

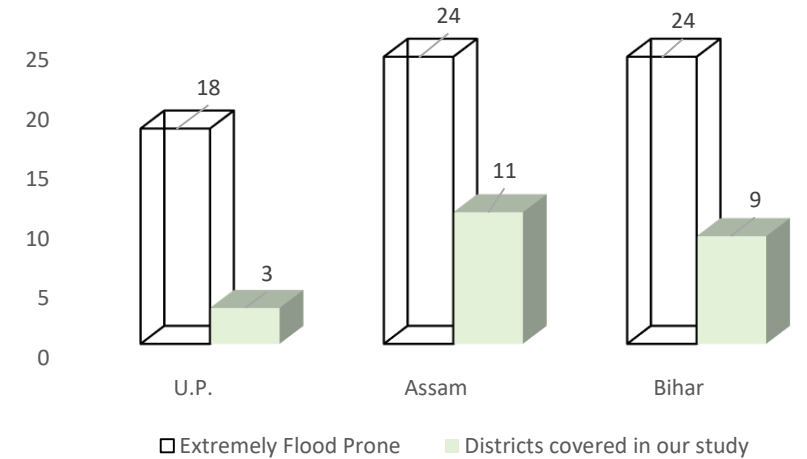
Floods and Eastern India

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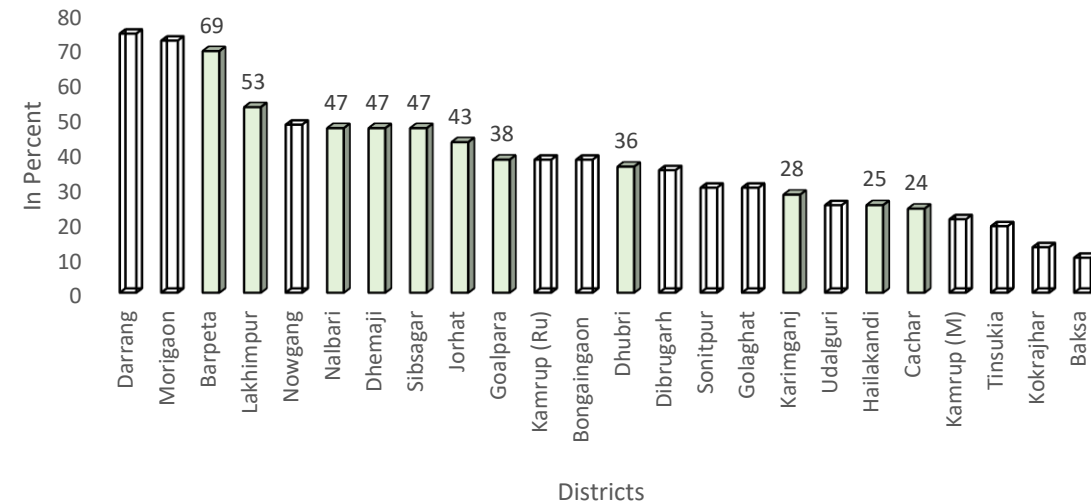
Recurrent Flood Prone Areas

