SESSION: FIELD SURVEY

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Gendering Water and Climate Science Research in South Asia

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GENDERING WATER AND CLIMATE SCIENCE RESEARCH IN SOUTH ASIA

CONTENT

a) What is Survey and Why do we need to conduct field survey in research?
b) Types of field surveys
c) How can we decide on the appropriate field survey methods for data collection?
d) Steps involve in field designing for Data collection

BASIC OF SURVEY DESIGN

SURVEY

- Surveys are **systematic methods of generating information** from given populations in order to establish prevalence, distribution and interrelationships of variables within the particular population that is the subject of investigation.

WHY DO WE NEED TO CONDUCT FIELD SURVEY IN RESEARCH?

- Capturing **real-world information** that may not be available through secondary sources
- Understand the **specific context** in which a phenomenon occurs
- provide the **empirical evidence** necessary to confirm or refine theoretical models
- Capture the **perspectives of different stakeholders or communities**, enriching the research with a diversity of viewpoints.
- Ensure that interdisciplinary **research remains grounded in real-world conditions and challenges**
- Identification of **new questions or areas of inquiry**, driving the research forward in unexpected and fruitful directions
- Involve direct interaction with local communities, which can **enhance the relevance and impact of the research**

TYPES OF FIELD SURVEYS

Based on time—when or with what frequency a survey is administered

- **Cross-sectional**
- **Longitudinal**
  - Trend
  - Panel
  - Cohort
- **Retrospective**

Based on how the survey is administered

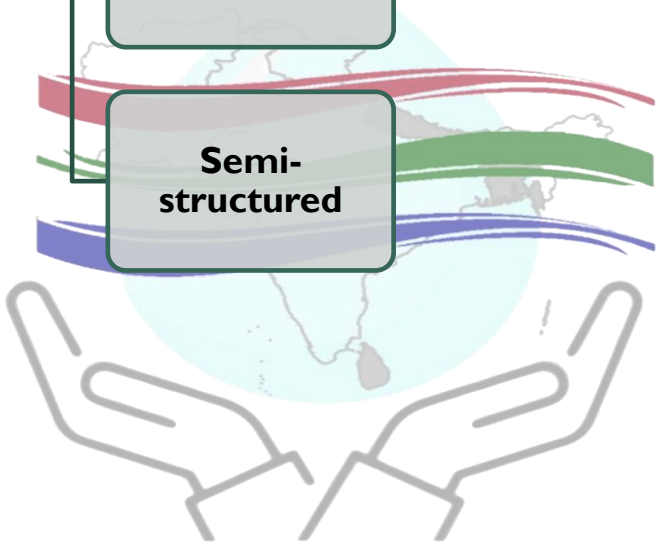
- **Interviewer-administered**
  - Face to face
  - Telephonic
- **Self Administered**
  - Online
  - Offline

Based on the purpose

- **Descriptive/ General**
- **Exploratory Surveys**
- **Analytical**
- **Experimental**

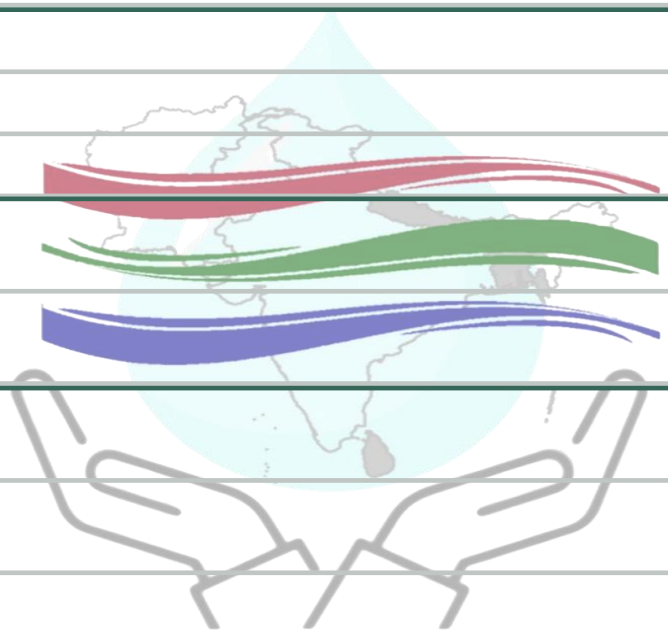
Based on the structure of the survey

- **Structure**
- **Unstructured**
- **Semi-structured**



HOW CAN WE DECIDE ON THE APPROPRIATE FIELD SURVEY METHODS FOR DATA COLLECTION?

