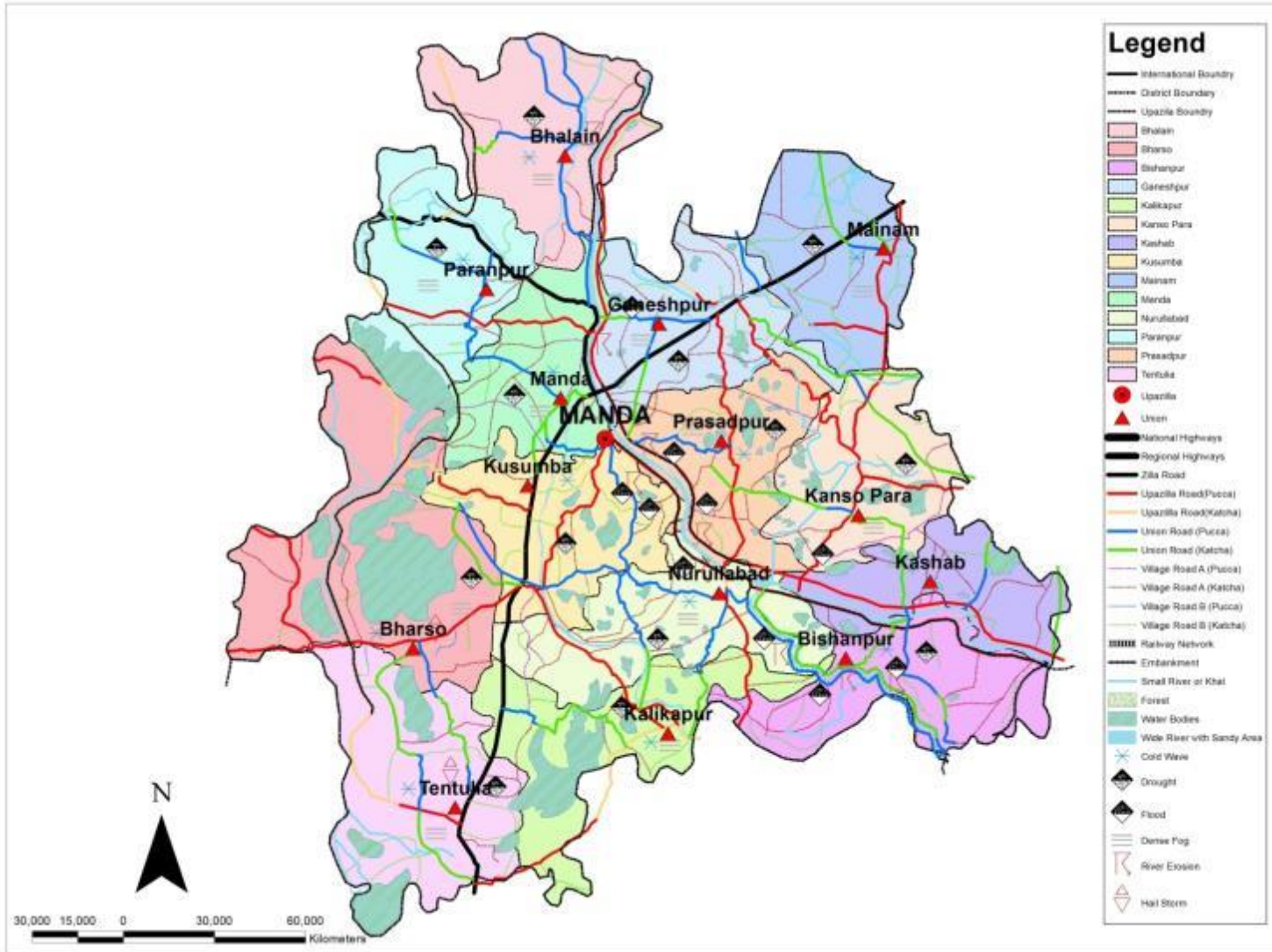
## **2.7 Social Map**

In context of the discussion of the Manda upazilla disaster management committee members' with the common people of various occupations of different villages describing the objectives and importance of making a social map, The social map of Manda upazilla has been prepared with their help. The location of unions, villages, infrastuctures, different institutions, land use, roads, rivers, canals, wet lands, buildings, hospitals, embankments and other important matters are included in the social map. The entire condition of this upazilla is shown in the social map.

## **2.8 Hazard and Risk Map**

In context of the discussion of the Manda upazilla disaster management committee members' with the common people of various occupations of different villages showing the map of Manda upazilla and describing the objectives and importance of making a Hazard and Risk Map, Hazard and Risk Map of Manda upazilla has been prepared with their help to identify the hazards. Which hazard affects which union is shown in the map by the participants. Moreover, land infertility, land utilization, movement of river such matters is considered here through geographical information management. The entire condition of this upazilla is also shown in the hazard and risk map.





## 2.9 Seasonal Calendar of Hazards

Although Manda upazilla is a drought prone area, different hazards are seen throughout the year. Drought continues to grow in the month of March, but it takes the extreme form in April. Field and lands dry up, no water remains in most of the tube well. At this tie, ground water level is low; therefore water can be lifted only through deep tubewell. Besides, one river runs through Manda upazilla. Areas and public adjacent to the river face a huge amount of losses at any time between the months June to October in case of sudden floods. Moreover, outbreak of cold wave and heavy mist prevails from November to February which hampers winter crops production. Seasonal Calendar of Hazards is presented through the following table:

Table 2.6: Calendar of Hazards based on months

No	Hazards	April	May	June	July	August	September	October	November	December	January	February	March
1	Flood												
2	Draugh												
3	River Erosion												
4	Cold Wave												
5	Heavy Mist												
6	Hail Rain												

*Source: field Visit, Manda, 2014*

### Seasonal calendar of Hazards analysis:

In which months of a year hazards occur in this area and in which months the effects are more or less are shown in the graph of the seasonal calendar. It is known through discussions with the participants as part of the Pre-C.R:

**Flood:** flood generally occurs due to river filling and the lack of drainage. Rivers fill up due to sediment accumulation in the riverbed and rising of chars which causes excess water pressure to overflow and cause flood. Manda upazilla is flood prone from mid-July to the end of September.

**Drought:** Drought is the main hazard of this area. The presence of drought is seen from mid-March to mid-June. Excessive drought causes extensive damage to agriculture here. Though the effects of drought are moderate in early March and late June, but effects are somewhat lower during the rest of the year. Many of the crops are lost due to lack of irrigation as the effect of



drought. Again, the production of crops which are getting irrigation is reduced due to lack of sufficient water. Again, water of stored pond dries up due to drought which leads to extreme shortages of drinking water.

River Erosion: homes, roads, crops, livestock and aosomal and educational institution of Manda upazilla are disappearing every year because of river erosion. River erosion is not manifest From April to July here, but River erosion takes extreme form during early August to mid-September.

Cold Wave: Cold Wave occurs every year in Manda upazilla. It appears here so much because of close proximity to the river Chhota Jamuna. As a result, it affects common lives and ruins the production of mango, lichee, pees and other winter crops.

Hill Rain: According to the denizens of Manda upazilla, a drastic change in rainfall is observed in this area. Hail rain occurs quite frequently. It seems like a negative effect in the weather pattern. It makes a huge damage in agriculture.

## 2.10 Seasonal Calendar of Livelihood

Although this upazilla is dominated by agriculture, but fishing is also an income source here as some big and small canals are here. Besides, there are landless workers who earn their living as day laborers. As there are quite a few hats and bazars, the trader professions have arisen for exporting huge amount of agricultural products.

Seasonal Calendar of livelihood is presented through the following table:

Table 2.7: Seasonal Calendar of Livelihood

No	Source of Livelihood	April	May	June	July	August	September	October	November	December	January	February	March
1	Agriculture												
2	<b>Fisheries</b>												
3	Daily Labor												
4	Businessman												

*Source: field Visit, Manda, 2014*

## 2.11 Vulnerability on Life and Livelihood

Pre-discussed hazards and disasters hamper the normal lifestyle. Farmers, fishermen, day laborers, businessmen all become vulnerable.

Vulnerability on Life and livelihood is presented through the following table:

Table 2.8: Vulnerability on Life and Livelihood

Sl no:	Livelihood	Hazards/ Disasters						
		Low water level	Flood	River Erosion	Drought	Seasonal Storm	Lack of rain	Cold Wave
01	Agriculture	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
02	Fisheries	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
03	Daily Labor	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
04	Businessman	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>

Source: Field Visit, 2014

## 2.12 Sector-wise Risks and Hazards

The vulnerable sectors of Manda upazilla are crops, plants, livestock, fisheries, homes, roads, bridges, culverts, educational institutions, health care and shelter. The sectors are endangered because of the pre-discussed hazards. After performing hazard identification of each union and its corresponding vulnerable sector, elements and area selection, the list of risks have been prepared and written. Two representatives from each of the groups (farmers, landless, women and fishing) has been selected and divided into four groups. Risks have been given priority by voting on unacceptable risks (voting through Zipstick) after evaluating the risks described separately by each groups consisting of 6 members with a total of 24 representatives. The possible ways of reducing the risk to the local level including risk analysis has been set from the list of risks obtained by incorporating the highest risks voted by four groups. Following are the preferred risks. These risks have been validated later by the indirect stakeholders at the presence of the representatives of the group. The following table identifies vulnerable sectors of Manda upazilla:

Table 2.9: Sector-wise Risks and Hazards

Hazard	Vulnerable Social Elements									
	Crops	Trees	Livestock	Fisheries	Homes	Roads	Bridges and Culverts	Educational institution	Health	Shelter
Flood	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Drought	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	
River Erosion	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		



Hazard	Vulnerable Social Elements									
	Crops	Trees	Livestock	Fisheries	Homes	Roads	Bridges and Culverts	Educational institution	Health	Shelter
Cold Wave	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	
Heavy Mist	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	
Hail rain	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	

Source: Field Visit, 2014

## 2.13 Climate Change and Its Possible Effect

Assessing the daily weather, the result of general condition of physical factors of wind sphere (air heat, air pressure, wind direction and speed, air humidity, amount and type of clouds and rainfall) of a place or region (30 years or more) is the climate of that place or region. Every day the sun reaches the earth, the earth absorbs it. Absorbed sunlight emits or reflects back to space again. Therefore, any type of exploitation of natural laws creating obstacles or barriers to this radiation process leads to climate change.

Some sectors which are affected by climate change are described in detail below:

Table 2.10: Sector Related Climate Change and Impact

Sectors	Description
Agriculture	Owing to climate change, a flood like 1988's may ruin the agricultural products of 22561 hectares of cultivable land. River erosion may cause financial loss for numerous families destroying sugarcane and paddy lands of 6 unions. Drought, as occurred in 2001, may ruin the agricultural products of approximately 16600 hectares and cause severe financial damage for 43996 families. As a result of climate change, a sudden raise of hailrain may destroy the agricultural products of 18230 hectares that consequently may create financial loss for many households. Cold wave may destroy agricultural products of 12680 hectares that may create a scarcity of food in Manda upazilla. Heavy mist is also a threat that may ruin the production of a lot of mango trees (for dropping out buds) and 11925 hectares of cultivable lands.
Fisheries	Severe drought may ruin the fish cultivation in 2750 ponds that leads to financial loss and lack of protein supply in Manda upazilla. 2582 cultivable ponds may get washed away by a flood as occurred in 1988. As a result, it is obvious to bring about a scarcity of food, nutrition and protein.
Plantation	As a result of climate change, a flood like 1988's may smash down many a tree in Manda upazilla. It is a great hamper for environmental balance. River erosion also may hamper environmental balance grasping many trees into the

Sectors	Description
	river in 6 unions.
Health	A flood like 1988's may create lack of safe place for 60% pregnant women during the flood in Manda upazilla. It may even cause death because of vulnerable communication. Besides, different epidemic may bring out. Drought like 2001's may cause different kinds of skin diseases and other problems among 65% of the population of Manda upazilla.
Livelihood	Flood, drought, river erosion, heavy mist, low rainfall etc. seriously affect agriculture, fisheries, livestock and most importantly human resource. 48% people of Manda upazilla may become workless because of these hazards. As a result, it throws a terrible challenge towards the economic condition of Manda upazilla.
Water	Heavy drought and low level of water in Aranagar and Umar unions may cause a horrible scarcity of water in several unions of Manda upazilla. As a result, damage of 20862 hectors of cultivable land may cause financial loss of numerous families. Besides, different diseases like skin disease can spread all over and agriculture, fisheries and livestock can be severely spoiled.
Infrastruc ture	A sudden storm like 2003's may smash down 42% of stuctures including academic and religious institutions, which may result in unexpected disruption of education. 80% of earthen houses can be devastated by the storm that leads to suffering and economic loss for many people. A flood like 1988's may damage almost 349.05 km. roads which may impede communication. In six unions, approximately 89 kilometers road and some schools, colleges and other structures also may be devoured by the river. 32% of earthen houses may get submerged in water leading many families to be homeless and economically fallen.

*Source: Field Visit, 2014*

## Chapter Three

### Disaster Risk Reduction

#### 3.1 Identification of Risk Factors

The possibility of the adverse effect of 3 elements - any hazard or hazards, resources and environment, vulnerable population of Manda upazilla and their income that is to say the interaction of the possibility of a hazard and its degree is risk. Identified risks and risk factors of Manda upazilla is in the table below:

Table 3.1: Risk Factors

Description of Risk	Causes		
	Immediate	Moderate	Ultimate
A sudden flood like 1988's may ruin the agricultural products of 22561 hectares of cultivable lands causing great loss for 33895 families.	<ol style="list-style-type: none"> <li>1. Extreme water pressure destroying the dams</li> <li>2. Heavy ascending wave</li> </ol>	<ol style="list-style-type: none"> <li>1. Decreased navigability because of river erosion</li> <li>2. Lack of sufficient dams in required places</li> </ol>	<ol style="list-style-type: none"> <li>1. Lack of government policies of dredging system</li> </ol>
Drought, as occurred in 2001, may ruin the agricultural products of approximately 22561 hectares and cause severe financial damage for 146429 people of 33895 families.	<ol style="list-style-type: none"> <li>1. Lack of irrigation system</li> </ol>	<ol style="list-style-type: none"> <li>1. Lack of deep tubewell</li> <li>2. Deforestation and short of plantation</li> <li>3. Low ground-water level</li> </ol>	<ol style="list-style-type: none"> <li>1. Lack of necessary repair of canals</li> <li>2. Shallowness of river Chhota Jamuna</li> </ol>
River erosion may cause financial loss for many families destroying 28 square km. hectares of sugarcane and paddy lands.	<ol style="list-style-type: none"> <li>1. Extreme water pressure</li> <li>2. Heavy rainfall in the month of <i>Sraban</i></li> </ol>	<ol style="list-style-type: none"> <li>1. Shallowness of rivers</li> </ol>	<ol style="list-style-type: none"> <li>1. Lack of depth of river and proper management</li> <li>2. Lack of river dam monitoring and implementation committee</li> </ol>

Description of Risk	Causes		
	Immediate	Moderate	Ultimate
Cold wave is also a threat that may create loss for 12447 families ruining crops of 12680 hectors of cultivable lands.	1. Monsoon wind from the north-west corner	1. Climate change 2. Cold drizzling	1. Deforestation 2. Environment pollution
Heavy mist is also a threat that may ruin the production of countless mango trees (dropping out buds) and agricultural products of 11925 hectors of cultivable lands.	1. Interruption in weather reports 2. Lack of mass awareness	1. lack of agricultural training 2. Lack of awareness in using pesticides	1. Inadequate govt. supply of pesticides 2. lack of awareness measures from national level
A sudden attack of seasonal storm may destroy the agricultural products of 18230 hectors that consequently may create financial loss for many farmer families.			
Approximately many roads and 83 academic structures may be devoured by the river. 32% of earthen houses can be devastated by the rivers leading to suffering and economic loss for many families.	1. Extreme water pressure 1. Heavy rainfall in the month of <i>Sraban</i>	1. Shallowness of river	1. Lack of depth of river and proper management 2. Lack of river dam monitoring and implementation committee
Severe drought may ruin the fish cultivation in 2750 ponds that may lead to financial loss and spoil 148 metric tons of fish production in Manda upazilla.	1. Lack of irrigation system	1. Shallowness of ponds	1. Lack of govt. steps in necessary repairing of ponds
80% of earthen houses can be devastated by the flood that leads to suffering and economic loss for 28924 families.	1. Extra upstream water pressure	1. Housing in low lands 2. Unplanned housing	1. Lack of govt. policies in building infrastructure