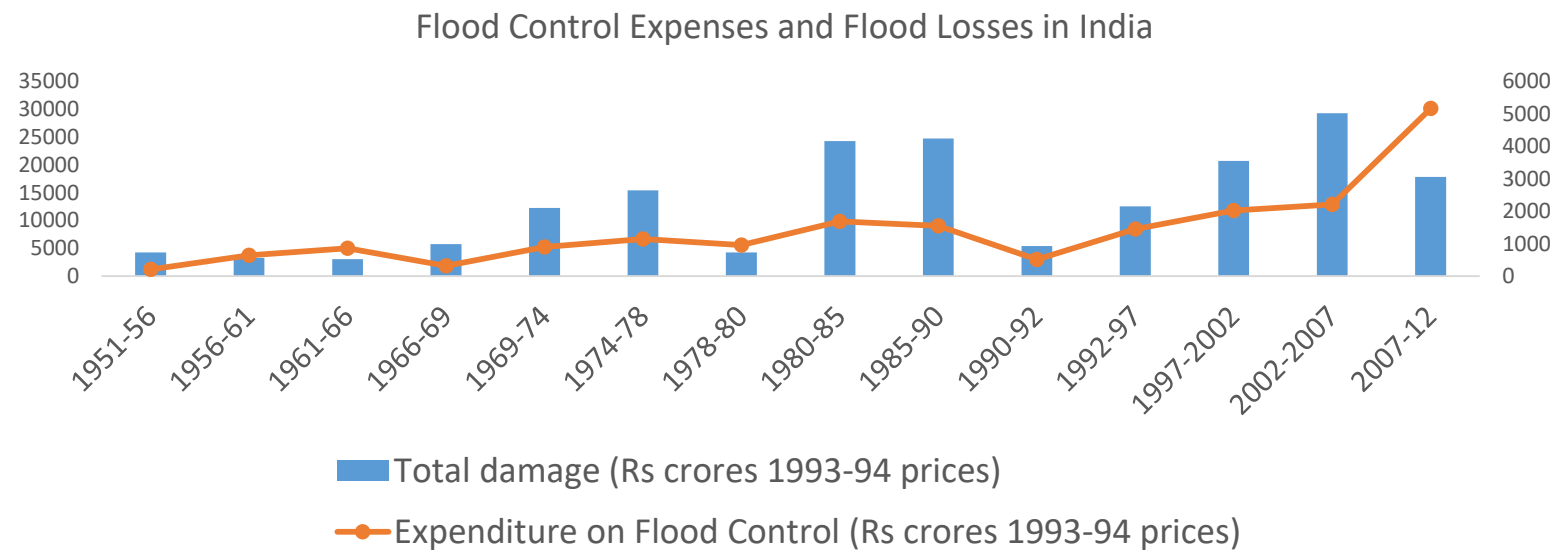
- Between 1953 and 2010 flood damage annually in the range of INR 18 billion (Planning Commission, Gol 2011).
- U.P., Bihar, Assam and West Bengal together 17% geographical area but 47-52% of total flood prone area of India
- 40-70% area in U.P., Bihar, Assam and West Bengal are flood prone
- Around 66 districts in U.P., Bihar and Assam are extremely flood prone

Flood Prone Districts



Area Prone to Flood Hazard in Assam (in Percent)





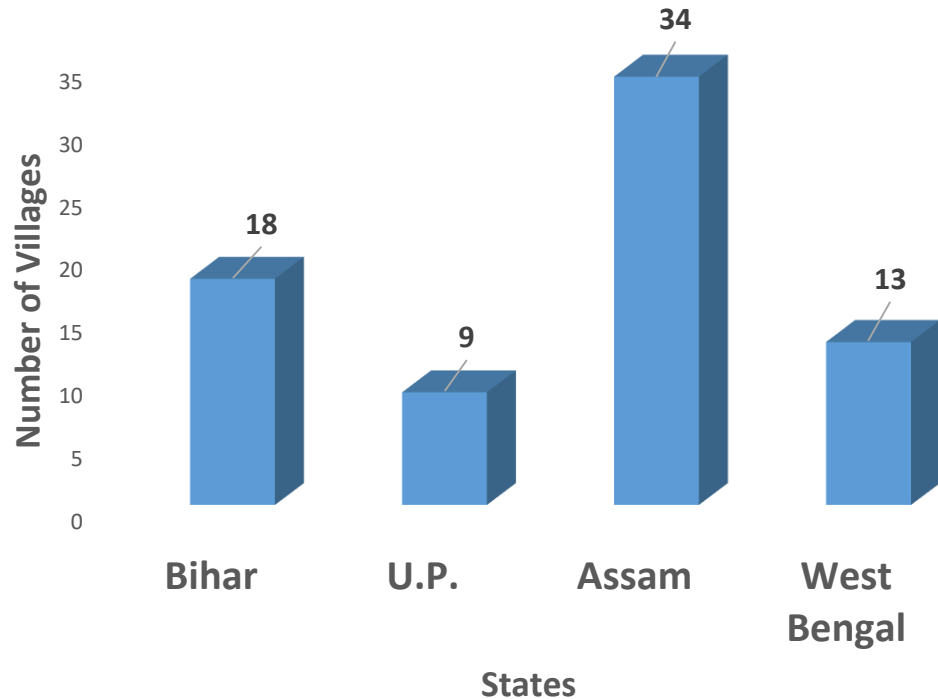
Expenditure has increased and so does the flood damages!

