Flood Disaster Management in the North Indian Plains using GIS Application

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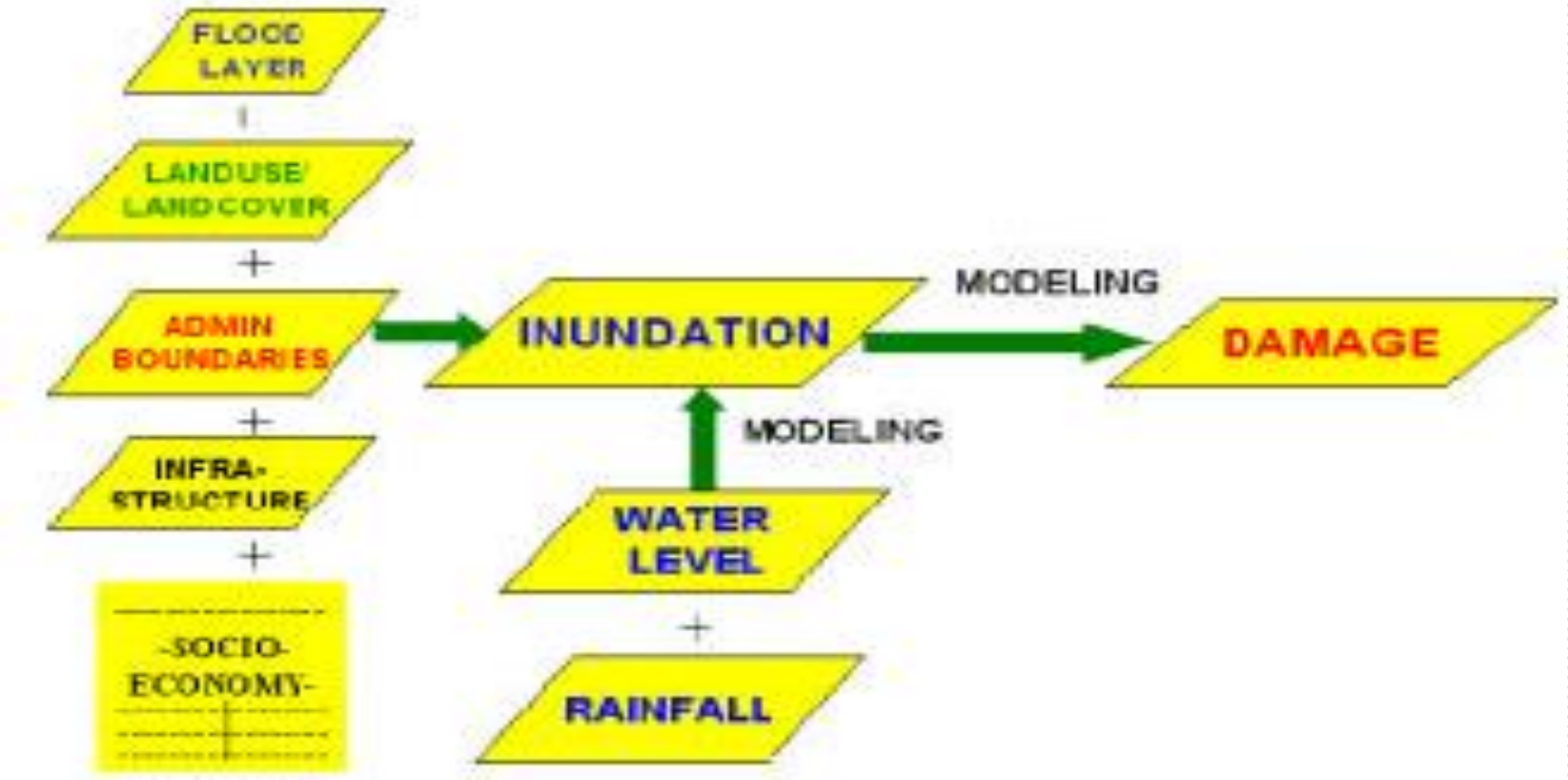
Introduction

- What is GIS ?
- What are floods ?
- Use of GIS in Flood Management in the two main Rivers of North India, namely the River Ganga and the River Brahmaputra.

