Review and Consultation Workshop

Preparation of Multi-Hazard District Disaster Management Plan (DDMP)

Banka and Bhagalpur Districts: Dr. Shankar Dayal
Begusarai and Khagaria Districts: Dr. Madhubala

Venue: Ashoka Hall, Hotel Maurya, Patna, Bihar
06-07 January 2016

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Incorporation of suggestions during Inception Workshop

- District wise submission of Inception Report to BSDMA
- Common Framework for Inception Report
- Various thematic maps including hazard, vulnerability and risk from authentic sources
- Various aspects related to important historical heritage sites, and livestock getting affected due to disaster
- Consultation of key stakeholders in DDMP preparation process
Highlights of District level consultation

- Stakeholders consultation meetings held in all four districts - Banka, Begusarai, Bhagalpur and Khagaria under chairmanship of DM
- Participation of Officials from the concerned line departments in an interactive session
- Discussed about disaster situation in the districts
- Discussed about disaster preparedness, response and mitigation measures in the districts
- Discussed about DDMP preparation process
- Capacity and Need assessment of the stakeholders in a structured questionnaire format
- One to one consultation with concerned line departments
## Highlights of stakeholder consultations in 4 districts

<table>
<thead>
<tr>
<th>Stakeholders</th>
<th>Issues discussed</th>
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| Disaster Management Department| ▪ Disaster situation in the district and related issues- multi-hazard proneness of the district  
▪ Role of district administration in handling the disaster events  
▪ Level of disaster preparedness, response and mitigation in the current situation  |
| Flood Control Division        | ▪ Flood control measures and preparedness to handle the flood situation arisen due to bank cutting by the Kosi and Ganga Rivers in Bhagalpur. E.g. Engineering college, DPS and adjoining areas got affected due to bank cutting by River Ganga almost every year in Bhagalpur town |
| Police                       | ▪ Safety measures and security arrangements made to manage crowds during Shravani mela, Bausi mela, and mela near Teldiha in Banka and other districts.                                                         |
| PHED                          | ▪ Drinking water facilities available in the district and measures taken to facilitate drinkable water in the hand pumps during floods                                                                            |
| Telecom/BSNL                  | ▪ Communication situation during disaster e.g. flood and earthquake scenarios                                                                                                                                     |
| Deptt of Electricity          | ▪ Electricity supply and its restoration during pre and post disaster events                                                                                                                                       |
| Deptt of Fire Services        | ▪ Facilities available to tackle any situation arisen due to fire hazard                                                                                                                                           |
| Hospital                      | ▪ Medical facilities and preparedness in the hospitals for pre & post disaster events                                                                                                                              |
| PRIs/ULBs (Most vulnerable GPs/Blocks) | ▪ Conducted sample surveys in the most vulnerable Blocks to find out Hazard, Risk and Vulnerability of the affected areas in an structured questionnaire and through one to one interactions with the officials and people |
Field Visits and Stakeholder Meetings - Bhagalpur

Stakeholder Meeting at Bhagalpur

Flood vulnerable location: Bhagalpur Engineering College and DPS, Bhagalpur
Field Visits and Stakeholder Meetings - Bhagalpur

Flood Vulnerable location - Sahora village, Rangra Block, Bhagalpur

Flood vulnerable location - Madrauni Village, Rangra Block, Bhagalpur
Field Visits and Stakeholder Meetings- Khagaria

Stakeholder Meeting at Khagaria

Balha Khir, Chautham Block, Khagaria

Marar, Mansi Block, Khagaria
Field Visits and Stakeholder Meetings- Khagaria

Accident prone- People crossing river on boat- with the help of rope tied across the banks

Flood vulnerable location near Kosi River- Gogri block, Khagaria
Field Visits and Stakeholder Meetings - Begusarai

Stakeholder Meeting at Begusarai

“Raised platform” on embankment to keep vigil on water level rise in the river during monsoon, Bachhwara Block, Begusarai

Embarkment on River Ganga, Bachhwara Block, Begusarai
Field Visits and Stakeholder Meetings - Begusarai

Flood prone area, Amarpur, Begusarai

Field survey in Madhepura, Begusarai

Embankment, Teghra-Bachhwara Block, Begusarai
Field Visits and Stakeholder Meetings- Banka

