**Integrating Disaster Risk Reduction (DRR) and Climate Change Adaptation (CCA)**

*Understanding Flood Risk and Resilience in Eastern India*

**Workshop report**

**Date:** 10th October 2012

**Department:** Tube well Division, Saryu Nahar Division, Irrigation Department, Uttar Pradesh

**No. of participants:** 16

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1. **ORGANOGRAM OF DEPARTMENTS**
2. **Irrigation Department**
3. **Tube well Division**
4. **Saryu Nahar Division**
5. **ROLES AND RESPONSIBILITIES**

According to the structure, the roles and responsibilities are the officers under different departments are as follows:

1. **Irrigation Department**
2. **Chief Engineer:** Administrative work at the division level
3. **Superintendent Engineer (Administrative):** Administrative work at thecircle level
4. **Executive Engineer:** Execution of work at the division level
5. **Assistant Engineer:** Execution of **a**dministrative work at the sub-division level:
* Design
* Work execution
* Revenue
1. **Junior Engineer:** Execution of work at the development division level
2. **District Revenue Officer:** Execution of revenue related work related and supervision of illegal activities
3. **Jiledar:** Maintaining the revenue records at the Tahsil
4. **Amin:** Work related to revenue and supervision of irrigation with the help of Sinchpal
5. **Sinchpal:** Supervision of irrigation and maintenance of area level irrigation records
6. **Tube well Division**
7. **Superintendent Engineer:** Execution of work orders received from the department and district level, looking after administrative works, etc.
8. **Executive Engineer:** Execution of work orders received from Superintendent Engineer in the division, giving directions to the Assistant Engineer and Junior Engineer to carry out financial and administrative responsibilities, supervision of tasks related to tube well management and maintenance**.**
9. **Assistant Engineer:** Execution of the orders received from Executive Engineer; giving orders to the junior officials under him to look after works related to repair of defunct tube wells and motor/pumping sets, irrigation, water distribution process, etc.
10. **Junior Engineer:** Execution of work at the development division level
11. **Section Mistry:** Tasks related to repair and maintenance of tube wells, lifting and lowering of sets, etc.
12. **Jiledar:** Supervision of tube well irrigation at the sub division level
13. **Amin:** Maintenance of tube wells in his area and informing about the same to sub division level officials.
14. **Tube well Operator:** Management of tube wells, supervision of irrigated areas, maintenance of tube wells, send information regarding defunct tube wells to sub division level officials, documentation of irrigation area.
15. **Saryu Nahar Division**
16. **Executive Engineer:** Execution ofadministrative works related to the district level Saryu Nahar Division
17. **Assistant Engineer:** Designing and monitoring of tasks
18. **Junior Engineer:** Execution and supervision of tasks
19. **Sub Revenue Officer:** Revenue related tasks and controlling
20. **Jiledar:** Irrigation and land acquisition related tasks
21. **Amin:** Irrigation and land acquisition related tasks
22. **Sinchpal:** Addirrigation details
23. **DEPARTMENTAL REPORTING MECHANISM (TOP TO BOTTOM AND BOTTOM TO TOP)**

In all the departments, the flow of information and work orders take place either from top to bottom or bottom to top depending upon departmental structure.

1. **FACTORS WITHIN THE REGION THAT CONTRIBUTE TO RESILIENCE OR EXACERBATE VULNERABILITY**
2. **Impact of Flooding (1998/2008/10)**