Description of Risk	Causes		
	Immediate	Moderate	Ultimate
Approximately many roads and 42% academic structures may be devoured by the river, which may result in unexpected disruption in education of 15300 students.	1. Soft river banks because of heavy rainfall	1. Shallowness of river	1. Not strengthening the river banks
.Cold wave seriously affects livestock Numerouscattle may die of cold wave that maycause severe financial damage for 3530 families.	1. Weather change 2. Cold drizzling	1. Cutting down big trees/ deforestation	1. Deficiency in management of forest department
Drought may cause different kinds of skin diseases and other problems among 65% of the population and financial loss for 56540 families of upazilla Manda.	1. Lack of mass-awareness	1. lack of hospitals/ health centers	1. Lack of govt. measures in health sector 2. Lack of rules and planning

### 3.2 Ways of Risk Reduction Identification

The possible risks and ways to mitigate the risks from the discussion of Manda upazilla union wise field meetings and important persons are discussed in the table below:

Table 3.2: Possible ways of the risk reduction

Description of risk	Possible ways of the risk reduction		
	Short-term	Medium	Long-term
A sudden flood like 1988's may ruin the agricultural products of 22561 hectors of cultivable lands causing great loss for 33895 families.	1. Dam management	1. Dredging the rivers 2. Strengthening the river banks with closely set stones	1. Blocking the river edges imposing government policy
Drought, as occurred in 2001, may ruin the	1. Proper	1. Sufficient deep	1. Canal repairing

Description of risk	Possible ways of the risk reduction		
	Short-term	Medium	Long-term
agricultural products of approximately 22561 hectares and cause severe financial damage for 146429 people of 33895 families.	irrigation system	tubewells 2. Avoiding deforestation and promoting plantation	2. Dredging the rivers
River erosion may cause financial loss for many families destroying 28 square km. hectares of sugarcane and paddy lands.	1. Measures to prevent water pressure with tin, bamboo and sand piles	1. Raising navigability of rivers 2. Setting dams	1. River dredging and forming and managing of implementation committee 2. Constructing dams on rivers 3. Allotting budgets
Cold wave is also a threat that may create loss for 12447 families ruining crops of 12680 hectares of cultivable lands.	1. Measures for protecting crops from cold wave	1. Creating mass awareness	1. Sufficient plantation by forest department
Heavy mist is also a threat that may ruin the production of countless mango trees (dropping out buds) and agricultural products of 11925 hectares of cultivable lands.	1. Maintaining continuity in early weather reports 2. Creating mass awareness	1. Timely use of pesticides 2. Arranging training on agriculture	1. adequate govt. supply of pesticides 2. awareness measures from national level
A sudden attack of hail rain may destroy the agricultural products of 18230 hectares that consequently may create financial loss for many farmer families.	1. Maintaining continuity in early weather reports 2. Creating mass awareness	1. Timely use of pesticides 2. Arranging training on agriculture	1. adequate govt. supply of pesticides 2. awareness measures from national level
Approximately many roads and 83 academic structures may be devoured by the river. 32% of earthen houses can be devastated by the rivers leading to suffering and economic loss for many families.	1. Protecting river banks with sand piles	1. Raising navigability of rivers through dredging	1. Setting govt. rules and planning and ensuring proper implementation
Severe drought may ruin the fish cultivation in 2750	1. Proper	1. Allowing lone to fish	1. Govt. steps in necessary

Description of risk	Possible ways of the risk reduction		
	Short-term	Medium	Long-term
ponds that may lead to financial loss and spoil 148 metric tons of fish production in Manda upazilla.	irrigation system	cultivators for increasing depth of pond	repairing of ponds
80% of earthen houses can be devastated by the flood that leads to suffering and economic loss for 28924 families.	1. Prevent water pressure with sand piles	1. Building houses on high lands	1. Forming govt. policies in building infrastructure
Approximately many roads and 42% academic structures may be devoured by the river, which may result in unexpected disruption in education of 13450 students.	1. Protecting river banks with sand piles	1. Raising navigability of rivers through dredging	1. Setting govt. rules and planning and ensuring proper implementation
Cold wave may affect livestocks. 6548 families can be affected financially at the death of livestock's from various diseases.	1. Talking care of cattle	1. Raising awareness among livestock cultivators	1. Constructing govt. policies in building veterinary hospitals
Drought may cause different kinds of skin diseases and other problems among 65% of the population and financial loss for 56540 families of upazilla Manda.	1. Creating mass awareness	1. Arranging clinics/ health centers	1. Taking govt. measures in health sector And fixing rules and planning

### **3.3 NGO's Development Plan**

Because of slow paced disaster in Manda upazilla, mitigation by identifying hazard is seemed to be neglected. Recently, however, due to climate change tend to disasters has increased. So, few NGOs have started to work on disaster which is quite scarce than necessity.

Table 3.3: NGOs' Development Plan

Sl. No	NGO	Disaster Related Activity	Beneficiaries	Amount / number	Project Duration
1	CCDB	Works on Providing scholarship, plantation, health service, testing arsenic, raising public awareness and	3300-3500	4000-	Running

Sl. No	NGO	Disaster Related Activity	Beneficiaries	Amount number /	Project Duration
		providing development training		5000BDT	
2	Care	Works on Health service of mother and children and birth control through “ Shurjer Hashi Clinic” all over Manda upazilla	3200-4000	-----	Running
3	Proshika	Provides loan to poor farmers and fishermen	1700-1900	4500-5000BDT	Running
4.	ASA	Works on Providing loan, plantation, health service, education loan,testing arsenic,raising public awareness of about sanitary latrines	2800-3000	3500-4500BDT	Running
5	Thyangamara Mohila Sobuj Sangha (TMSS)	Employment training and micro-finance activities	2500-2700	4500-5000BDT	Running
6	Ujjebon	Worls on micro-finance activities	1700-1900	4500-5000BDT	Running
7	Grameen Bank	Micro-finance, sanitation, goat rearing, sewing training and motivation activities	2400-2600	4500-5000BDT	Running
8	Ashroy	Sanitation, preventing early marriage and stopping dowry	1600-1800	5000-6000BDT	Running
9	BRAC	Microfinance activities, social, developmental activities, non-formal education activities	3000-3200	4500-5000BDT	Running
10	World vision	Social development activities, informal educational activities	1800-2000	4500-5000BDT	Running



Sl. No	NGO	Disaster Related Activity	Beneficiaries	Amount number /	Project Duration
11	PolliSree	Microfinance activities	2600-2800	3000-4000BDT	Running

Source: Upazilla Parishad, Manda, 2014

### 3.4. Disaster Management Action Plan

#### 3.4.1. Pre-disaster Preparation

Table 3.4: Pre-disaster preparation activities, target level, budget, Implementation and coordination

SL	Activities	Target Level	Possible Budget	Location	Possible Date	Who & How Far				Adjustment with Development Plan
						% Upazilla	% Community	UP%	NGO%	
1	River Dredging	12 km.	10-12 crores	Proshadpur	January-April	100				The operations will make the people in the area aware and enthusiastic to take pre-disaster preparation immediately in order to reduce the risk of disaster. As a result, damage to people's lives and property will be reduced. If the operations are properly implemented, it will contribute to the overall socio-economic and national development.
2	River Dams	12 km.	10-12 crores	Proshadpur	February-April	35	1	25	25	
3	Deep Tubewells	30 deep tubewells (220-250 feet deep)	5-6 crores lakhs	8 unions	Anytime of the year	60	2	10	28	
4	Agricultural	Total	652-3	Upazilla	November-	40	5	15	40	

SL	Activities	Target Level	Possible Budget	Location	Possible Date	Who & How Far				Adjustment with Development Plan
						% Upazilla	% Community	UP%	NGO%	
	Training	training ward wise	lakhs	Agriculture Office	January					
5	Proper Continuity of Weather Report	Public awareness through UP members	5-6 lakhs	Different wards of each union	April- May	20	1	60	20	
6	Public Involvement in Disaster report explanation	3 day training for ward wise groups each containing 20 members	30-35 lakhs	Different wards of each union	August-September	15	05	20	60	
7	Preserving Water by Digging ponds	20 feet deep (presently 10 feet)	50-60 lakhs	Different wards of each union	March-May	19	01	70	10	
8	Employment for the Disabled	Raising self-reliance of the disabled	15-20 lakhs	Different unions of Manda upazila	Anytime of the year	35	5	25	35	
9	Mass	3 day training	20-25	All wards of	January-	35	5	25	35	

SL	Activities	Target Level	Possible Budget	Location	Possible Date	Who & How Far				Adjustment with Development Plan
						% Upazilla	% Community	UP%	NGO%	
	Awareness through Govt. Policy	for ward wise groups containing 30 members	lakhs	each union	February					

Source: Upazilla disaster management committee, Manda, 2014

### 3.4.2 During disaster

Table 3.5: During disaster preparation activities, target level, budget, Implementation and coordination

SL	sActivitie	Target Level	Possible Budget	Location	Possible Date	Who & How Far				Adjustment with Development Plan
						Upazilla %	Communi %ty	% UP	% NGO	
1	Safe transfer of assets	Safety from damages	7-8 lakhs	Affected area	During disaster	10	20	40	30	The operations will make the people in the area aware and enthusiastic to take pre-disaster preparation immediately In order to reduce the risk of disaster. As a result, damage to people's lives and property will be reduced. If the operations are properly implemented, it will contribute to
2	Immediate and safe evacuation of pregnant women, children, the disabled and the old people	Safety from damages	7-8 lakhs	Affected area	During disaster	10	20	40	30	

SL	sActivitie	Target Level	Possible Budget	Location	Possible Date	Who & How Far				Adjustment with Development Plan
						Upazilla %	Communi %ty	%UP	%NGO	
3	Immediate treatment facility	Instant life support	7-8 lakhs	Affected area	During disaster	39	1	20	40	the overall socio-economic and national development.
4	Distributing dry food and safe water	Instant life support and keep away from diseases	10-12 lakhs	Affected area	During disaster	30	1	29	30	
5	Helping the affected	Safety for lives and assets	8-10 lakhs	Affected area	During disaster	20	1	19	60	
6	Safe sanitation system	Alleviation of health problems	3-4 lakhs	Affected area	During disaster	25	5	30	40	

Source: Upazilla disaster management committee, Manda, 2014

### 3.4.3 Post Disaster

Table 3.6: Post Disaster preparation activities, target level, budget, Implementation and coordination

SL	Activities	Target Level	Possible Budget	Location	Possible Date	Who & How Far				Adjustment with Development Plan
						Upazilla %	Community %	%UP	NGO %	
1	Debris	Enabling debris	60-70	Affected	Post-	15	15	50	20	The operations will

SL	Activities	Target Level	Possible Budget	Location	Possible Date	Who & How Far				Adjustment with Development Plan
						Upazilla %	Community %	%UP	NGO %	
	Cleaning	management and preventing diseases and suffering in post disaster period	lakhs	areas	disaster period					make the people in the area aware and enthusiastic to take pre-disaster preparation immediately In order to reduce the risk of disaster. As a result, damage to people's lives and property will be reduced. If the operations are properly implemented, it will contribute to the overall socio-economic and national development.
2	Road construction and repairing	Enabling communication system in emergency rescue, damaged crop management and relief activities in post disaster period	25-30 crores	Affected areas	Post-disaster period	40		5	55	
3	Re-construction of academic institutions	Protection of educational institution in case of floods, storms and continuation of academic progress	60-70 lakhs	Affected areas	Post-disaster period	19	01	70	10	
4	Irrigation system	Protecting crops from water	6-7 lakhs	Affected areas	Post-disaster	35	5	25	35	

SL	Activities	Target Level	Possible Budget	Location	Possible Date	Who & How Far				Adjustment with Development Plan
						Upazilla %	Community %	%UP	NGO %	
		logging and food crisis alleviation			period					
5	Housing management	Assuring the shelter for affected people	70-80 lakhs	Affected areas	Post-disaster period	55	5	20	20	
6	Relief activity	re-establishing regular life	8-10 crores	Affected areas	Post-disaster period	35	1	9	55	

Source: Upazilla disaster management committee, Manda, 2014

### 3.4.4 Normal time / risk reduction time

Table 3.7: Normal time preparation activities, target level, budget, Implementation and coordination

SL	Activities	Target Level	Possible Budget	Location	Possible Date	Who & How Far				Adjustment with Development Plan
						Upazilla %	Community %	%UP	NGO %	
1	Setting dams	Protection of crops from flood, removing financial crisis	5-6 Crores	From Proshadpur	January - April	35	15	25	25	The operations will make the people in the area aware and enthusiastic to take pre-disaster
2	Establishing	Safety of lives	9-10	Kashopara	September-	45	10	10	35	

SL	Activities	Target Level	Possible Budget	Location	Possible Date	Who & How Far				Adjustment with Development Plan
						Upazilla %	Community %	%UP	NGO %	
	shelter house	from disasters	Crores		April					preparation immediately In order to reduce the risk of disaster. As a result, damage to people's lives and property will be reduced. If the operations are properly implemented, it will contribute to the overall socio-economic and national development.
3	Deep tubewells	Water supply in dry seasons	3-4 Crores	8 unions and 1 municipality	September-April	40	10	10	40	
4	Plantation	Maintaining Environmental Balance	3 Crores 50 lakhs	8 unions and 1 municipality	July-September	20	10	50	20	
5	Repairing houses	Safety of lives and assets from disasters	1 Crore 40 lakhs	Proshadpur	September-April	15	30	10	45	
6	Raising awareness	Environmental Balance	25-30 lakhs	8 unions and 1 municipality	Entire year	<b>19</b>	<b>20</b>	<b>20</b>	<b>40</b>	

Source: Upazilla disaster management committee, Manda, 2014

## Chapter Four

### Emergency Response

#### (Emergency Operation Center (EOC) .4.1

In any kind of hazard, Emergency Operation Centre serves effective integration in giving orders and manages data and information response. During disaster period it keeps active for 24 hours. It handles collection, assessment, demonstration and asset management. There are an operation, a control room and a communication room in emergency operation center

Table 4.1: Persons in charge of emergency operation center

oSL N	Name	Designation	Mobile No:
1	Pro. Abdur Roshid	Upazilla Chairman	01716844591
2	Mr. Shahana Akter Jhan	UNO	01713785886
3	Mr. Md. Abu Lohel Al Mamun	PIO	01711032089
4	Mr. S M Fojlur Rhaman	Women Affairs Officer	01711015432
5	Mr. Anisur Rhaman	Social Welfare Officer	01717699671
6	Mr. Jhangir Alom	Agriculture Officer	01711040644