Objectives

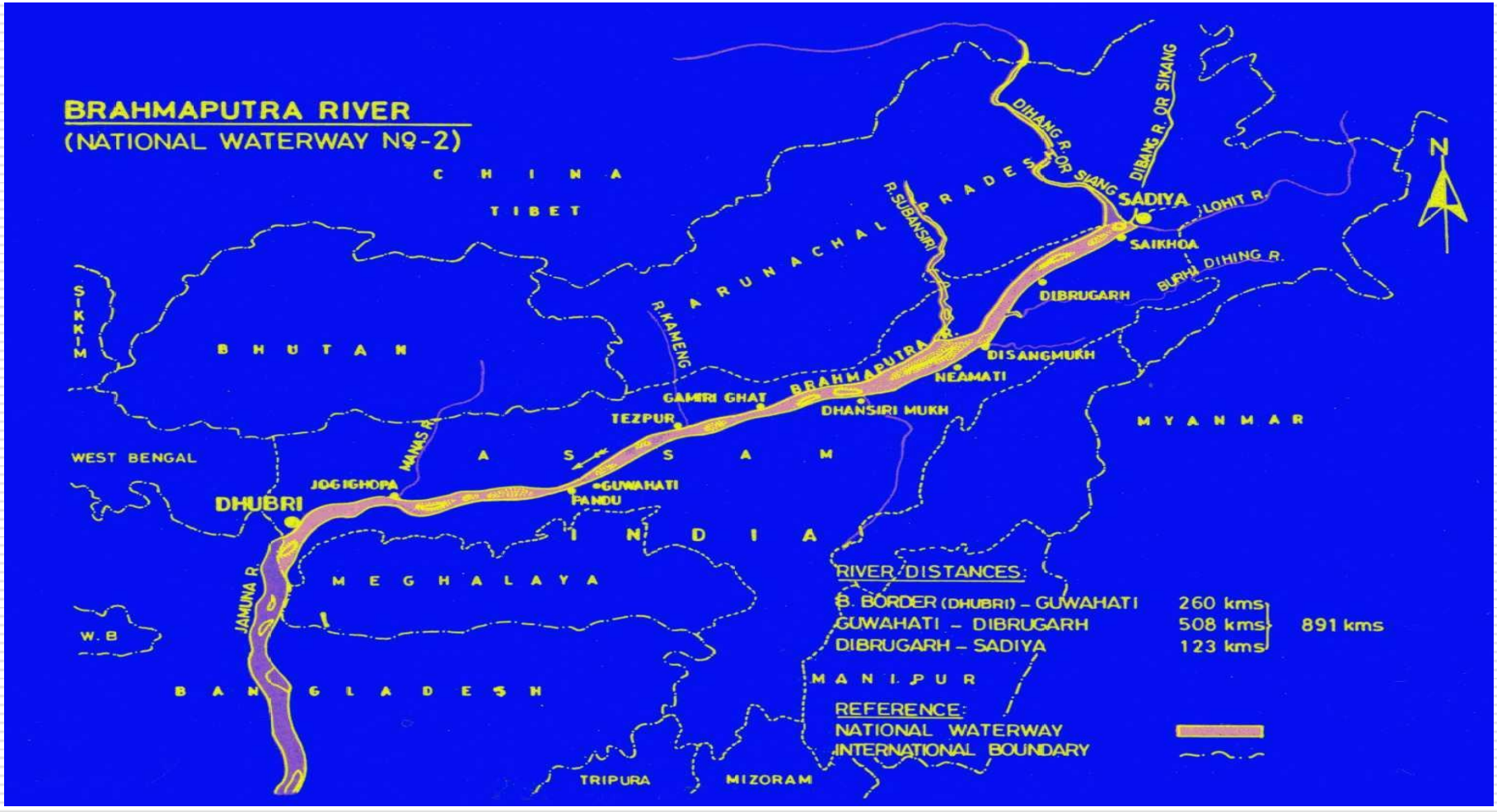
- To Find an alternative to the existing Flood management measures.
- To have a management plan to assess the Damage
- To provide a plan which is precise, easily accessible and easy to use.
- To provide a solution to the problem of flood hazard in long term.

Objective


FLOOD LAYER
LANDUSE/ LANDCOVER
ADMIN BOUNDARIES
INFRA-STRUCTURE
-SOCIO-ECONOMY-
INUNDATION
MODELING
DAMAGE
MODELING
WATER LEVEL
RAINFALL