Objective

- To obtain an understanding of the nature of problems posed by floods to people living in diverse regions within the flood plains
- To come up with a tentative list of possibly programmable activities to help the communities affected by the floods

Methodology

Geographical Coverage



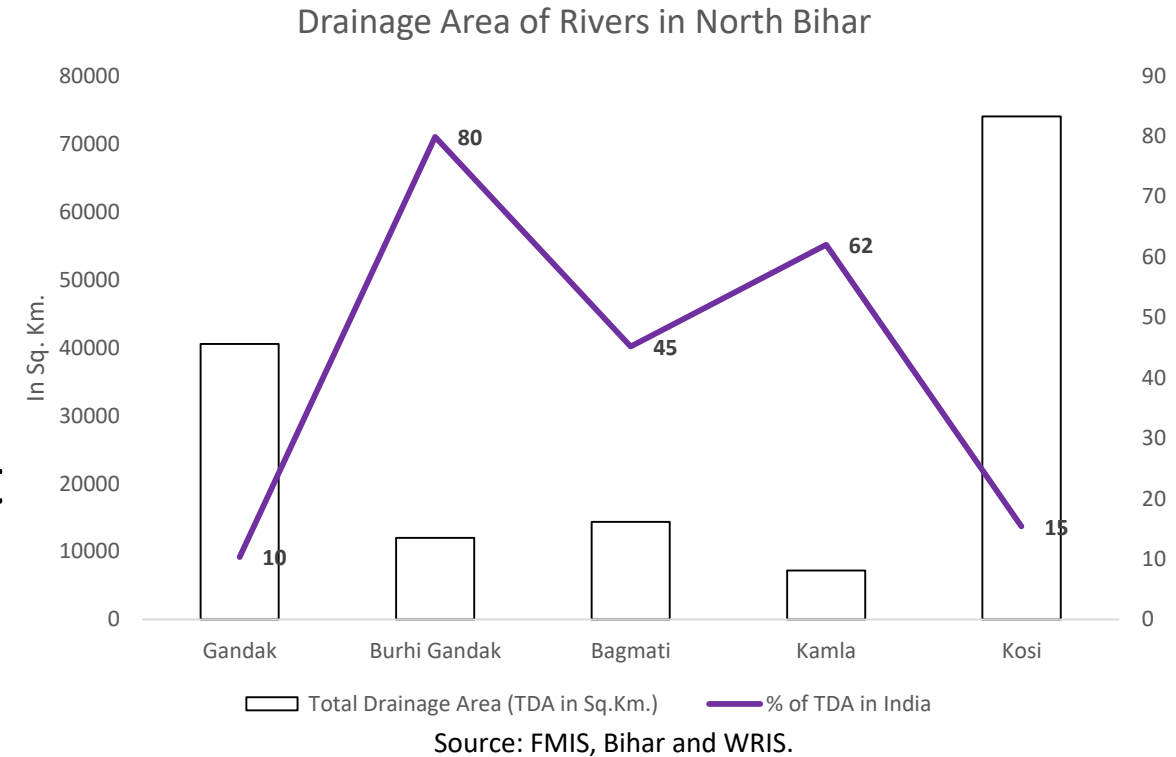
Altogether consultation with around 400 people