*Source: Upazilla Parishad, Manda, Naogaon*

#### .4.1.1 Emergency Control Room Management

- Emergency control room has to be established by Upazilla/ Union Parishad Office immediately after disaster. It has to be ensured that there are at least 3/ 4 volunteers and village policemen always in emergency control room.
- Responsible persons of zilla/ upazilla are to be in charge of control room. Three groups are to guide the control room alternatively for 24 hours each containing three volunteers
- Constant communication with divisional/ Zilla Sadar is to be maintained
- There must be a register in the control room. Persons acting in any schedule, data and any persons in any specific time are to be written information received by and sent to a specifically in that register
- Positions of zilla/ upazillas, roads, canals, dams are to be marked on a map hung on the wall of control room so that it may help in identifying the most damaged areas at post-disaster period
- For the sake of control room activities, it is important to preserve radio, charger light, 5 big torch lights, gum boots, life jackets, batteries, raincoats and other equipment



## Planning for Hazard Period .4.2

Table 4.2: During Hazard Activities Implementation

Sl. no	Activity	Target level	When	Who	Who to Help	How	Contact
1	Preparing volunteers	Volunteer groups should be formed under the guidance of UP members at union level	From warning announcement in disaster period	Local Govt.	Disaster Management Committee	Through Emergency Control Room	UzDMC
2	Warning Announcement	Every UP member is to personally ensure the matter of warning announcement in his/her ward.	From warning announcement in disaster period	Local Govt.	Volunteer groups	Through Emergency Control Room	UzDMC
3	Preparing Boats/ cars/ vans	Sufficient numbers of boats, motor vessels, vans are to be preserved to be used in emergency.	From warning announcement in disaster period	Local Govt.	Volunteer groups	Through Emergency Control Room	UzDMC
4	Rescue Activity	preparing sufficient equipments and human resource for rescue activity assessing accurate loss of disaster	Immediately after disaster	Local Govt.	Volunteer groups	Through Emergency Control Room	UzDMC
5	First Aid/ health/ dead management	Organizing necessary treatment/ medicines/ health services assessing accurate loss of disaster	Immediately after disaster	Local Govt.	Volunteer groups	Through Emergency Control Room	UzDMC
6	Collecting and Preparing Dry Food and Life-saving Medicine	Dry food like flatten rice, puffed rice etc. is to be collected from local markets for instant distribution.	Immediately after disaster	Local Govt.	Volunteer groups, Health assistant, Family welfare assistant	Through Emergency Control Room	UzDMC

Sl. no	Activity	Target level	When	Who	Who to Help	How	Contact
7	Treatment/ Vaccine for Cattle	Collecting necessary medicines	Immediately after disaster	Local Govt.	Volunteer groups, Upazilla veterinary hospital and Health centre	Through Emergency Control Room	UzDMC
8	Shelter Management	To keep the shelter house usable maintaining necessary repairing before the disaster prone season	Pre and during disaster period	Local Govt.	Volunteer groups	Through Emergency Control Room	UzDMC
9	Relief Activity	UP chairman has to supervise the relief activity of different relief and rehabilitation assisting groups.	during and post disaster period	UP Chairman	Volunteer groups	Through Emergency Control Room	UzDMC
10	Arranging Rehearsals	Arranging continual rehearsals in cyclone/ flood prone areas	April and September of each year	UP	Volunteer groups	UP	UP
11	Emergency Control Room Management	Emergency control room has to be established by Upazilla/ Union Parishad Office immediately after disaster. It has to be ensured that there are at least 3/ 4 volunteers and village policemen always in emergency control room.	during and post disaster period	Local Govt.	Volunteer groups	UP	UP

Source: UzDMC, 2014

#### **4.2.1. Preparing volunteers**

- Forming volunteer groups under the guidance of UP members at ward level
- Spreading announcement and information to every villages through volunteers
- Distributing duties signals, data collection, rescue, evacuation, shelter management and arranging training on disaster risk reduction among all volunteers

#### **4.2.2. Warning Announcement**

- Every UP member is to personally ensure the matter of warning announcement in his/ her ward.
- Once in every hour, mike announcements have to be arranged up to 5 no. signals transmitted by radio, television. As soon as the great danger signal (8-9 no. signals) is announced by radio and television, mike announcement and school bell ringing have to be done constantly as danger alarm.

#### **4.2.3. Evacuation Activity**

- Every UP member is to start evacuating people to safer places with the help of volunteer groups of that ward as soon as it is announced to evacuate the people of risky areas by radio, television.
- As soon as 8 no. extreme danger signal is declared, mike announcements and volunteer activities have to be ensured toward every home to direct the vulnerable people to safe places. The vulnerable people must be well-informed of the shelter they belong to.

#### **4.2.4. Rescue and First Aid**

- The people of extreme risk zone are to be under the supervision of members of Zilla/ upazilla disaster management committee.
- A fixed deposit has to be run by Zilla/ upazilla disaster management committee for rescue management.
- Temporary health camps have to be set up and directed.
- The sick, the old, children and pregnant women are to be sent toward hospitals immediately.
- Every UP member together with volunteers is in charge of dead body management as well as burial of cattle.

#### **4.2.5. Shelter Management**

- To keep the shelter house usable maintaining necessary repairing before the disaster prone season
- To fix the specific shelters to be chosen by specific people in emergency
- To ensure complete safety of women, children and disable persons (in taking shelter)
- To ensure safe water supply and other services
- To help people carry their necessary assets (cattle, poultry, food etc.) to safe places

#### **4.2.6. Preparing Boats**

- Upazilla disaster management committee is to keep the account of motor-boats and settle on which ones are to be used in emergency.
- The owners of boats are to help them in this task.
- The names and mobile numbers of owners of boats are to be preserved.

#### **4.2.7. Measuring the Damage and Need of Disaster and sending Report**

- Immediately after the disaster, 'SOS Form' is to be sent within 24 hours and 'D Form' is to be sent within 7 days to the UP chairman.
- With the help of UP secretary, UP chairman is to collect the reports of every ward and send those to the chairman of upazilla disaster management committee within the next 12 hours.

#### **4.2.8. Relief Activity**

- UP chairman has to supervise the relief activity of different relief and rehabilitation assisting groups.
- If any other relief distributor groups come from outside, it is ordered to keep a record of the amount and category of relief and rehabilitation materials and to inform control room of the groups and their assigned areas.
- Union disaster management committee is to fix and distribute the amount/ number of relief materials among people based on vulnerability and damage at ward level.

#### **4.2.9. Collecting and Preparing Dry Food and Life-saving Medicine**

- Dry food like flatten rice, puffed rice etc. is to be collected from local markets for instant distribution.
- Food materials like rice, peas, flour, oil etc. and house-building materials like tin, nylon string etc. are to be collected from local markets.
- With the help of health assistant and family planning assistant, all necessary medicines are to be listed and collected at union level.
- Union chairman is to be in charge of assimilation of necessary transportations like rickshaws, taxies and other vehicles to transport relief materials as well as relief workers.

#### **4.2.10. Treatment/ Vaccine for Cattle**

- Collecting necessary medicines from upazilla veterinary hospital and preserving those in UP building or health center according to situations
- Arranging necessary trainings on veterinary treatment for the members of union disaster management committee
- Relating experienced persons to veterinary treatment if it is necessary in disaster period

#### 4.2.11. Arranging Rehearsals

- Arranging rehearsals on signal/ warning announcement, evacuation, rescue and primary relief management
- Arranging continual rehearsals in cyclone/ flood prone areas
- Assessing disaster preparation through rehearsals involving the population in April and September each year
- Mentioning in the rehearsals to take the sick, the disable, pregnant women and children to shelter center
- Executing rehearsals, for teaching people of risky areas, in risky villages instead of UP office

#### 4.2.12. Emergency Control Room Management

- Emergency control room has to be established by Upazilla/ Union Parishad Office immediately after disaster. It has to be ensured that there are at least 3/ 4 volunteers and village policemen always in emergency control room.
- Union Parishad secretary and responsible persons are to be in charge of emergency control room.

#### 4.2.13. entres/ Safe Places Shelter C

- Places that do not get washed away in flood and lie away from river erosion can be used as shelter centers.
- Selected shelter centers, local schools, colleges, govt. and non-govt., organizations, high roads and dams can be used as shelter centers.

### 4.3 List and explanation of area safe places of Manda Upazilla

Table 4.3: List of Safe places of Manda Upazilla

Shelters	Name	Union	Capacity	Comment
School cum Shelter	--	--	--	--
Public / Private Institutions	Upazilla Parishad	Manda Sadar	1200-1100 Person	--
Union Parishad Building	Kushumba UP Building	Kushumba	Person 200 150	--
	Moinum UP Building	Moinum	Person 200 150	
	Varsho UP Building	Varsho	Person 200 150	
	Manda UP Building	Manda	Person 200 150	
	Isobpur UP Building	Isobpur	Person 200 150	
	Jahanpur UP Building	Jahanpur	Person 200 150	
	Khelna UP Building	Khelna	Person 200 150	

Shelters	Name	Union	Capacity	Comment
	UP Building		Person 200 150	
Elevated road	Migonj Bazar to Saligram	Manda Union	3500-3200 Person	--
Embankment	Migonj Bazar to Saligram	Manda nionU	3500-3200 Person	--
Others	--	--	--	--

*Source: UzDMC, 2014*

The detailed description of each shelter center should be written. Information like foundation, date of latest repairing, number of flores, present use, number of tubewells, number of latrines, present condition of those, list and description of equipment's of shelter volunteers and other necessary information should be mentioned. If possible, pictures of every shelter centers and safe places are to be attached.

#### **4.4. Formation of Shelter Management Committee**

Shelter management is a very significant part of disaster management. Because of lack of proper and suitable management, many shelter centers get useless. Shelter management:

- Saves life and assets during disasters
- Saves livestock during disasters
- Ensures proper use and management of shelter centers

Shelter Management Committee

- There are 7-9 members in shelter management committee.
- The 7-9 member committee consists of UP chairman/ members, responsible persons, social workers, teachers, NGO staffs, land provider, volunteers etc.
- This committee can act as this management committee according to approval of the denizens.
- Half of the committee members have to be females.
- This committee fixes the responsibilities of shelter management.
- It performs the complete supervision and management of shelter center with the help of the denizens.
- It arranges meetings, keeps records of decisions and fixes responsibilities and deadlines for implementation of those decisions.
- The list of shelter management committee is to be attached to Disaster Management Plan.

The places to be used as shelter centers:

- Selected shelter centers
- Local schools, colleges
- Govt. and non-govt. organization
- High roads and dams

Things to be noticed in shelter center are:

- Preserving tent/ polyether/ ORS/ filter/ necessary medicines (Paracetamol, Flagil etc.)/ water purifying tablets/ bleaching powder etc. in shelter centers
- Measures for drinking water and cooking
- Sanitation system (male-female specified)
- Bathing place (male-female specified)
- Keeping clean and waste free
- Safety
- Light
- Hygiene
- Registration of protected people, enlisting and storing of their reserved assets and returning those properly while discharging
- Distributing duties among particular staffs and volunteers for shelter management
- Managing food and treatment for the protected
- Special care for pregnant women, the old and the disable

Use of Shelter Center:

- Shelter centers are mainly used for safe shelter for vulnerable people during disasters.
- Shelter centers can be used in community development activities except disaster period.
- It can also be used as primary ailment center.
- It can be used as school and education center for elderly people.
- It can be used as wireless station.

Shelter Center Management

- Every shelter center should be properly supervised.
- Local steps should be taken to protect the shelter centers from being ruined.
- Plantation should be maintained surrounding shelter centers in a planned way.
- Shelter center should be locked except disaster period.
- Shelter Management committee should be formed according to guideline.
- The list of Shelter Management committee is to be attached to Disaster Management Committee.

Table 4.4: List of Shelters

Shelters	Name	Union	Capacity	Comment
School cum Shelter	--	--	--	--
Public / Private Institutions	Upazilla Parishad	Manda Sadar	1200-1100 Person	--
Union Parishad Building	Kushumba UP Building	Kushumba	Person 200 150	--
	Moinum UP Building	Moinum	Person 200 150	
	Varsho UP Building	Varsho	Person 200 150	
	Manda UP Building	Manda	Person 200 150	
	Valain UP Building	Valain	Person 200 150	
	Jahanpur UP Building	Jahanpur	Person 200 150	
	Niamotpur UP Building	Niamotpur	Person 200 150	
	Valain UP Building	Valain	Person 200 150	
Elevated road	Migonj Bazar to Saligram	Manda Union	3500-3200 Person	--
Embankment	Migonj Bazar to Saligram	Manda Union	3500-3200 Person	--
Others	--	--	--	--

Source: UzDMC, 2014

#### 4.5. List of Resources of Upazilla (usable during disaster)

Table 4.5: List of Resources of Upazilla

Infrastructure / resources	Number	Responsible Person	Short Description
Shelter	--	--	--
Storage	3	Manda-Mujibor Rohman Rangamati-Soid Abdul Hannan Agradigun-Atikul Islam	--
Transport	2	Upazilla Parishad	One of them Upazilla Chairman and another one for UNO

Source: UzDMC, 2014



## Finance .4.6

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The income of Union Parishad arises from collecting local tax, approving lease for hat/ bazaars and canals/ swamps and approving trade licenses for business and trade. But, this authority has been taken away from Union Parishad. As a result, its income sources have been reduced. Nonetheless, Govt. is presently allowing Union Parishad 1% of land registration fee that UP used to have the whole of it before. Moreover, after the salaries of gram polices and UP secretary are paid with this money, the rest is seldom sent to UP. Very recently, govt. has taken measures to allow 4/5 lacs taka per year directly to UP.

### Income of Parishad

There must be a deposit for every Union Parishad.

#### (a) Local Sources (union tax, rate & fees)

- Tax on yearly fiscal value of household
- Tax on business, trade and profession (trade license)
- Licenses and Permit fees issued by UP
- Lease money
  - Hat/ bazaar leasing
  - Moorage (ghat) leasing
  - Public pond leasing
  - Khoarr (cattle detention place) leasing
- Tax on vehicles except motor cars
- Income from properties
- General deposit of UP

#### (b) Govt. donation

- Development sector
  - Agriculture
  - Health and sanitation
  - Road construction and repairing
  - Development assisting deposit (LGSP)
- Adjustment
  - Honorary bills for chairman and members
  - Salaries and bills for secretary and other staffs
- Others
  - 1% of and registration tax

#### (c) Local govt. sources

- Money allowed by Upazilla Parishad
- Money allowed by Zilla Parishad

#### (d) Non-govt. development organization

- NGOs
- CDMP

Various donor organizations and non- govt. development organizations are financing directly to UP to strengthen local govt. A better achievement depends on efficiency, sincerity and, most importantly, good-governance of Union Parishad. UP is supposed to manage the finance considering all the hazards and promoting those that are the major obstacles for the development of the union. UP should prepare, finance and implement every development project relating disaster risk reduction to it.

## **4.7 Updating and Analyzing Work Plan**

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2 follow-up committees are to be structured to devise plan.

1. Plan Follow-up Committee
2. Plan Implementation and Management Committee

### **Plan Follow-up Committee**

#### **5 member plan recording and presentation committee**

1. Chairman
2. Secretary
3. NGO representative
4. 2 members (from general committee)

up Committee-Table 4.6: List of Plan Follow

<b>Sl. No</b>	<b>Name</b>	<b>Designation</b>	<b>Mobile</b>
1	Pro. Abdur Roshid	Upazilla Chairman	01716844591
2	Mr. Shahana Akter Jhan	UNO	01713785886
3	Tonmoy (World Vision)	NGO	01730320846
4	Dr. Md. Jamal Uddin	Member	01712272859
5	Md. Israfil Hossain	Member	01725085295

*Source: UzDMC, 2014*

Tasks of committee:

- Assessing rough plan and devising final plan
- Sector-wise planning activity e.g. consulting Deputy Assistant Agriculture Officer for planning on agriculture, livestock and fishery
- Making the plan pragmatic signifying specific tasks and finance

### **Plan Implementation and Management Committee**

7-Member Plan Implementation and Management Committee

1. Chairman
2. Secretary

3. Female Member
4. Govt. Representative
5. NGO Representative
6. 2 Members (from general committee)

Table 4.7: List of Plan Implementation and Management Committee

Sl. No	Name	Designation	Mobile
1	Pro. Abdur Roshid	Upazilla Chairman	01716844591
2	Mr. Shahana Akter Jhan	UNO	01713785886
3	Md. Faruk Ahmed	Women Member	01712959582
4	Dr. Md. Jamal Uddin	GO Member	01712272859
5	Tonmoy (World Vision)	NGO	01730320846
6	Shree Tapos Roy	Member	01731521437
7	Md. Israfil Hossain	Member	01725085295

*Source: UzDMC, 2014*

**Tasks of the Committee:**

- Every year in April/ May, present work plan must be updated through complete assessment, essential modification and addition. Committee member secretary is personally liable for taking the steps. All necessary amendments must be implemented assessing the flaws of current plan immediately after any disaster.
- Every year in April/ May, disaster management rehearsal must be celebrated by the direction of Management Bureau on national disaster day.
- Disaster management plan has to be approved by District Disaster Management Committee.
- Plan implementation should be supervised.
- Communication with different organization should be maintained.