|  |  |  |
| --- | --- | --- |
| Irrigation Department | Tube well Division | Saryu Nahar Division |
| * Canals are generally made up of mud which gets easily damaged because of rains and floods
* Service road gets damaged
* Illegal tapping of irrigation resources by putting up a bore near the canal
* Floods cause deposition of silt in the canals due to which the irrigation capacity of the canals are being lost
* Irrigation canals are full of silt reducing water carrying capacity of canals and hence water is not reaching till the tale
 | * The pipelines stop functioning because of the mud around the branch-lets of canal (*gool*) is removed.
* The water distribution process happens through pipelines and pakka canals which get damaged in times of floods
 | * The structural design for the construction of canals is prepared on the basis of departmental orders
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1. **Causes of physical infrastructure damage**
2. Quality – Yes
3. Design – Yes
4. Codes of construction – Yes
5. Maintenance – Yes
6. Lack of preparedness/prevention – No
7. Lack of prior information on arrival of flood – Yes
8. Lack of redundancy and flexibility – Yes
9. Lack of knowledge – Yes
10. Lack of coordination between departments – Yes
11. Availability of resources (human and kind) – Yes
12. **Changes in pattern and extent of damages in the projected climate scenario**

The effects of climate change and its frequency will go on becoming severe.

1. **PRIORITIZE THE FACTORS BETWEEN**

|  |  |  |  |
| --- | --- | --- | --- |
| Disaster | Priority | Problems | Suggestions |
| Flood/erratic rainfall | **System** | * Continuous and heavy rainfall leads to destruction of branch-lets of canals
* Canal breaks when excess rainwater enters into it
 | * Irrigation or water distribution process through pakka canals near the tube wells is more effective
* These problems can be overcome by changing certain policies and executing them strictly
 |
|  | **Agents** | In water inundated areas, in-letting the excess water by cutting the canals and channelizing the water through canals lead to deposition of large amounts of silt in the canal. This causes problems in regulation |  |
|  | **Institutions** | * Continuous and heavy rains erodes the mud around the branch-lets of canals
* At some places, heavy rainfalls lead to water logging in the villages due to which the canal requires to be closed and opened from some other area. This adversely affects irrigation
 |  |
| Long dry spells and increased temperatures with hot winds | **System** | * Depletion in the groundwater levels due to which the discharge from tube wells is decreased
* Low electricity voltage because of which the tube wells get defunct
 | * These problems can be overcome by changing certain policies and executing them strictly
 |
|  | **Agents** | * In the *Kharif* season, the pipelines are destroyed at some places by the farmers
* Due to late monsoon, farmers are unable to sow crops in time
 | In order to deal with problems like increased temperatures and erratic rainfall patterns, farmers will have to adopt alternative techniques like improvement in crop cycles, mixed farming, cultivation of crops that require less water input |
|  | **Institutions** | * At times, the construction work goes on for long time due to which the area does not get irrigated appropriately
* In times of drought, the groundwater table depletes because of which the discharge from tube wells also decrease
 | * The construction work should be well planned and executed and should be according to the particular area
* Arrangement of additional pipe lines should be done according to the particular area
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1. **DEVELOPMENT PROGRAMMES BEING IMPLEMENTED BY THE DEPARTMENT**

Construction of canals and its appropriate management for providing irrigation facilities; provision of tube wells in areas where canals cannot be constructed and management of these tube wells so that they could be efficiently used for irrigation requirements

1. **HOW IMPLEMENTED PROGRAMMES CAN REDUCE THE VULNERABILITY – ACTIONS NEEDED**
2. Capacity building of key players – Yes
3. Access to resources – human/knowledge/financial can be improved – Yes
4. Inter linkages between various departmental programmes/schemes – Yes
5. Need some exposure – Yes
6. Best practices documentation – Yes
7. **SPECIFIC POLICY INNOVATIONS**
8. Modification in their departmental practices
9. Rules and regulations
10. Laws
11. Policies
12. Reporting mechanisms
13. **ACTION PLAN**
14. Considering the geographical and environmental situation of an area, it is important to place bans and restrictions on cultivation of water-intensive crops such as *afeem,* etc.
15. Diversity in cropping systems should be strictly implemented
16. The structural designs of various infrastructures which are related to canals are done as per the orders of respective departments. These infrastructure should also be made earthquake proof
17. As a mechanism to adapt to drought and flood situations, various rivers should be joined so that they prevent floods and help in increasing the groundwater table levels
18. It is important to have convergence between various departments in order to prevent encroachment

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