Stakeholder Meeting at Banka

Hanumana Dam on River Badua, near Suiya Banka (Irrigation)

Odhani Dam on River Odhani, Banka
Field Visits and Stakeholder Meetings - Banka

Bausi mela site, Banka

Interaction with villagers in Banka
Arrangements made from District Administration to manage crowd/Kawarias during Shravani Mela at Katoria, Banka District

Guidelines from District Administration

Facilitation centre in camp

Medical facilities for the Kawarias during Mela in nearby hospital at Katoria

Police protection at the camp

Water Sanitation facility in the camp

Government Dharmshala available for the Kawarias during Mela near Katoria
Blocks visited

- **Banka**: Banka, Amarpur, Belhar, Bausi, Katoria, and Sambhuganj (6 out of 11 Blocks)
- **Begusarai**: Begusarai, Bachhwara, Teghra, Bhagwanpur, Barauni, Balia, Nao Kothi, and Birpur (8 out of 18 Blocks)
- **Bhagalpur**: Narayanpur, Bihpur, Kharik, Naugachhia, Rangra Chowk, Gopalpur, Sabour, and Pirpaintti (8 out of 16 Blocks)
- **Khagaria**: Khagaria, Chautham, Mansi, Gogri, and Parbatta (5 out of 7 Blocks)
## Highlights of Activities undertaken in the districts

<table>
<thead>
<tr>
<th>Important Aspects</th>
<th>Activities Undertaken</th>
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</table>
| HRVCA             | - Identification through field visits, and consultations  
                    - Sensitization through consultation  
                    - Seeking response/feedback through structured questionnaire  
                    - Index-based analysis and GIS mapping at Gram Panchayat level |
| Environment & CCA | - Assessment of climate data and measures for CCA |
| Prevention        | - Consultation of stakeholders to understand prevention measures taken |
| Preparedness      | - Consultation of various line departments/ stakeholders to understand preparedness |
| Mitigation, Risk  | - Consultation of various stakeholders/line departments |
| Reduction, Response, Relief | |
| Recovery (Short, Medium & Long Term) | - Consultation of stakeholders/line departments at district and State levels |
| Rehabilitation    | - Consultation of concerned stakeholders; |

### Cross – cutting Issues

<table>
<thead>
<tr>
<th>Training &amp; Capacity Building</th>
<th>Consultation of concerned line departments/ stakeholders through structured questionnaire</th>
</tr>
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<tbody>
<tr>
<td>Gender</td>
<td>Consultation of stakeholders and through local surveys</td>
</tr>
<tr>
<td>Differently Abled</td>
<td>Consultation of stakeholders and through local surveys</td>
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</table>
List of Hazards districts face

- Flood
- Drought
- Earthquake
- Strong winds/Cyclone
- Cold waves/Heat strokes
- Fire
- Crowd/Stampede
- Road/Rail Accidents
- Epidemic
- Industrial/Chemical Hazards
- Lightning
GIS Maps for Begusarai district
GIS Maps for Begusarai district

Source: NBSS & LUP, Kolkata
GIS Maps for Begusarai district
GIS Maps for Begusarai district

FLOOD INUNDATION MAP
BEGUSARAI DISTRICT

Legend
- District Boundary
- Block Boundary
- GP Begusarai
- River/Stream
- Flood Depth:
  - 1m
  - 2m
  - 3m
  - 4m
  - 5m
  - 6m

SEISMIC MAP
BEGUSARAI DISTRICT

Legend
- District Boundary
- Block Boundary
- Earthquake Risk Zone:
  - ZONE IV: High Damage Risk Zone (MSK IX-VIII)
- Historical Epicenter (Within 100 km)
- Fault Type:
  - Neo-Tectonic Fault
  - Subsurface Fault

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GIS Maps for Begusarai district
GIS Maps for Begusarai district