Research Objectives and question	Alignment with research goals
	Type of data needed
Target Population	Demographics
	Geographical Location
Available Resources	Budget
	Time
	Expertise
Survey Context	Cultural Sensitivity
	Environmental Factors
Data Quality and Reliability	Accuracy and precision
	Sample size



RESEARCH TOPICS

- **Understanding Inequalities in Irrigation Water Access: Insights from the Gurugal Oya Irrigation Project**

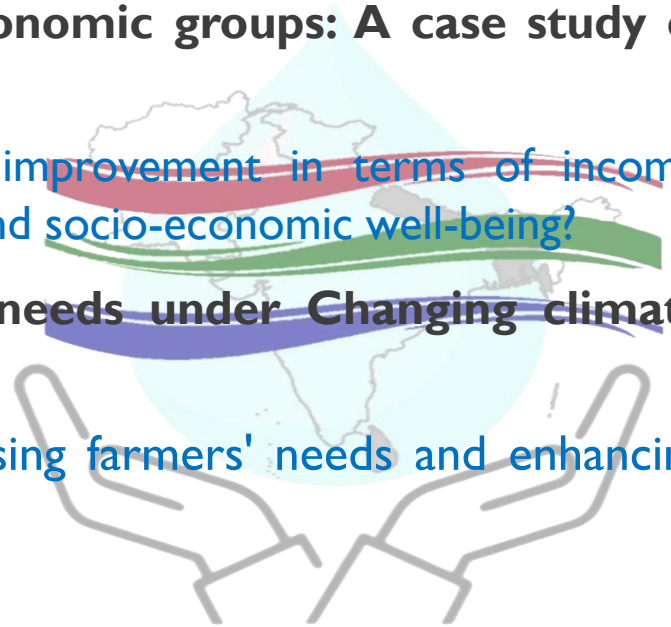
What factors contribute to the unequal distribution of irrigation water among farmers in the Gurugal Oya Irrigation Project, and to what extent are these inequalities shaped by technological (design) factors/policies/ institutional factors/ geospatial factors/ existing socio-economic inequalities?

- **Impacts of irrigation system on livelihoods among diverse socio-economic groups: A case study of Gurugal Oya Irrigation project**

How has the Gurugal Oya irrigation system impacted household livelihood improvement in terms of income, agricultural productivity, crop diversification, increased employment opportunity and socio-economic well-being?

- **The role of Gurugal oya dam construction in addressing farmer needs under Changing climate conditions**

How has the construction of the Gurugal Oya Dam contributed to addressing farmers' needs and enhancing agricultural resilience under changing climate conditions?



STEPS INVOLVE IN FIELD DESIGNING

STEPS

- Identify the Study Area/ Region
- Select Broad Indicators
- Assess available Resources
- Collect Background Information
- Select sample size
- Decide Sampling Framework and Sampling Plan
- Design Survey Instruments
- Pilot Testing and modification
- Set code of conduct and obtain ethical clearance

STEP 1

- Identify the Study Area/ Region
- Select Broad Indicators
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IDENTIFY THE STUDY AREA/ REGION

Study Area

1. A study area in research refers to the **specific geographical location** where a research project is conducted

2. Each Region is **characterised by specific water related problems and having specific political, socio-economic and cultural context.**