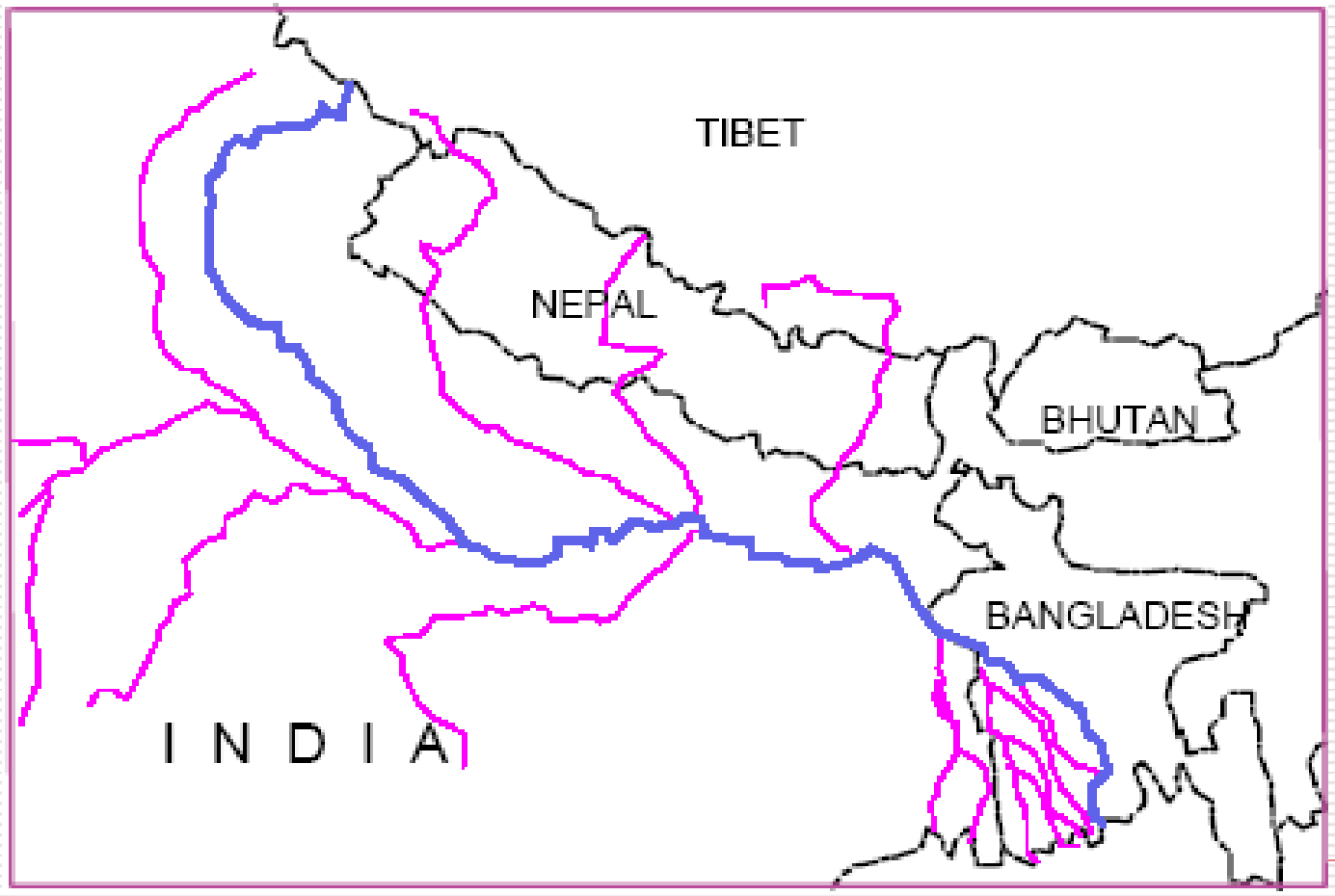
Study Area

- Case Study:1 : -



Study Area

- Case Study:2 : -



Methodology of Study

- Case Study: 1: -

  Temporary measures given preference.

- Case Study: 2: -

  Structural approaches have been given more importance.

Constraints

- Lack of Suitable Equipments
- Data Collection and Data accuracy
- Organization and coordination
- Political Will

Recommendations

- Before Flooding: -

- ✓ Calculate the distribution of areas at high risk by comparing historical flood heights with digital elevation model data;
- ✓ Estimate social and economic losses under different alternatives for decision-making or flood routing based on social and economic databases and corresponding models;
- ✓ Suggest the best alternative for population withdrawal from areas at risk;
- ✓ Suggest the best alternative for storing and transporting flood-prevention materials.

Recommendation

- During Flooding: -
- ✓ Dynamic monitoring of flooded areas;
- ✓ Estimating the expansion of flooded areas according to meteorological and hydrological forecasting; and
- ✓ Optimizing the transport of materials for disaster relief

Recommendation

- After Flooding: -

- ✓ A system that will calculate the actual flood loses.
- ✓ Provide a data base for relief measures.
- ✓ Helpful in planning of new facilities

Conclusions

- GIS technology serves as an efficient monitoring tool.
- GIS can play a very important role in flood control and disaster mitigation, especially in the serious floods of the Ganga and Brahmaputra Rivers.