**Legend**

- **District Boundary**
- **Block Boundary**
- **GP Boundary**

**Flood Vulnerability**

- HIGH <11
- MEDIUM 11-7
- LOW<7

**Drought Vulnerability**

- HIGH <11
- MEDIUM 11-7
- LOW<7

**FLOOD RISK ASSESSMENT MAP BEGUSARAI DISTRICT**

**DROUGHT RISK ASSESSMENT MAP BEGUSARAI DISTRICT**
GIS Maps for Begusarai district

**Legend**

- **District Boundary**
- **Block Boundary**
- **GP Boundary**

**Earthquake Vulnerability**
- HIGH <11
- MEDIUM 11-7
- LOW <7

**Fire Vulnerability**
- HIGH <11
- MEDIUM 11-7
- LOW <7

EARTHQUAKE RISK ASSESSMENT MAP BEGUSARAI DISTRICT

FIRE RISK ASSESSMENT MAP BEGUSARAI DISTRICT

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GIS Maps for Begusarai district

Legend

District Boundary
Block Boundary
GP Boundary

Cold Waves Vulnerability
HIGH <11
MEDIUM 11-7
LOW<7

COLD WAVES RISK ASSESSMENT MAP
BEGUSARAI DISTRICT

Legend

District Boundary
Block Boundary
GP Boundary

Industrial Vulnerability
High <11
Medium 11-7
Low<7

INDUSTRIAL RISK ASSESSMENT MAP
BEGUSARAI DISTRICT
GIS Maps for Begusarai district

**ROAD RISK ASSESSMENT MAP BEGUSARAI DISTRICT**

**EPIDEMIC RISK ASSESSMENT MAP BEGUSARAI DISTRICT**
GIS Maps for Begusarai district
GIS Maps for Begusarai district

Legend

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Population Density (person/sqkm)

- Very Low
- Low
- Medium
- High
- Very High

GRAM PANCHAYAT
POPULATION DENSITY MAP
BEGUSARAI DISTRICT

Legend

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Water Sources

- Tap Water
- Hand Pump
- Tube Well
- Well
- River Canal
- Tank/Pond/Lake

WATER SOURCES
BEGUSARAI DISTRICT
GIS Maps for Begusarai district
Highlights of HVCA

- **Earthquake:**
  - Construction quality of the residential buildings, particularly the traditional semi-pucca and pucca houses don’t follow engineering standards and are vulnerable to earthquake.

- **Flood:**
  - Flood mitigation measures include several initiative in the upstream of the river and construction of embankments along the river in the districts.
  - Map shows the embankments within the district and the level of vulnerability of blocks/GPs due to flood hazard.
  - Casualties reported during flood are mostly to boat accidents and due to snake bites.
Drought:
- Change in rainfall pattern affects crop yield in the districts particularly less rainfall during Rabi season
- Districts have Agriculture Contingency Plans focusing on flood and drought

Cold waves:
- Districts experience severe cold wave conditions during winter months
- Casualty mostly among poor people living in kutcha houses who are less protected

Wind Hazard:
- Begusarai, Bhagalpur and Khagaria lie in High Damage Risk Zone (wind velocity 169 km/h)
- SW part of Banka lies in Moderate Damage Risk Zone (Wind velocity 140 km/h) and rest part lies in High Damage Risk Zone
Fire Hazard:
- As per fire risk assessment of “Fire Hazard and Risk Analysis in India” for revamping the Fire Services in the Country, Bihar report, MHA, 2012, most parts of these districts fall in “very high risk zone” based on population density, residential and industrial built up.
- Fire stations numbers and functioning needs to be strengthened

Epidemics:
- Prevalence of conducive situation for water and vector-borne diseases due to waterlogging from continuous rain and flood conditions
- No major outbreak of diseases in districts in recent past probably due to non-conducive temperature for pathogens to multiply in monsoon months

Industrial/ Chemical hazard:
- Begusarai district is prone as oil refineries, fertilizers, and other industries are in Barauni Block
Stampede- Hazard due to overcrowding:
- Various melas and festivals in the districts can lead to stampede e.g. Shravan mela, Bausi mela, Teldiha mela, Chhatha Puja, etc.
- Crowd management planning needs to be strengthened with all supporting infrastructure and services

Rail/Road accidents:
- NH and State Highways in the districts pass through the inhabited areas
- These stretches having dense trees and turnings reduce the visibility which lead to many fatal accidents every year
- These stretches need to be illuminated and trees should be pruned in order to reduce its proneness to road accidents
- Accident prone rail stretches should be manned

Lightning:
- Installation of “Tarit Chalak” on high rise buildings to reduce the impact
आपदा नहीं हो भारी।
यदि पूरी हो तैयारी।

Thank you