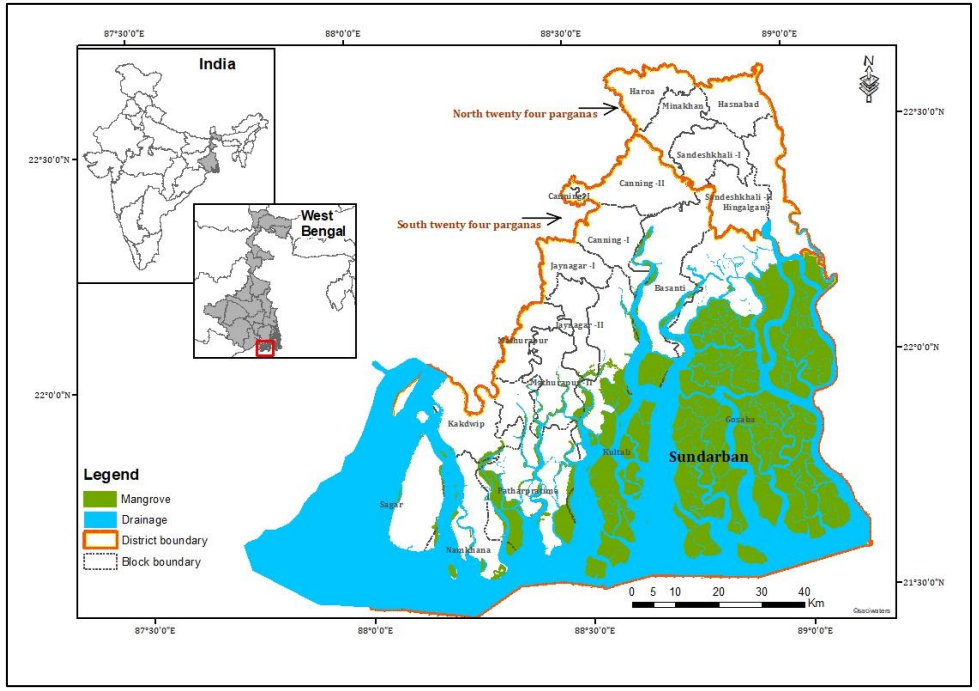
3. Study area is **crucial for achieving research goals and providing valuable information for policymakers**

How to determine study area

1. Choose an area that is **geographically relevant to the research questions**.
2. Determine whether the research requires a **micro (local), meso (regional), or macro (national/ international) scale**, considering the interplay of various factors at these levels.
3. If the research involves both environmental science and social sciences, the area should have **significant environmental and social dynamics**.
4. Ensure the area is **accessible for researchers**, considering logistics, cost, and time constraints.
5. Evaluate the **feasibility of conducting research** in the area, considering factors like political stability, legal restrictions, and the local population's willingness to participate.

IDENTIFY THE STUDY AREA/ REGION: EXAMPLE

To carry out a survey it is important to define the extent of the **geographical areas to be covered under the survey and the target population**.



District	Sub-Division	Police Stations	Blocks / Panchayat Samitee
24-Parganas (South)	Kakdwip	Sagar, Namkhana, Kakdwip, Patharpratima	Sagar, Namkhana, Kakdwip, Patharpratima
	Diamond Harbour	Mathurapur, Roydighi	Mathurapur-I, Mathurapur-II
	Baruipur	Kultali, Joynagar	Kultali, Joynagar-I, Joynagar-II
	Canning	Canning, Basanti, Gosaba	Canning-I, Canning-II, Basanti, Gosaba
24-Parganas (North)	Bashirhat	Hingalganj, Hasnabad, Sandeshkhali, Haroa, Minakhan	Hingalganj, Hasnabad, Sandeshkhali-I, Sandeshkhali-II, Haroa, Minakhan.

STEP 2

- Identify the Study Area/ Region
- **Select Broad Indicators**
- Assess available Resources
- Collect Background Information
- Select sample size
- Decide Sampling Framework and Sampling Plan
- Design Survey Instruments
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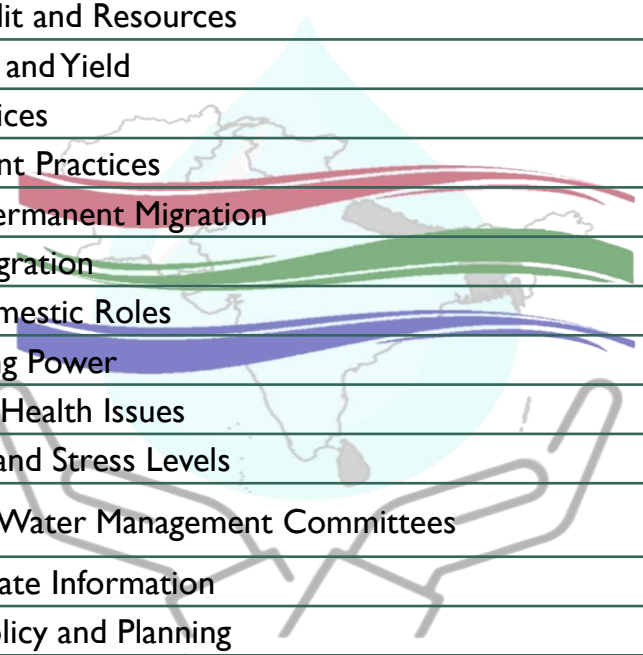
SELECT BROAD INDICATORS