## Chapter Five

### Rescue and Rehabilitation Plan

#### 5.1 Damage Assessment

Table 5.1: Damage Assessment

Sector	Discription
Agriculture	Owing to climate change, a flood like 1988's may ruin the agricultural products of 22762 hectors of cultivable land. River erosion may cause financial loss for numerous families destroying sugarcane and paddy lands of 6 unions. Drought, as occured in 2001, may ruin the agricultural products of approximately 15175 hectors and cause severe financial damage for 20233 families. As a result of climate change, a sudden raise of hailrain may destroy the agricultural products of 20233 hectors that consequently may create financial loss for many households. Cold wave may destroy agricultural products of 20233 hectors that may create a scarcity of food in Dhamoirhat upazilla. Heavy mist is also a threat that may ruin the production of a lot of mango trees (for dropping out buds) and 3525 hectors of cultivable lands.
Fisheries	Severe drought may ruin the fish cultivation in 4776 ponds that leads to financial loss and lack of protein supply in Dhamoirhat upazilla. 3473 cultivable ponds may get washed away by a flood as occured in 1988. As a result, it is obvious to bring about a scarcity of food, nutrition and protein.
Plantation	As a result of climate change, a flood like 2003's may smash down many a tree in Dhamoirhat upazilla. It is a great hamper for environmental balance. River erosion also may hamper environmental balance grasping many trees into the river in 5 unions.
Health	A flood like 1988's may create lack of safe place for 60% pregnant women during the flood in Dhamoirhat upazilla. It may even cause death because of vulnerable communication. Besides, different epidemic may bring out. Drought like 2001's may cause different kinds of skin diseses and other problems among 50% of the population of Dhamoirhat upazilla.
Livelihood	Flood, drought, river erosion, heavy mist, low rainfall etc. seriously affect agriculture, fisheries, livestock and most importantly human resource. 38% people of Dhamoirhat upazilla may become workless because of these hazards. As a result, it throws a terrible challenge towards the economic condition of Dhamoirhat upazilla.

Sector	Discription
Water	Heavy drought and low level of water in Aranagar and Umar unions may cause a horrible scarcity of water in several unions of Dhamoirhat upazilla. As a result, damage of 22762 hectors of cultivable land may cause financial loss of numerous families. Besides, different diseases like skin disease can spread all over and agriculture, fisheries and livestock can be severely spoiled.
Infrastructure	A sudden storm like 2003's may smash down 25% of stuctures including academic and religious institutions, which may result in unexpected disruption of education. 00% of earthen houses can be devastated by the storm that leads to suffering and economic loss for many people. A flood like 1988's may damage almost 349.05 km. roads which may impede communication. In six unions, approximately 89 kilometers road and some schools, colleges and other structures also may be devoured by the river. 32% of earthen houses may get submerged in water leading many families to be homeless and economically fallen.

*Source: Field Visit, 2014*

## 5.2 Recovery

### 5.2.1 Administrative Resettle

Table 5.2: Administrative Resettlement commettee

sl. No	Name	Degisnation	Mobile
1	Prof. Abdur Rashid	Adviser	01716844591
2	Sahana Akter	President	01713 785886
3	Md. shariful Islam	member	01922 518411
4	Md. Rafiqul Islam	member	01768 909990
5	Md. Faruk Hossain	member	01718 448542
6	Md. Ejaj ahmed	member	01713 760207
7	Md. Shariful Islam	member	01718 575637
8	Md. Kalam Ajad	member	01757 961836
9	Md. Foyej Udin	member	01711 479046
10	Md. Naofel Ali	member	01718 279401
11	A.K.M najmul	member	01710 874081
12	S M najmul Islam	member	01713 761722
13	Md. AsharulIslam	member	01748 339730
14	Md. Eyad ali	member	01740 551965
15	Md. Khoibor promanik	member	01717 669532
16	Md. Shariful Islam	member	01922 518411
17	Md. Abu lohel Al mamun	Secretary	01711032089

*Source: Upazila Disaster management commettee, 2014*

## 5.2.2

Table 5.3: Dist management committee

sl. No	Name	Degisnation	Mobile
1	Prof. Abdur Rashid	Adviser	01716844591
2	Sahana Akter	President	01713 785886
3	Md. shariful Islam	member	01922 518411
4	Md. Rafiqul Islam	member	01768 909990
5	Md. Faruk Hossain	member	01718 448542
6	Md. Ejaj ahmed	member	01713 760207
7	Md. Shariful Islam	member	01718 575637
8	Md. Kalam Ajad	member	01757 961836
9	Md. Foyej Udin	member	01711 479046
10	Md. Naofel Ali	member	01718 279401
11	A.K.M najmul	member	01710 874081
12	S M najmul Islam	member	01713 761722
13	Md. AsharulIslam	member	01748 339730
14	Md. Eyad ali	member	01740 551965
15	Md. Khoibor promanik	member	01717 669532
16	Md. Shariful Islam	member	01922 518411
17	Md. Abu lohel Al mamun	member Sec.	01711032089

Source: Upazila Disaster management commettee, 2014

## 5.2.3 Health Recovery

Table 5.4: health Recovery Commettee

sl. No	Name	Degisnation	Mobile
1	Prof. Abdur Rashid	Adviser	01716844591
2	Sahana Akter	President	01713 785886
3	Md. shariful Islam	member	01922 518411
4	Md. Rafiqul Islam	member	01768 909990
5	Md. Faruk Hossain	member	01718 448542
6	Md. Ejaj ahmed	member	01713 760207
7	Md. Shariful Islam	member	01718 575637
8	Md. Kalam Ajad	member	01757 961836
9	Md. Foyej Udin	member	01711 479046
10	Md. Naofel Ali	member	01718 279401
11	A.K.M najmul	member	01710 874081
12	S M najmul Islam	member	01713 761722
13	Md. AsharulIslam	member	01748 339730
14	Md. Eyad ali	member	01740 551965

15	Md. Khoibor promanik	member	01717 669532
16	Md. Shariful Islam	member	01922 518411
17	Md. Abu lohel Al mamun	Secretary	01711032089

*Source: Upazila Disaster management commettee, 2014*

## 5.2.4 Emargency Livvelihood Service

**Table 5.5: Emargency Livvelihood Service list**

sl. No	Name	Degisnation	Mobile
1	Prof. Abdur Rashid	Adviser	01716844591
2	Sahana Akter	President	01713 785886
3	Md. shariful Islam	member	01922 518411
4	Md. Rafiqul Islam	member	01768 909990
5	Md. Faruk Hossain	member	01718 448542
6	Md. Ejaj ahmed	member	01713 760207
7	Md. Shariful Islam	member	01718 575637
8	Md. Kalam Ajad	member	01757 961836
9	Md. Foyej Udin	member	01711 479046
10	Md. Naofel Ali	member	01718 279401
11	A.K.M najmul	member	01710 874081
12	S M najmul Islam	member	01713 761722
13	Md. AsharulIslam	member	01748 339730
14	Md. Eyad ali	member	01740 551965
15	Md. Khoibor promanik	member	01717 669532
16	Md. Shariful Islam	member	01922 518411
17	Md. Abu lohel Al mamun	member sect.	01711032089

*Source: Upazila Disaster management commettee, 2014*

## Annex 1

### Plan Implementation Checklist of Hazard Period

#### Checklist

Checklist) has to be checked out immediately after the broadcast of 5 The following 'Table' (ch .number danger signal by radio/ television and necessary measures have to be taken

Sl. No.	Subject	Yes/No
1.	If the selected members of volunteer group assigned for warning announcement have been ordered to declare the coming hazard	Yes
2.	If the responsible persons/ groups are prepared to rescue the people of vulnerable areas	Yes
3.	If the declaration to keep dry food and drinking water buried under ground for 2/1 days is announced	Yes
4.	If life jackets for the safety of volunteer groups are provided	Yes
5.	If the necessary manpower is prepared to keep Union Control Room open constantly	Yes
6.	If the necessary safety measures for union food storage/ relief storage are ensured	Yes
7.	Others	

N. B.

Assessing the checklist, immediate measures should be taken for the flawed sectors.

It is very necessary to manage life jackets for volunteer groups with union Parishad deposit or any other source/ organization.

#### Checklist

The following 'Table' (checklist) must be filled and sent to Upazilla Nirbahi Officer and District Commissioner discussing in the meeting of Disaster Management Committee within 15th of April/May each year.

Sl. no	Subject	Mark (√)
1	If sufficient food is reserved in Union food storage	
2	If the children of risk zones have been served with vaccines	



3	If the children (1-6) and their mothers are served with vitamins	
4	If sufficient amount of oral saline is reserved in UP Clinic/ Hospital	
5	If the members of volunteers group are served with annual training	
6	If there are necessary drugs and first aid equipments for each shelter	
7	If there is selected village doctor for each shelter	
8	If there is tubewell for each shelter	
9	If the doors and windows of each shelter are in proper condition	
10	If the alternative care taker is present in each shelter	
11	If there are separate facilities for women in each shelter	
12	If there are selected midwives for the taking care of pregnant women in each shelter	
13	If mound shelters are selected for the cattle	
14	If the member of volunteers group are aware of their assigned responsibilities.	
15	If there is sanitation facilities each shelter	
16	If the microphones are activated to spread weather announcement and danger signals	
17	If the people are made aware to preserved dry food and drinking water for at least 2/1 days	
18	Others	

**Annex -2**

## Upazila Disaster Management Committee

Sl. no	Name	Designation	Member	Mobile
1	Prof. Abdur rahman	Upazila Chairman	Adviser	01716 844591
2	Shahana Akter janhan	Upazila Nirbahi Officer	President	01713 785886
3	Sri bisnu pod sarkar	Vice Chairman	member	01715 081449
4	Jonab Jangir Alam	Agriculture Officer	member	01711 040644
5	Md. Atiqur Rahman	Education Officer	member	01711 106750
6	Jonab shunil mondal	Fisheries Officer	member	01712 204719
7	Jonab Anisur Rahman	Social Welfare Officer	member	01717 699671
8	Jonab Abdul Rshid	coordination Officer	member	01737 370194
9	Jonab Paritosh	youth welfare Officer	member	01717 725771
10	Nur alam	Secondary school Officer	member	01716 655932
11	Md. Aminul Islam	food Officer	member	01731 894330
12	Md. Shariful Islam	health Officer	member	01711 949438
13	Jonab lutfur raman	rural development Officer	member	01724 025449
14	Jonab johurul Islam	Upazila Engineering	member	01713739447
15	Jonab Md. Mostofa kamal	OC (Manda thana)	member	01716 544125
16	Dr. Mojaher hossen	health planning Officer	member	01711 578378
17	Dr Shamima	vetenary Officer	member	01718 541516
18	Jonab Afchanul Arefin	Family planning Officer	member	01726 560161
19	Jonab s M bojlur Rahamn Rahman	Wemen Officer	member	01711 015432
20	Jonab Eyaqub Ali	Accounce Officer	member	01740 624867
21	Pobitro kumar	secondary school officer	member	01712 022072
22	Jonab Kolilur	assist. Upazila	member	01717 821383

Sl. no	Name	Designation	Member	Mobile
	Rahman Rahman	Educational Officer		
23	Md. Shariful Islam	Chairman, varsho UP	member	01739 410182
24	Md. Rafiqul Islam	Chairman, Valail UP	member	01922 518411
25	Md. Faruk hossen Molla	Chairman, Poranpur UP	member	01768 909990
26	Md. Ejaj Ahmed	Chairman, Manda UP	member	01718 448542
27	Md. Shofiqul Islam	Chairman, Goneshpur UP	member	01713 760207
28	Md. Abulkalam Ajad	Chairman, Moinom UP	member	01718 575637
29	Md. Foyej uddin sarkar	Chairman, Proshad pur UP	member	01757 961836
30	Md. naofel Ali	Chairman, Kusumba UP	member	01711 479046
31	Najmul	Chairman, Tatulia UP	member	01718 279401
32	Rafiqul Islam	Chairman, Nurullahbad UP	member	01710 874081
33	Md. Ashraful Islam	Chairman, Kalikapur UP	member	01713 761722
34	Md. Eyad ali	Chairman, kashopara UP	member	01748 339730
35	Md. Kuibar Ali	Chairman, Kosob UP	member	01740 551965
36	Md. Jahangir Alam	Chairman, Bisnu purUP	member	01717 669532
37	Jonab Mostakim	Upazila Ancer VDB Officer	member	01747 095423
38	Animiesh sarkar	NGO represntative (brak)	member	01730 347561
39	Jonab Abdus samad	sonali bank, Manda	member	01715 917871
40	Jonab Aktarujjamn	Janata bank, Manda	member	01716035484
41	Md. Al manun	PIO	member sec.	01740884303

*Source: Upazila parishad, Manda, 2014*

**Annex-3**

List of Union volunteers

Sl.no	Name	Father/ Husband	Word no	Traini ng	Mobile
01	Md. Sabbir Ali	Let. Tachim ali	7, varsho	No	01736 350652
02	Md. Hossain Motaher	Alhaj Md. Ali Morol	6	No	01714 602342
03	Mrs. Jinnatul	Let kasim udding	4,5,6	No	01710633755
04	Md. Golam mostafa	Let romij uddin	7, Valail	No	01718 7-9349
05	Md. Rois uddin saha	Let khoj saha	5	No	01758 211310
06	Mrs. Shirin	Hus. Shamim	4,5,6	No	01783 103369
07	Md. astanAli, Goneshpur	Deoyan mollah	1	No	01725 654278
08	Md. monoyar	Mojahar Ali	9	No	01721 897924
09	Mrs. Anoyara	Hus.-Asytan Ali	1,2,3	No	01736 845396
10	Md. munsu Ali,	Let Kayes uddin	8	No	01722 085212
11	Md. Yachin Ali	Let IslamilMotaher	9	No	01725 621372
12	Mrs. Momotaj begum	Hus.-hadek Ali	7,8,9	No	01751 525317
13	Md. edris Ali sha, Poranpur	Let bochir uddin	4	No	01713 931720
14	Md. Alomgir Motaher	Md. Moyej uddin	6	No	01985 735085
15	Mrs. Chofura begum	Let babul Motaher	1,2,3	No	01727 133132
16	Md. deloyar hosain, Tatulia	Let chober Ali	2	No	01710 137991
17	Md. tohidul Islam	Let amir udin	3	No	01726 515085
18	Mrs. Airin	Rejaul karim	1,2,3	No	01760 173005
19	Md. Munsur Rahman,	Let solaiman Ali	4, Kalikapur	No	01728 461955
20	Md. mostofa	Md. mujoborRahman	8	No	01747 254773
21	Mrs. Shofeda begum	Md. oyajed Ali	1,4,5	No	01748 227580
22	Md.khurshid Alam	Md. Ahmed	4, Nurullahba d	No	01735 181135
23	Md. Abul Motaher	Let meku	6	No	01710060526
24	Mrs. janntul	Can morol	1,2,3	No	01751 722950
25	Golam ajom bisnupur	Md. saidurRahman	4	No	01731 338559
26	Md. Ajijur Rahman	Md. ayub Ali	8	No	01746 848436
27	Mrs. farida	habibur Rahman	4,5,6	No	01733 104711