- Research design: Exploratory and concurrent mix-method (Creswell 2008)
- Sampling: A combination of purposive and snowball sampling (Patton 1990)
- Methods used to collect data: Photo documentation, semi-structured personal interviews and Focus Group Discussions (FGD)

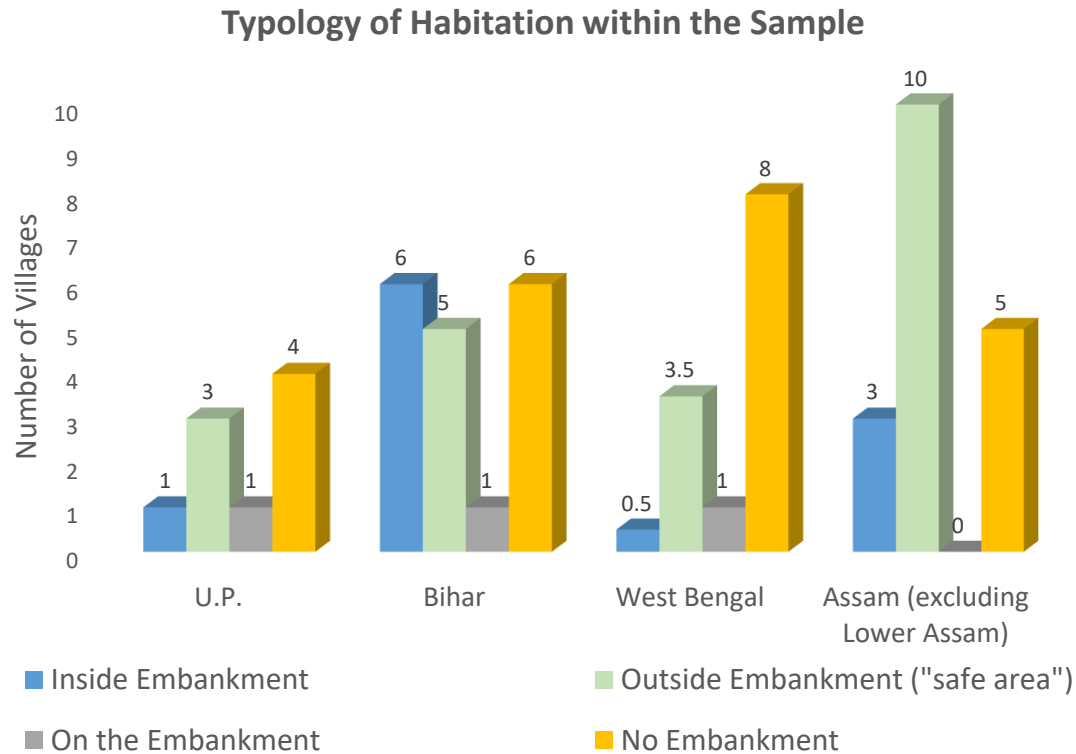


Why Floods?

- Sharp drop in elevation over a short distance, high sediment load and siltation of river bed: geomorphological feature of Himalayan rivers
- Large volume of water coming into wide, shallow and braided channels would result in over-topping of channels => inundation of the adjoining flood plains
- Significant portion of the catchment/drainage area could be outside India
- Anthropogenic challenges accelerate the problem.



Typology of Situations



- Around 60% of the embankments are located in U.P., Assam, West Bengal and Bihar (GoI 2011).
- Embankments can be seen along the North Bank of Brahmaputra, along Subansiri, Pagladiya, Kosi, Bagmati, Gandak, Teesta etc
- Smaller rivers, tributaries not embanked.
- Habitations are everywhere, even – unofficially – inside the embankment



Type of Water Hazards

Problem Intensity	Inside embankments	On embankments	Outside but close to embankments	No embankments
Flash flood – quick and destructive	Serious	Limited	Serious, in case of breach	Possible but less frequent
<i>Sailaab</i> kind of flood	Limited	Limited	Yes	Yes
Waterlogging	Limited	Limited	Yes	Yes
River Bank Erosion	Serious	Limited	Limited	Serious
River changing course	Serious	Limited	Serious	Serious