Sl.no	Name	Father/ Husband	Word no	Traini ng	Mobile
28	md. Ali, Manda	Mochir uddin	1	No	01739 488832
29	Md. khairul Islam	Md. Sober uddin	6	No	01782 928391
30	Mrs. Jinnutu begum	Rajaul karim	1,2,3	No	01770 657338
31	Md. jobbar Proshad pur	Let juju morol	1	No	01820 569858
32	Md. Mofajel Motaher	Let tomij uddin	7	No	01720 357087
33	Mrs. Rubina akter	Anal ahomed	1,2,3	No	01758 355938
34	Md. Abdul samad	Let tohir uddin	2	No	01981 601704
35	Md. Marshel	Let julum mondal	5	No	01714 722500
36	Mrs. Rosanara	Afaj uddin	7,8,9	No	01757 974188
37	Md. Abdul malek, Kosob	--	9	No	01726 585936
38	Md. Abdus samd	--	2	No	01734 444271
39	Mrs. Jinnatul hera	--		No	01743 977221
40	Kasem	Sahar Ali	1	No	01747 872009
41	Md. Sahjalal	pramanik	5	No	01764 005950
42	Mrs. Nadira khatun	Md. Matahar Motaher	1,2,3	No	01727 638310

*Source: Union parishad Manda, 2014*

**Annex -4**

## List of Shelters Management Committee

Name of Shelter	Responsible Person	Mobile	Comment
horkishor Primary School bolakhetro Primary School	Upazila Disaster management committee	01740884303	--

*Source: Upazila Disaster management committee, Manda, 2014*

govt./ Private institution

Name of Shelter	Responsible Person	Mobile	Comment
Valail Union Parishad Vabon	Md. Rafiqul Islam	01922 518411	--
varsho Union Parishad Vabon	Md. Shariful Islam	01739 410182	--
Bisnu pur Union Parishad Vabon	Md. Jahangir alom	01717 669532	--
Goneshpur Union Parishad Vabon	Md. Shafiqul Islam	01713 760207	--
Kalikapur Union Parishad Vabon	Md. Ashraful Islam	01713 761722	--
kashopara Union Parishad Vabon	Md. Eyad Ali	01748 339730	--
Kosob Union Parishad Vabon	Md. khoybor Ali	01740 551965	--
Kusumba Union Parishad Vabon	Md. Naofel Ali Mondol	01711 479046	--
Moinom Union Parishad Vabon	Md. abul kalam ajad	01718 575637	--
Manda Union Parishad Vabon	Md. Ejaj ahomed hillol	01718 448542	--
Nurulbad Union Parishad Vabon	Md. Rafiqul Islam	01710 874081	--
Poranpur Union Parishad Vabon	Md. Faruk Motaher mollah	01768 909990	--
Proshad pur Union Parishad Vabon	Md. Foyej uddin sarkar	01757 961836	--
Tatulia Union Parishad Vabon	Md. najmul	01718 279401	--

*Source Upazila Parishad, Manda, 2014*

**High Road or Embankment**

Name of Shelter	Responsible Person	Mobile	Comment
Bisnupur	Md. Jahangir alom	01717 669532	--

Source LGED, Manda, 2014

**Upazila Health Management committee**

Health center name	Responsible Person	Mobile	Comment
Manda Health Complex Naogon	Ejharul Islam	01711902785	--
Manda Health Complex Naogon	Dr.monoronjon Mondol	01718056991	--
Manda Health Complex Naogon	Dr.rombaliya Islam	01715413031	--
Manda Health Complex Naogon	Md. Najim uddin	01912633578	--
Manda Health Complex Naogon	Sri nirmal kumar	01714495548	--
Manda Health Complex Naogon	Niloy kumar	01715360144	--
Manda Health Complex Naogon	Dilip kumar	01718039745	--
Manda Health Complex Naogon	Gonesh condro saha	01715324737	--
Valail UnionHealthcenter	Moriyam kahtub	01726315844	--
Kalikapur UnionHealthcenter	Nargis parbin	01948751785	--
KusumbaUnionHealthcenter	Md. mosudujjam	01919260801	--
NurulbadUnionHealthcenter	Oyadul kaderRahman	01745173157	--
Poranpur UnionHealthcenter	Md. rafiquil	01717680810	--
Proshad purUnionHealthcenter	parto	01724131148	--

Source: Upazila Health office, Manda, 2014

**Upazila Fire station**

Responsible Person	Mobile	Comment
Fire station No	--	--

**Engine Boat**

union/Ward name	Responsible Person	Mobile	Comment
--	--	--	--

**Local businessman**

union/Ward name	le PersonResponsib	Mobile	Comment
Valail Union	Md. Rafiqul Islam	01761 938934	President
varshoUnion	Md. Shariful Islam	01739 140182	President
Bisnu purUnion	Md. Jahangir alom	01717 669532	President
Goneshpur union	Md. Shafiqul Islam	01712 340493	President
Kalikapur union	Md. AshrafulIslam	01713 761722	President
kashoparaUnion	Md. EyadAli	01748 339730	President
Kosob Union	Md. khoyborAli	01740 551965	President
Kusumbaunion	Md. NaofelAliMondol	01749 846002	President
Moinomunion	Md. abul kalam ajad	01713 705305	President
Manda Union	Md. Ejaj ahomed hillol	01718 448542	President
NurulbadUnion	Md. Rafiqul Islam	01710 874081	President
Poranpur Union	Md. Faruk Motaher mollah	01768 909990	President
Proshad purUnion	Md. tares Mondol	01735 960082	President
Tatulia union	Md. Najmul Haque	01718 279401	President

*SourceUpazila Parishad,Manda, 2014*



**Annex-5****At a glance-Manda Upazila**

Area	413.97 sq.km	Edgah	250
Union	14	Bank	11
Mouja	290	Post Office	23
Village	293	Club	157
House Hold	97219	ketMar	27
Population	363858	Graveyerd	62
Male	180022	Cymertry	25
Female	183835	Poltry Firm	38
Educational Institution	321	Deep Tubewell	--
Gov. Primary School	142	Tubewell	588
রেজিঃপ্রাথমিকবিদ্যালয়	68	Hand Tubewell	6210
মাধ্যমিকবিদ্যালয়	12	River	39,000
College	29	Canal	3
Madrasa	65%	Pond	2 (22 km.)
Litarcy Rate	43	Wet Land	22
Embankment	1	Katch Road	5805
Sluice Gate	5	Pacca Road	.71%
Bridge	24	Play Ground	437.58 km
Culvurt	486	Community Clinic	220.63 km
Mosque	980	Mobile Tower	6
Temple	22	Edgah	146
church	1		

## Annex-6

### List of Some Important Broadcast Programs of Bangladesh Betar

Radio Centre	Program	Time	Day
ka-Dhaka	Krishi Shamachar	am 7.00-6.55	ayEveryd
	Shukher Thikana	am 7.30-7.25	Everyday
	Shasthoi Shukher Mul	am 1200-11.30	Everyday exept Friday
	Shonali Foshol	pm 6.35-6.05	Everyday
	Weather News	pm 7.00-6.50	Everyday
Chittagong	Krishi Kotha	pm 7.00-6.55	Everyday
	Krishi Khamar	pm 6.50-6.10	veryday exept MondayE
	Shukhi Saongshar	pm 8.30-8.10	Everyday exept Friday
Rajshahi	Khet Khamar Shamachar	am 7.00-6.55	Everyday
	Shabuj Bangla	pm 6.50-6.05	Everyday
Khulna	Shastho Tatthyo	am 7.00-6.55	Everyday
	Krishi Shamachar	pm 4.30-4.20	Everyday
	Chashabad	pm 6.50-6.10	Everyday
Rangpur	Shukher Thikana	am 7.30-7.25	Everyday
	Khet Khamare	pm 6.35-6.05	Everyday
Shylet	Ajker Chashabad	am 7.00-6.55	Everyday
	Shukher Thikana	am 7.30-7.25	Everyday
	Shymol Shylet	pm 6.50-6.05	Everyday exept Friday
Thakurgaon	Kishan Mati Desh	pm 6.25-6.05	Suterday, Monday & Wednesday
Cox's Bazar	Ajker Krishi	pm 3.45-3.07	Everyday
	Sonali Prantor	pm 3.45-3.40	Tuesday & Thursday
Barishal	Krishi Kotha	pm 3.30-3.15	Everyday exept Sunday, Wednesday & Friday
	Paribar Chhoto	pm 3.50-3.35	Everyday exept Monday, Wednesday & Friday
Rangamati	Jiboner Jonno	pm 1.55-1.50	Everyday
	Khamar Bari	pm 3.15-3.05	Everyday

\* Weather news is broadcast to all stations at 6.50 pm.

Some Important Broadcast Programs of Community Radio

Radio Centre	Program	Time	Day

Interactive Voice Response (IVR)

Interactive Voice Response (IVR) refers to disaster early warning system that spreads disaster early warnings to common people via mobile phone. One can get weather news and early warning for flood and river ports dialing 10941.

## Annex-8

Name of Educational Institution	Sl	Name of Educational Institution	Students	Teachers	Ward	Use for Shelter or Ashroykendra
Primary School	1	Alalpur govt. Primary School	300	07	Varsho	No
	2	MojidpurGovt.Primary School	136	05	Varsho	No
	3	BalichGovt.Primary School	147	03	Varsho	No
	4	pakuria Govt.Primary School	632	10	Varsho	No
	5	bakapur Govt.Primary School	179	04	Varsho	No
	6	Aoupara Govt.Primary School	319	07	Varsho	No
	7	varshoGovt.Primary School	273	07	Varsho	No
	8	Turuk gramGovt.Primary School	208	06	Valail	No
	9	ayapur Govt.Primary School	136	03	Valail	No
	10	Valail Govt.Primary School	160	04	Valail	No
	11	Bandubi Govt.Primary School	136	04	Valail	No
	12	boddopurGovt.Primary School	206	06	Valail	No
	13	monay Govt.Primary School	166	02	Valail	No
	14	corshibrampurGovt.Primary School	155	04	Valail	No
	15	Poranpur Govt.Primary School	551	08	Poranpur	No
	16	balu bajarGovt.Primary School	281	05	Poranpur	No
	17	cok keshobr Govt.Primary School	235	04	Poranpur	No
	18	sisiel Govt.Primary School	372	07	Poranpur	No
	19	hator Govt.Primary School	253	04	Poranpur	हाँ
	20	Kalikapur Govt.Primary School	153	05	Kalikapur	No

Name of Educational Institution	Sl	Name of Educational Institution	Students	Teachers	Ward	Use for Shelter or Ashroyken dro
	21	badolghat Govt.Primary School	326	06	Manda	No
	22	nobgram Govt.Primary School	573	06	Manda	No
	23	k.k modelGovt.Primary School		10	Manda	No
	24	Manda Govt.Primary School		04	Manda	No
	25	Goneshpur Govt.Primary School	286	05	Manda	No
	26	parair (d)Govt.Primary School		06	Manda	No
	27	parair (1) Govt.Primary School	177	06	Goneshpur	No
	28	vebra Govt.Primary School	76	03	Goneshpur	No
	29	kanconpurGovt.Primary School	332	07	Goneshpur	No
	30	banggarpara Govt.Primary School	208	04	Goneshpur	No
	31	parailGovt.Primary School	248	04	Goneshpur	No
	32	srirampur(2) Govt.Primary School	438	08	Goneshpur	No
	33	rampur Govt.Primary School	247	04	moinom	No
	34	vodroseNo Govt.Primary School	247	06	moinom	No
	35	Moinom Govt.Primary School	470	08	moinom	No
	36	boddopur Govt.Primary School	305	06	moinom	No
	37	Govt.Primary School	170	05	moinom	No
	38	moinom Govt.Primary School	160	06	moinom	No
	39	cokrajapur Govt.Primary School	355	05	Proshad pur	No

Name of Educational Institution	Sl No	Name of Educational Institution	Students	Teachers	Ward	Use for Shelter or Ashroyken dro
	40	gobindo pur Govt.Primary School		06	Proshad pur	No
	41	Proshad pur Govt.Primary School	704	10	Proshad pur	No
	42	Jetpur Govt.Primary School	281	05	Proshad pur	No
	43	Enayet pur Govt.Primary School	281	06	enayetpur	No
	44	khudiyadanga Govt.Primary School	201	05	enayetpur	No
	45	Enayet pur manjil Govt.Primary School		06	enayetpur	No
	46	Haji gobindo pur Govt.Primary School	328	07	kusumba	No
	47	Kusumba Govt.Primary School		06	kusumba	No
	48	bilkarillo Govt.Primary School	407	06	kusumba	No
	49	buridoh Govt.Primary School	345	06	kusumba	No
	50	cokkanu Govt.Primary School	298	06	kusumba	No
	51	kaligamGovt.Primary School	117	06	kusumba	No
	52	boropai Govt.Primary School	198	08	Proshad pur	No
	53	gaigaGovt.Primary School	226	07	kusumba	No
	54	cokkattik Govt.Primary School	185	05	kusumba	No
	55	sonkorpor Govt.Primary School	340	05	Tatulia	No
	56	teghliaGovt.Primary School	194	07	Tatulia	No
	57	Teghlia Govt.Primary School		06	Tatulia	No
	58	Narayonpur Govt.Primary	231	05	Tatulia	No

Name of Educational Institution	Sl No	Name of Educational Institution	Students	Teachers	Ward	Use for Shelter or Ashroyken dro
		School				
	59	Dekruthi Govt.Primary School	185	05	Tatulia	No
	60	sateil Govt.Primary School	172	05	Tatulia	No
	61	ramnagor Govt.Primary School	168	05	nurullahbad	No
	62	kailgram Govt.Primary School	169	05	nurullahbad	No
	63	nurullahbad Govt.Primary School	444	07	nurullahbad	No
	64	barilloGovt.Primary School	171	05	nurullahbad	No
	65	nurullahbad Govt.Primary School	149	02	nurullahbad	No
	66	cok srikissono Govt.Primary School	240	03	nurullahbad	No
	67	kalinagor Govt.Primary School	191	04		No
	68	cokKalikapur Govt.Primary School	527	08	Kalikapur	No
	69	cokgobindo Govt.Primary School	274	05	Kalikapur	No
	70	cokroghunathGovt.Primary School	447	06	Kalikapur	No
	71	chotomullok Govt.Primary School	236	07	Kalikapur	No
	72	cokgobido Govt.Primary School	261	05	Kalikapur	No
	73	bakhail Govt.Primary School	92	04	Kalikapur	No
	74	Tulshi rampur Govt.Primary School	236	06	Kalikapur	No
	75	kulihar Govt.Primary School	363	06	Kalikapur	No

Name of Educational Institution	Sl	Name of Educational Institution	Students	Teachers	Ward	Use for Shelter or Ashroyken dro
	76	cokuli Govt.Primary School	271	07	kashopara	No
	77	andariar Govt.Primary School	280	06	kashopara	No
	78	kashopara Govt.Primary School	290	05	kashopara	No
	79	kulihar gongarampur Govt.Primary School	114	06	kashopara	No
	80	Kosob Govt.Primary School	202	06	kashopara	No
	81	shibnagor Govt.Primary School	200	06	Kosob	No
	82	turukbaria Govt.Primary School	243	04	Kosob	No
	83	Kosob turukbaria Govt.Primary School	354	06	Kosob	No
	84	pajordanga Govt.Primary School	234	05	Kosob	No
	85	kuriaparaGovt.Primary School	171	04	Kosob	No
	86	billbaira Govt.Primary School	200	03	Kosob	No
	87	dasparaGovt.Primary School	139	04	bisnupur	No
	88	pairtunnda Govt.Primary School	110	05	bisnupur	No
	89	fotepit Govt.Primary School	126	05	bisnupur	No
	90	konnovag Govt.Primary School		05	bisnupur	No
	91	cokrampur Govt.Primary School		06	bisnupur	No
	92	hulibari Govt.Primary School	133	04	bisnupur	No
	93	pali Govt.Primary School	118	03	bisnupur	No



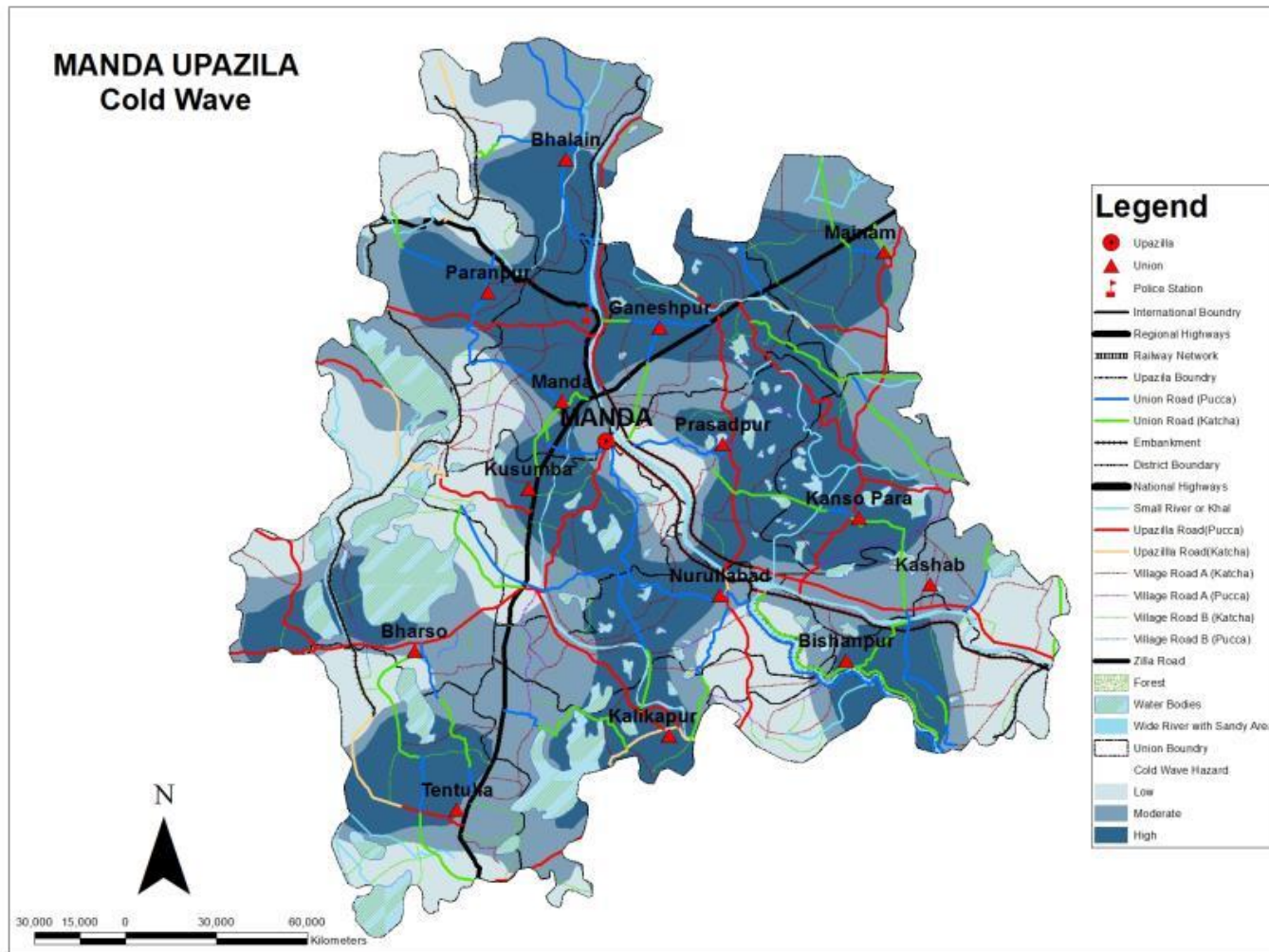
Name of Educational Institution	Sl No	Name of Educational Institution	Students	Teachers	Ward	Use for Shelter or Ashroyken dro
	94	cokkamdebpur Govt.Primary School		04	bisnupur	No
	95	sodolpur Govt.Primary School		04	bisnupur	No
	96	coksqamray Govt.Primary School	302	05	Poranpur	No
	97	wesat Govt.Primary School	111	05	kusumba	No
	98	sahapur Govt.Primary School	146	04	kusumba	No
	99	soidpur Primary School	135	04	Manda	No
	100	srirampur Primary School	169	04	srirampur	No
	101	rangadmant Primary School	122	03	ranggama a	No
	102	Moinomsorpara Primary School	134	04	moinom	No
	103	raypara Primary School	142	04	raypur	No
	104	surxopara Primary School	111	03	naraynpur	স্বা
	105	cokopara Govt.Primary School	144	05	cokcompok	No
	106	goyal Manda Govt.Primary School	164	05	goyal	No
	107	dariyapur Govt.Primary School	143	03	dariyapur	No
	108	cokhoripur Govt.Primary School	113	03	cokhpropur	No
	109	siyata Govt.Primary School	119	03	siyata	No
	110	ghacketa Govt.Primary School	123	04	ghacketa	No
	111	deluara Govt.Primary School	132	04	deluara	No
	112	maul Govt.Primary School	164	04	maul	No
	113	satail govt. Primary School	154	05	satail	No
	114	Satbaria govt. Primary School	138	04	Satbaria	No

Name of Educational Institution	№	Name of Educational Institution	Students	Teachers	Ward	Use for Shelter or Ashroyken dro
	115	cokgopalgovt. Primary School	122	04	cokgopal	No
	116	engelgovt. Primary School	147	04	engel	No
	117	cokvolai govt. Primary School	143	04	cokvolai	No
	118	okkirampur. Primary School	133	04	lokkirampur	No
	119	bomunnki govt. Primary School	154	04	bormuklluk	No
	120	bongargovt. Primary School	152	04	bongra	No
	121	Kosob volagari govt. Primary School	146	04	Kosob	No
	122	khodbaday govt. Primary School	114	04	khodbaday	No
	141	cokbalu govt. Primary School	153	04	cokbalu	No
	162	Katherdanga govt. Primary School	129	04	Katherdanga	No
	163	ganta govt. Primary School	131	04	ganta	No
	69	cok keshobr secondary girls school	192	11	cok keshobr	No
	70	Sahapukuria secondary girls school	197	09	Sahapukuria	No
	71	Talpatila secondary girls school	188	08	Talpatia	No
<b>Madrasha</b>	1	Parail sinior Madrasha	112	11	parail	No
	2	Jmagad AlimMadrasha	109	12	Jmagad	No
	3	fotepur DakhilMadrasha	132	10	fotepur	No
	4	daspara sinior Madrasha	121	11	daspara	No
	5	cokdebirampur cokvolai AlimMadrasha	143	13	cokdebirampur	No
	6	Varsho IslamiaDakhilMadrasha	132	09	Varsho	No
	7	songga DakhilMadrasha	129	10	songa	No
	8	deil DakhilMadrasha	109	08	deil	No

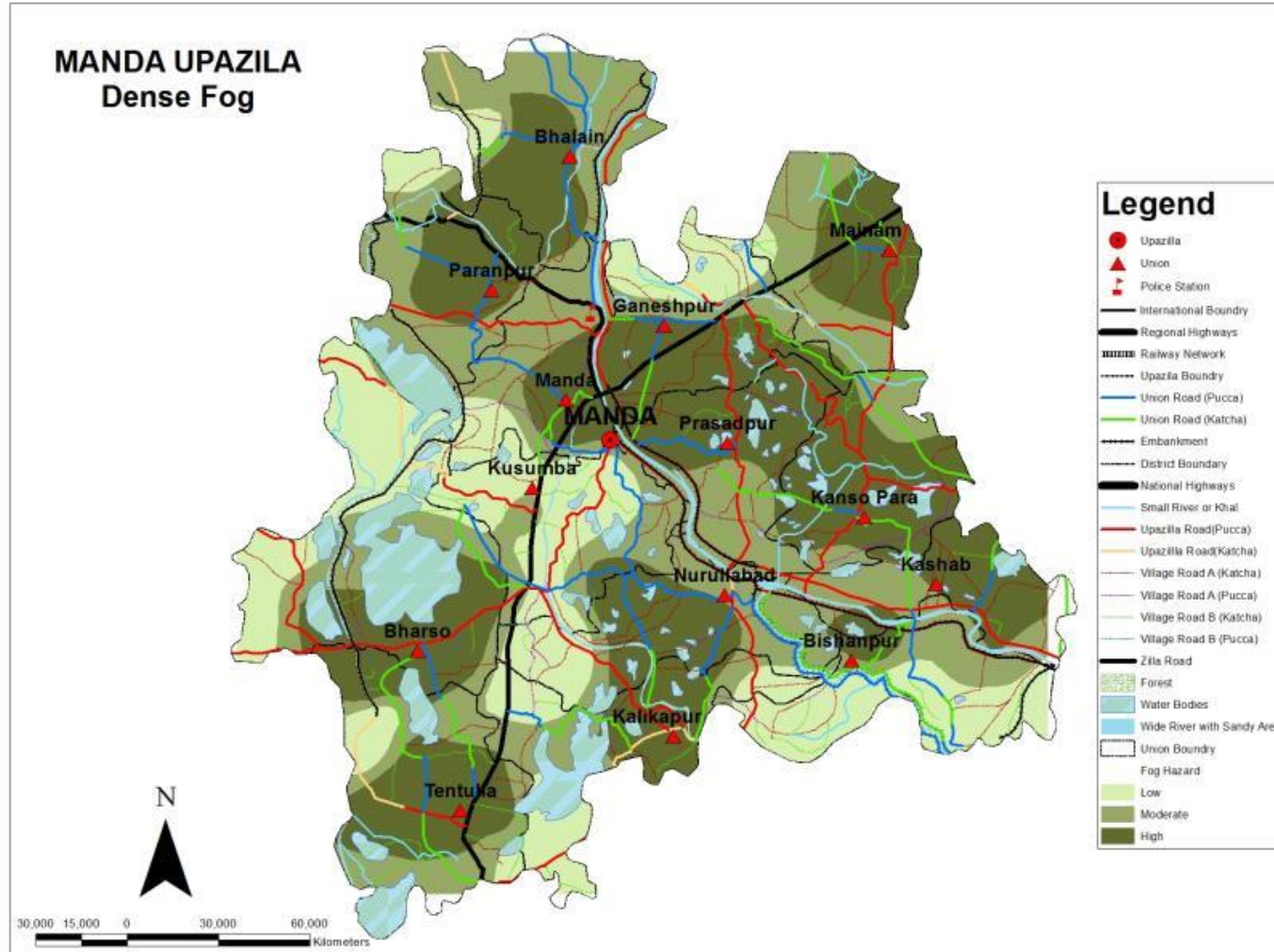
Name of Educational Institution	Sl	Name of Educational Institution	Students	Teachers	Ward	Use for Shelter or Ashroyken dro
	9	Poranpur kamil Madrasha	145	11	Poranpur	No
	10	Kalikapur sinior Madrasha	134	12	Kalikapur	No
	11	MojidpurIslamiafajil Madrasha	144	13	mojidpur	No
	12	borobela fajil Madrasha	138	13	borolekha	No
	13	DakhilMadrasha	133	09	cokhoribal	No
	14	bebiakter DakhilMadrasha	146	11	cokhoribal	No
	31	enatepur Madrasha	118	09	enayetpur	No
	32	gaigadakhil Madrasha	126	10	kisson	No
	42	ferihgat sotontro ettadayi madrasha	117	08	pairl	No
	43	cokshidesori sotontro ettadayi madrasha	113	09	cokpara	No
	44	pirhaji sotontro ettadayi madrasha	121	09	pirpala	No
	45	fetgram sotontro ettadayi madrasha	125	08	fetgram	No
	46	kukrail sotontro ettadayi madrasha	133	08	kukrail	No
	47	cokramakant sotontro ettadayi madrasha	143	08	cokramarjjam	No
	48	Cokkamdeb sotontro ettadayi madrasha	151	10	cokkamdeb	No
	49	turubaria sotontro ettadayi madrasha	154	08	tutbaria	No