Typology of Water Hazards in Flood Prone Areas



Problems in Life and Livelihoods

Problem Intensity	Inside embankments	On embankments	Outside but close to embankments	Rivers with no embankments
Sand-cast on farm lands	Possible	No farm lands	Very Possible	Limited
Damage to standing crops	Serious	Limited, but no farm lands	Serious	Limited
Loss of income from animal husbandry	Yes	Yes	Yes	Limited
Being marooned for a long time	Serious	Serious	Possible	Limited
Breakdown in Communication	Serious	Serious	Limited	Limited

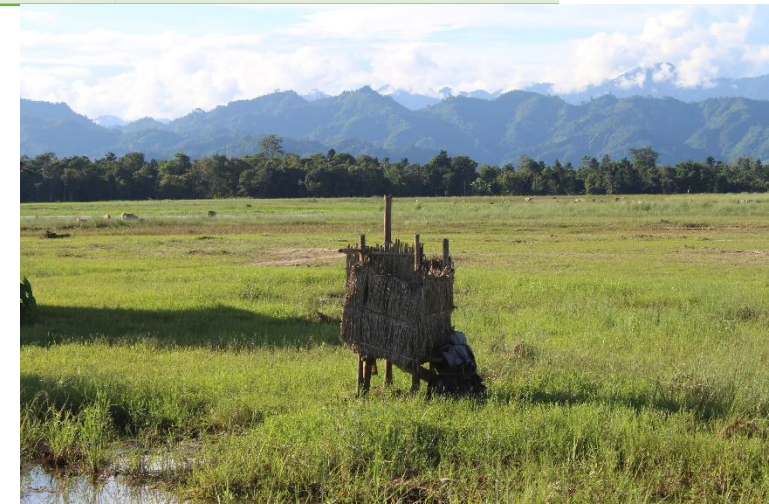
Adverse effects of water related hazards in flood prone areas



Problems in Life and Livelihoods

Problem Intensity	Inside embankments	On embankments	Outside but close to embankments	Rivers with no embankments
Discontinuity in Schooling	Yes	Yes	Yes	Limited
Drinking Water and Sanitation	Yes	Yes	Yes	Yes
Housing	Yes	Yes	Yes	Yes