Source: Upazila education office, 2014

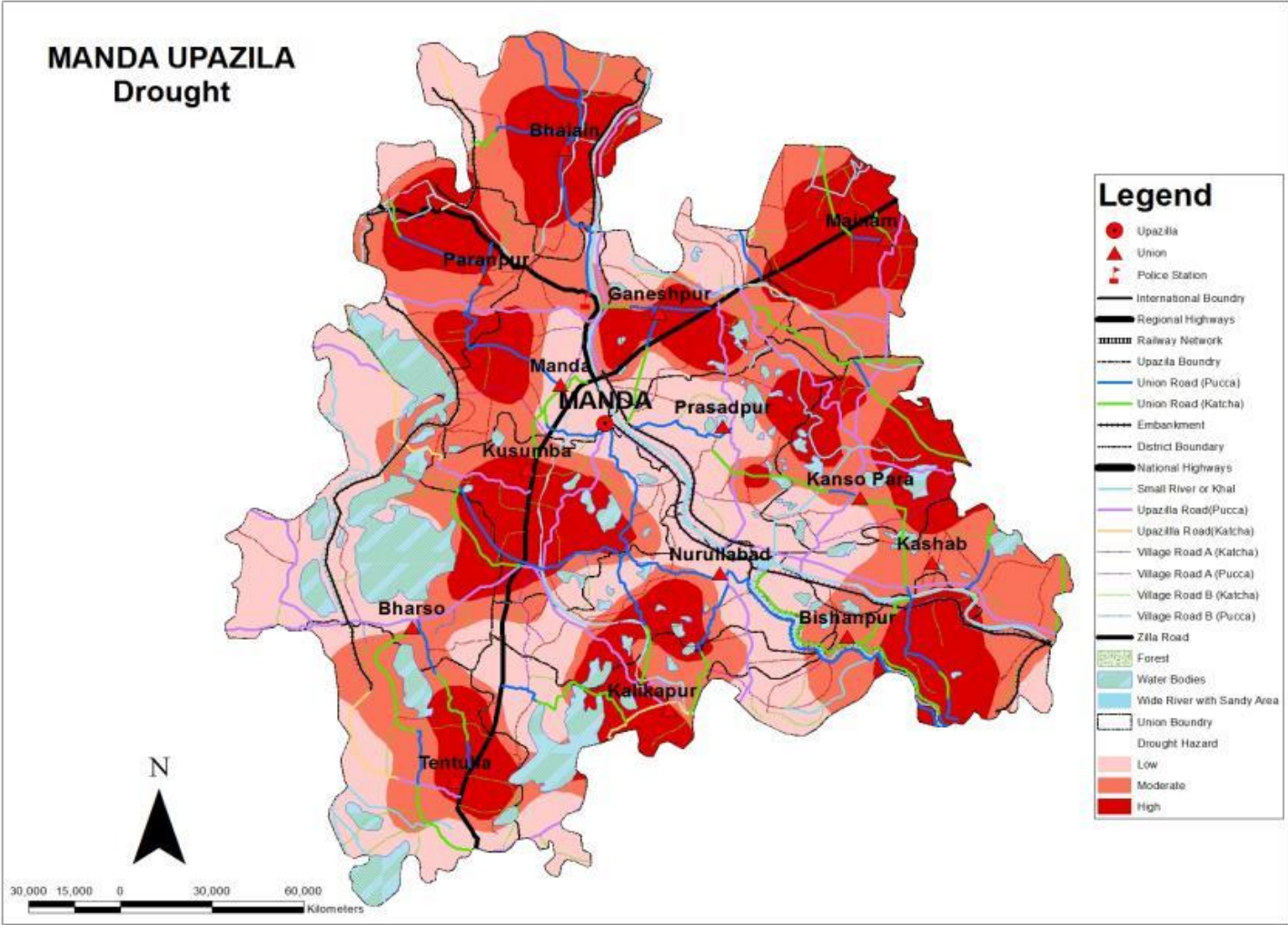
# Annex9



# Annex10

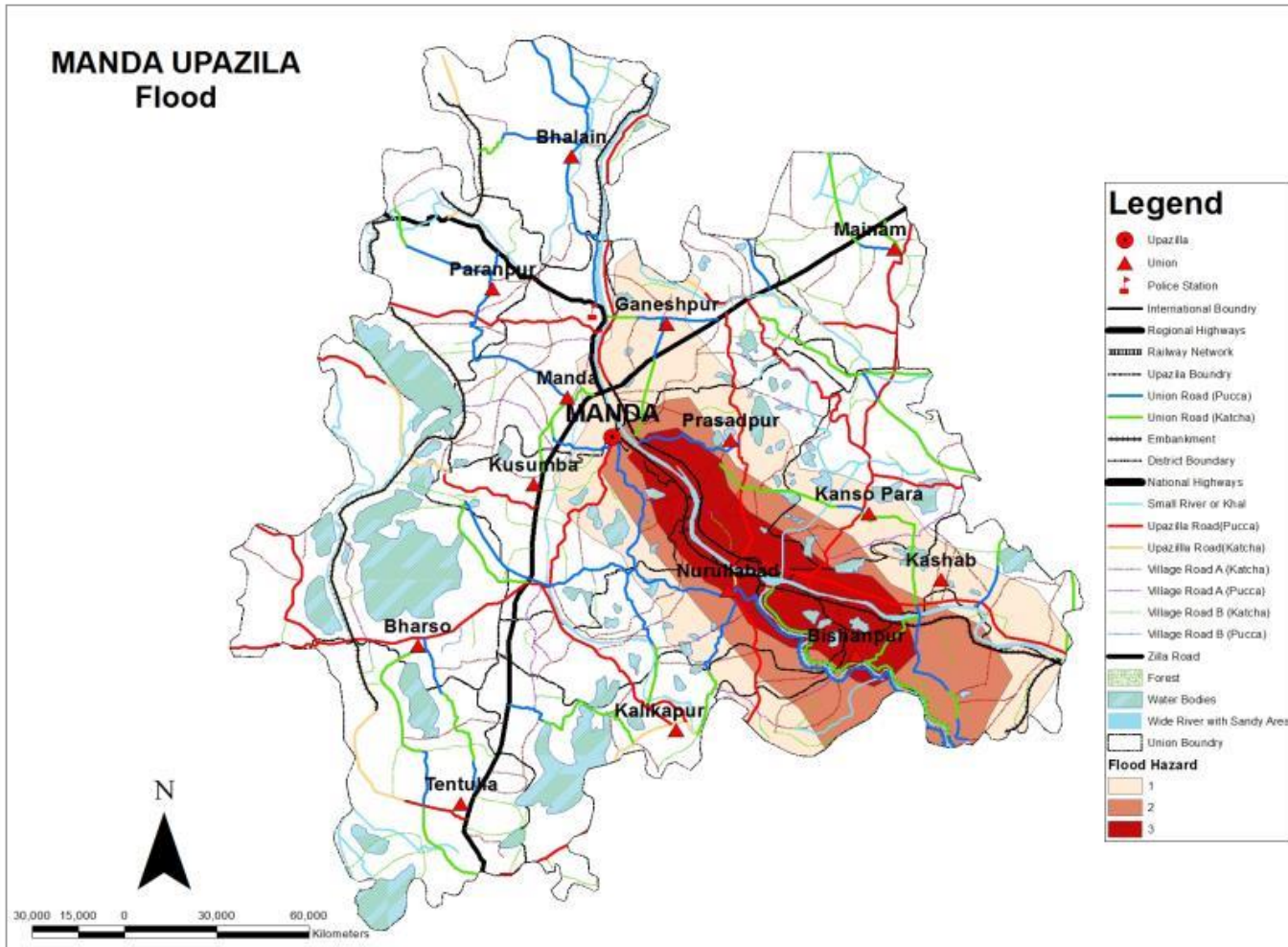


# Annex11

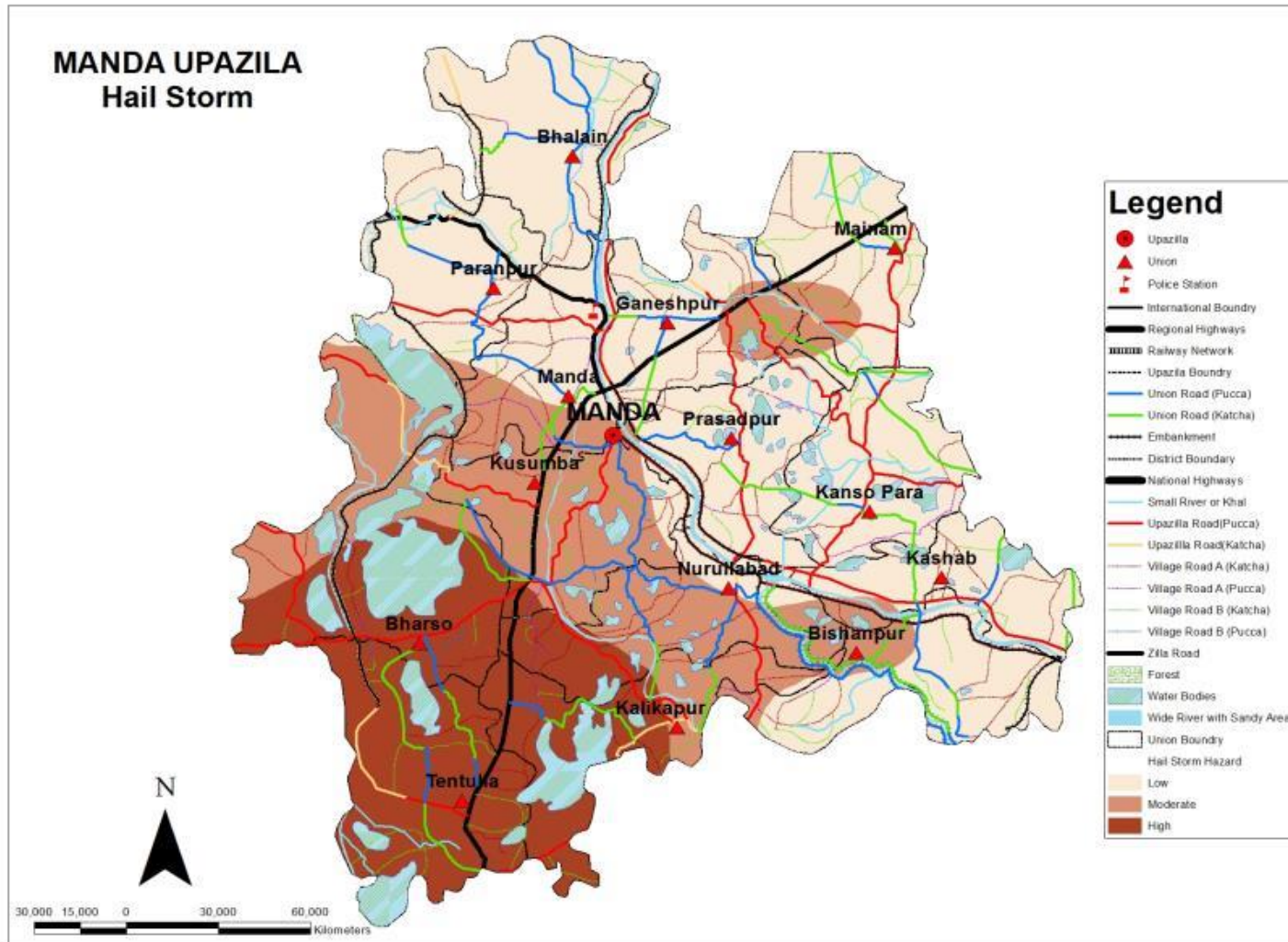




# Annex12

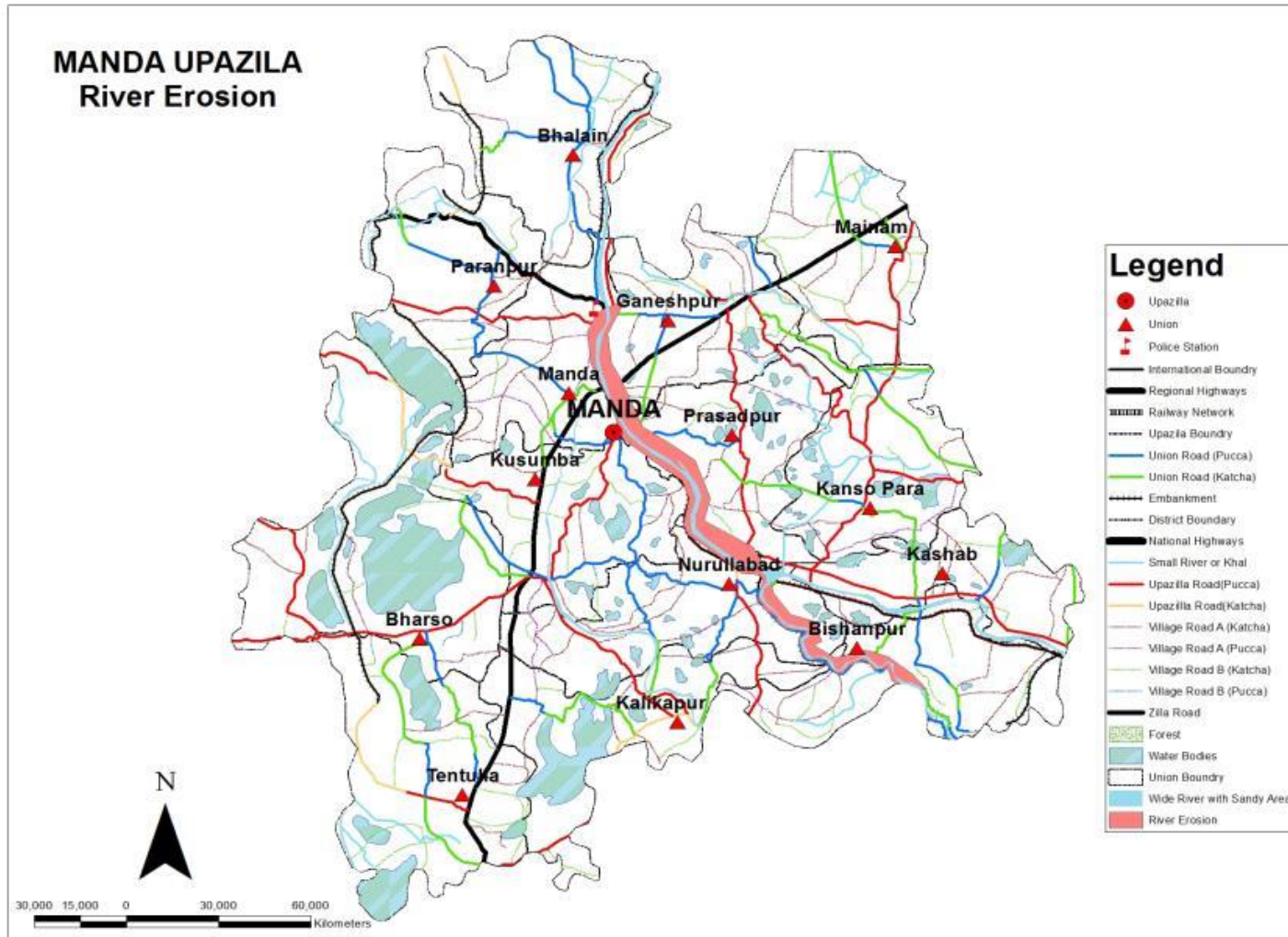


# Annex13

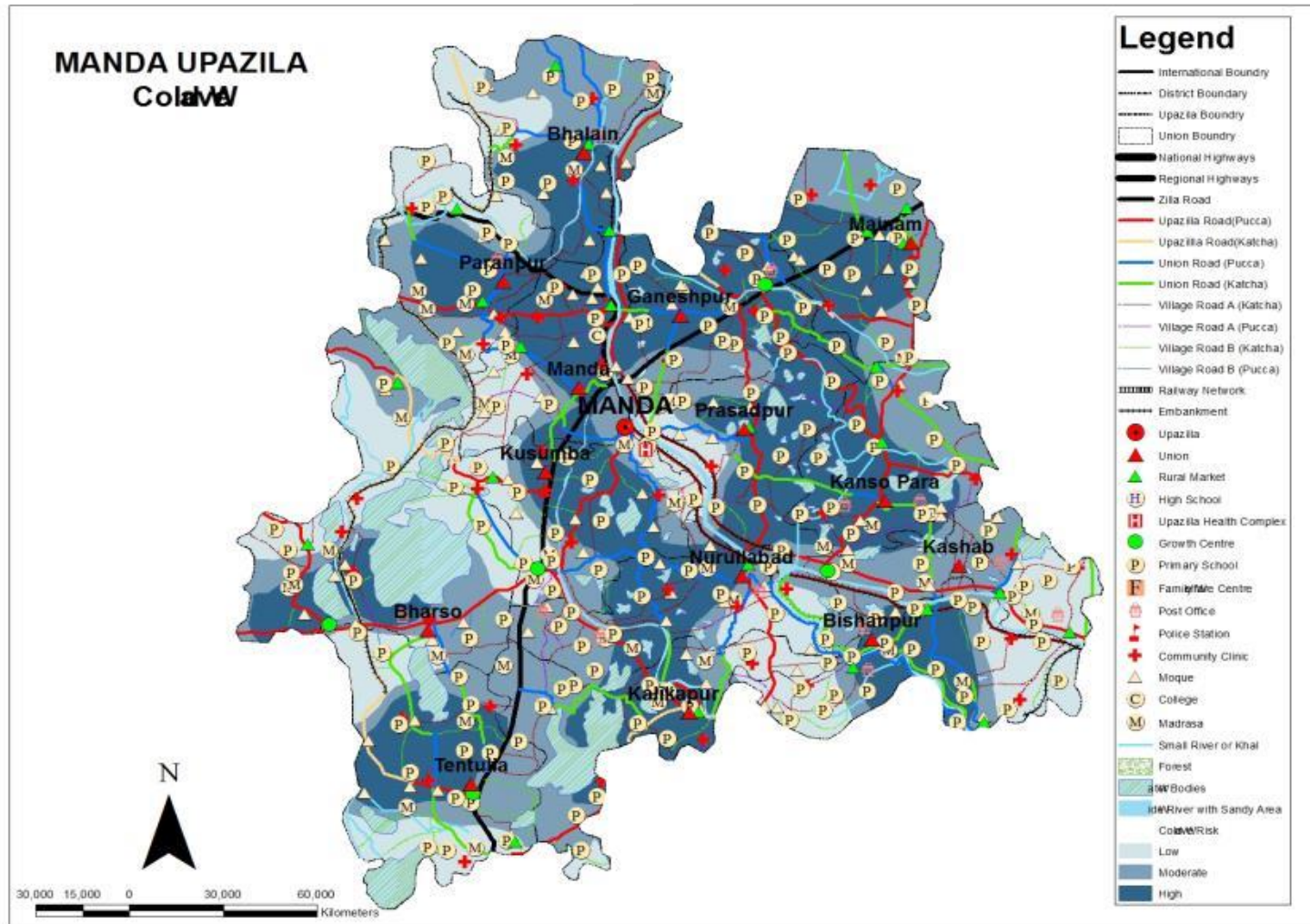




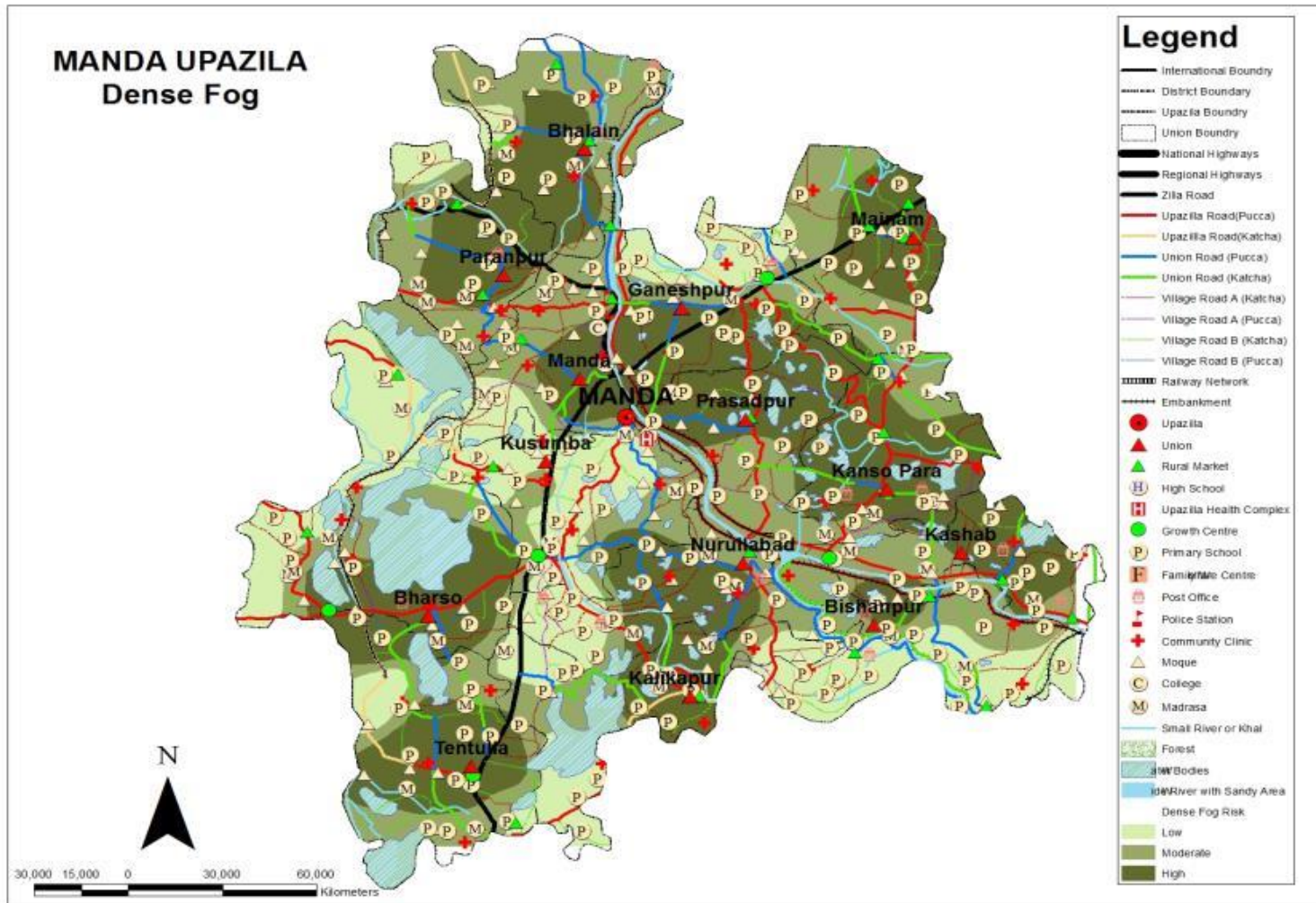
# Annex14



# Annex15

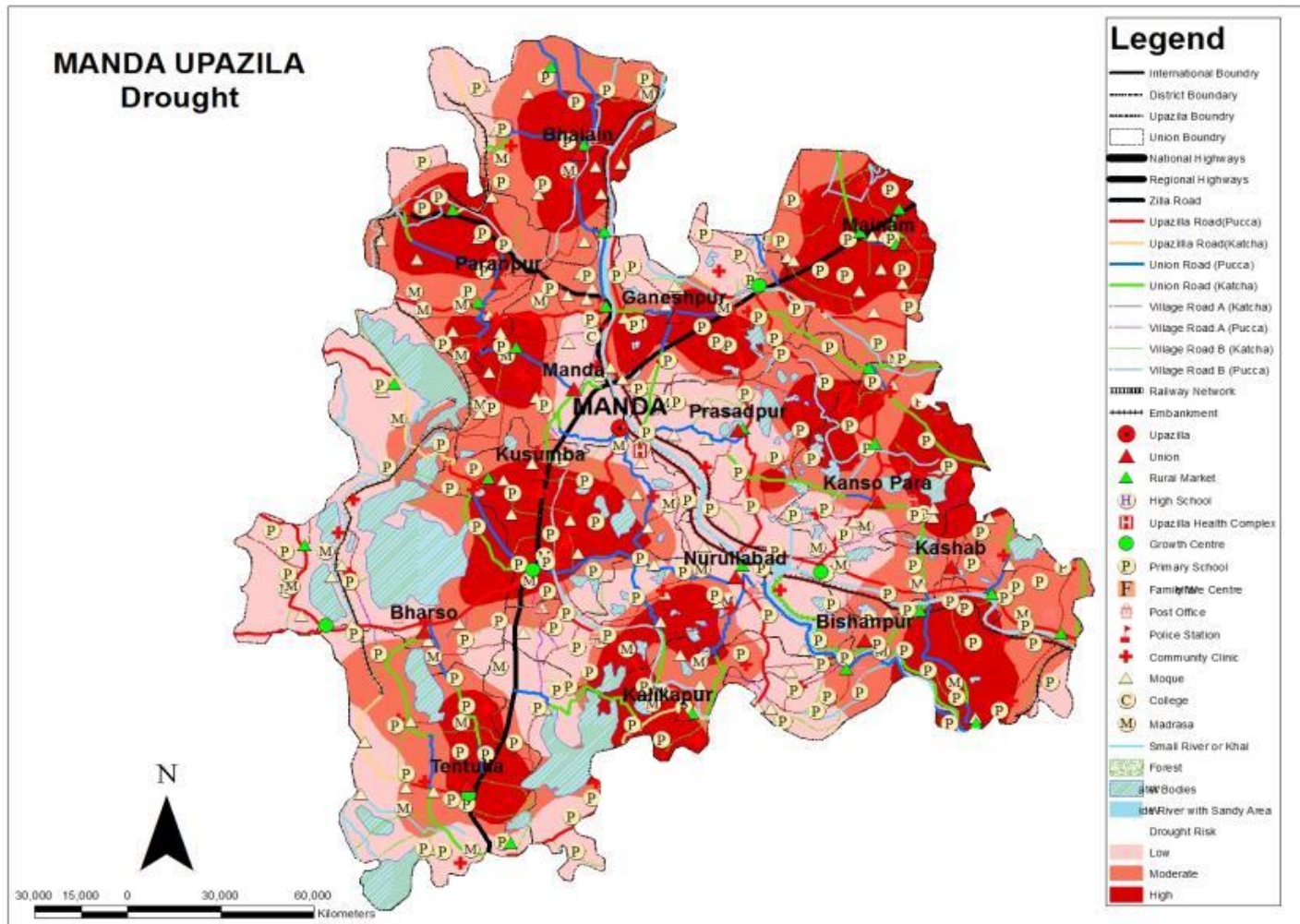


# Annex16

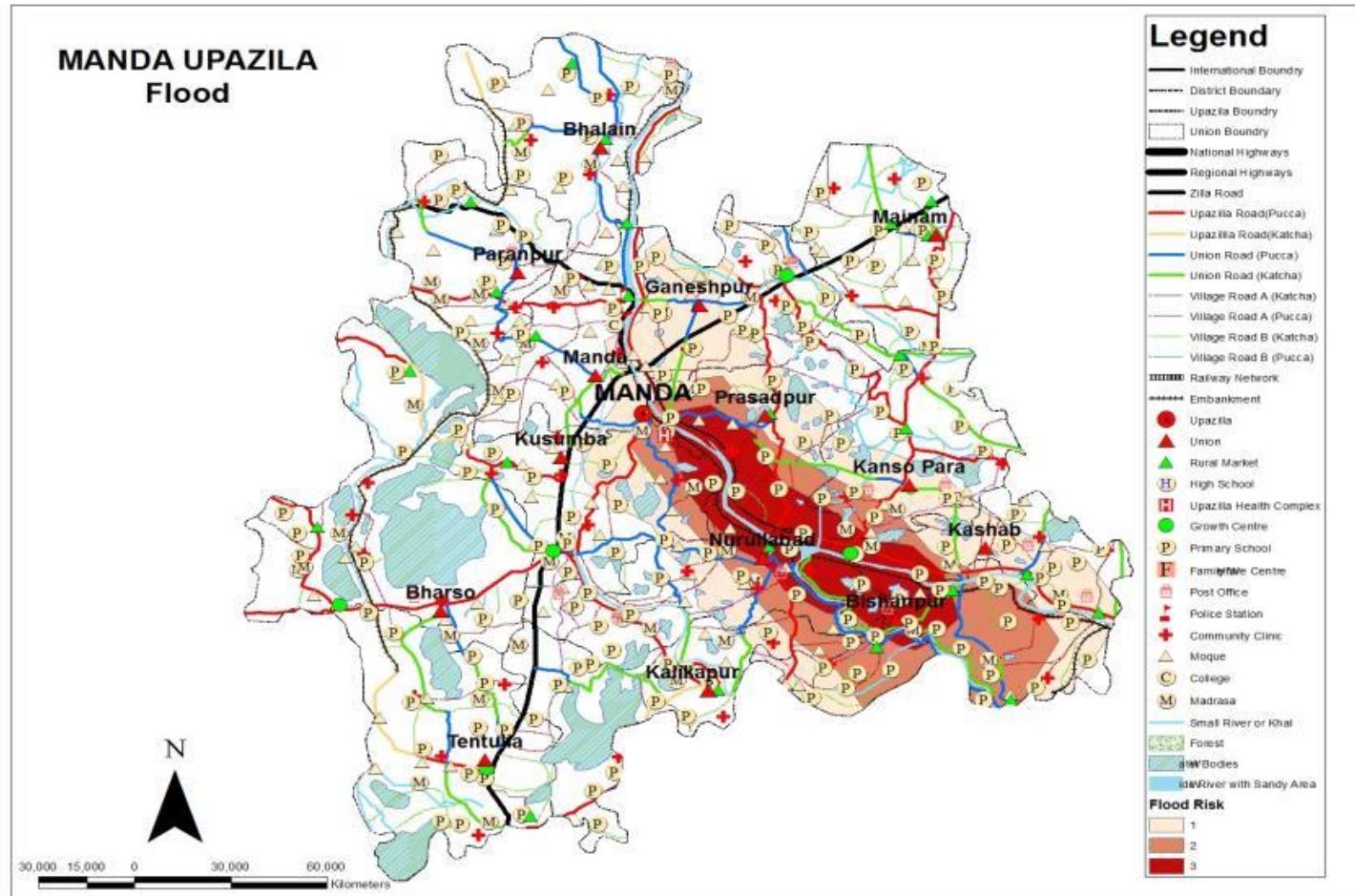




# Annex17

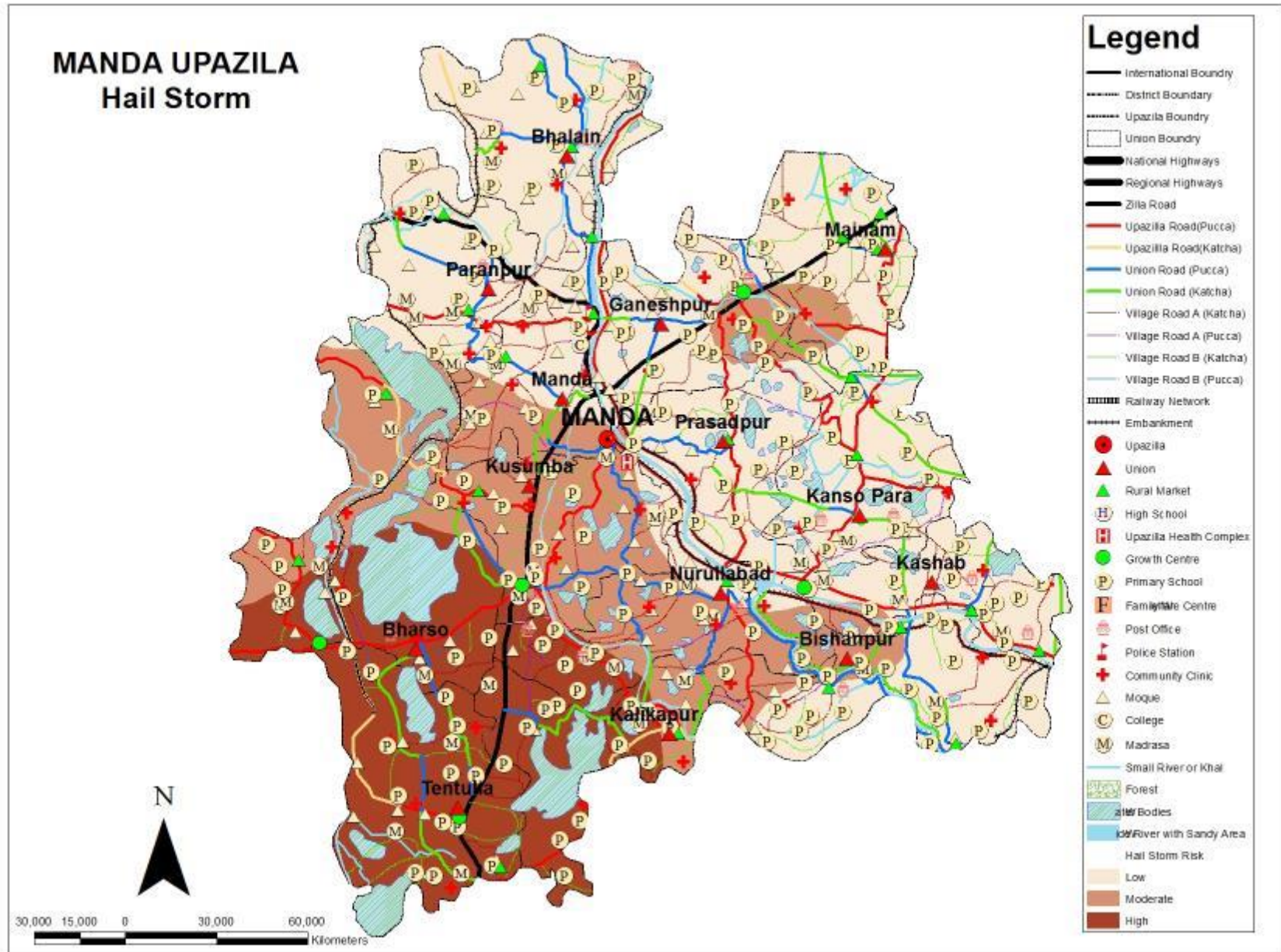


# Annex18





# Annex19



# Annex20