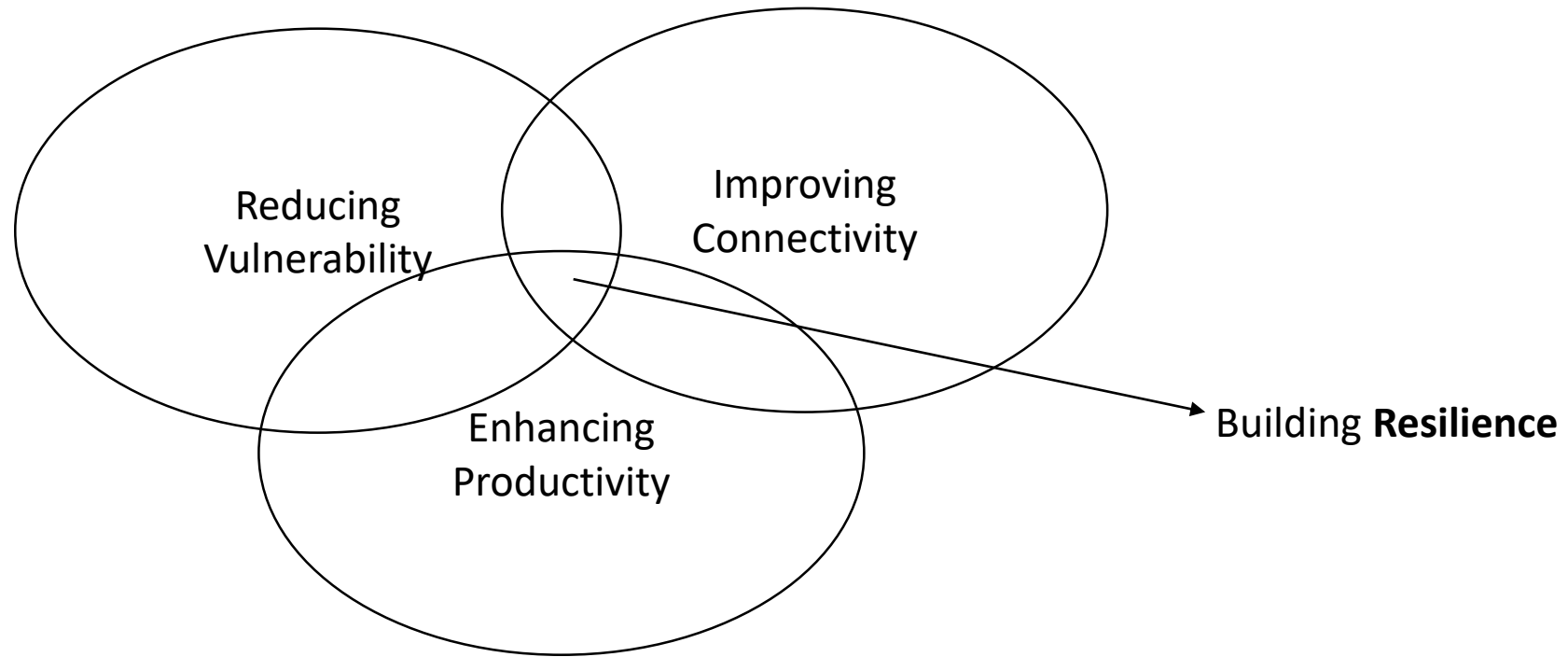
Adverse effects of water related hazards in flood prone areas



Who suffers the most?

- Gender insensitivity comes to fore during floods: open defecation without privacy
- Assisting women during their reproductive cycle is not even articulated
- Poor sanitation and hygiene results in gynaecological morbidity.
- Landless people get further impoverished (hand-to-mouth) with limited agriculture labour demand
- High dependence on relief materials and moneylenders to survive

Need to build Resilience



Most effective to focus on a **specific area** with an **integrated implementation approach** with the goal of **building resilience**.

Specific Areas of Action: Sanitation and Drinking

- **Raised** hand pumps which will remain above flood waters
- Promoting individual filtered water bottles as introduced by *Swachh*
- **Raised** toilets and bathing spaces for women



Specific Areas of Action: Health and Hygiene

- Construction of **private and secure spaces for women** to be created in all shelters, relief camps
- Provision of **sanitary napkins** in sufficient quantity
- Provision of **medicine kit** to treat recurrent water borne infections



Specific Areas of Action: Habitat

- **Raised platforms** for shelter during floods with **associated amenities** for water, sanitation for women and child
- **Provision of Boats**
- **Flood resilient schools** – solar powered floating schools as tried in Bangladesh



Class in floating schools in flood prone areas in Bangladesh
<http://www.shidhulai.org/photogallery2/boatschool9.jpg>



Floating computer section powered by solar in Bangladesh
<http://www.shidhulai.org/photogallery2/boatschool11.jpg>

Specific Areas of Action: Livelihoods

- A large scale livestock program for **vaccination** of small ruminants - provisioning for **fodder**
- Optimal utilisation of the crop calendar through introduction of **short duration** crops and vegetable
- Potential for **recovery of waterlogged lands** for cropping to be further analysed and exploited in Bihar/Lower Assam

Specific Areas of Action: Livelihoods

- Promotion of **small pumps**, including **solar powered pumps** to intensify agriculture
- Raised creeper gardens to be popularized
- Intensive **community fisheries**, of *cage* types fisheries, in local *beels* and *haors* (wetlands) in Barak valley of Assam.



Thank You.