Indicators: topic for which data will be collected

- Depends on **research objectives and framework**
- Indicators help in **identifying sources of information and the appropriate methods for obtaining information**

Impact of climate variability on water and livelihoods	
Category	**Indicator**
Water Access and Availability	Household Water Sources
	Time Spent on Water Collection
	Frequency of Water Scarcity
	Water Quality Perception
Livelihood Activities	Primary Livelihoods
	Income Sources
	Diversification of Livelihoods
	Access to Credit and Resources
Agricultural Practices	Crop Selection and Yield
	Irrigation Practices
	Climate-Resilient Practices
Migration Patterns	Seasonal and Permanent Migration
	Reasons for Migration
Impact on Household Roles and Responsibilities	Changes in Domestic Roles
	Decision-Making Power
Health and Well-being	Water-Related Health Issues
	Mental Health and Stress Levels
Participation in Community and Policy Processes	Involvement in Water Management Committees
	Access to Climate Information
	Influence on Policy and Planning



STEP 3

- Identify the Study Area/ Region
- Select Broad Indicators
- **Assess available Resources**
- Collect Background Information
- Select sample size
- Decide Sampling Framework and Sampling Plan
- Design Survey Instruments
- Pilot Testing and modification
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ASSESS AVAILABLE RESOURCES: CHECKLIST

Category	Questions
Budget and Funding	- What is the allocated budget for field data collection? Is it sufficient to cover all expenses?
	- Are there any additional or hidden costs that might arise during fieldwork?
	- Do you have contingency funds in case of unexpected expenses?
Human Resources	- How many team members are available for the field data collection?/ Would it be possible for you to hire field enumerators who would help you in data collection?
Time Management	- What is the timeline for data collection? Is it realistic given the scope of the study?
	- Are there specific deadlines or time constraints that need to be considered?
	- How will delays (e.g., due to weather, logistics) be managed?
Equipment and Materials	- What equipment (e.g., GPS devices, recording devices, vehicles) is needed for data collection?
	- Is the equipment in good working condition, or will new equipment need to be purchased or rented?
	- Are there sufficient supplies (e.g., notebooks, survey forms, batteries) for the entire data collection period?
Logistical Support	- Are transportation and accommodation arrangements for you secured and within budget?
	- What are the local conditions (e.g., terrain, weather) that could impact data collection?
	- Is there a local support network (e.g., guides, translators) available if needed?
Permissions and Ethical Considerations	- Have all necessary permissions and approvals been obtained from local authorities or ethical boards?
	- Are there any cultural or social considerations that might affect data collection?
Data Management	- What systems are in place for data storage, backup, and management during fieldwork?
	- Are there resources for data processing and analysis post-fieldwork?
Risk Assessment	- What are the potential risks (e.g., health, safety) to the team during fieldwork, and how will they be mitigated?
	- Is there a plan in place for emergency situations?

STEP 4

- Identify the Study Area/ Region
- Select Broad Indicators
- Assess available Resources
- **Collect Background Information**
- Select sample size
- Decide Sampling Framework and Sampling Plan
- Design Survey Instruments
- Pilot Testing and modification
- Set code of conduct and obtain ethical clearance

BACKGROUND INFORMATION: CHECKLIST

Category	Type of Background Information	Examples
Geographical Information	Location, climate, topography, hydrology	Understanding the regional climate patterns and river basin characteristics of the study area
Demographic Information	Population size, density, socio-economic status, education levels	Collecting data on the population of a rural community, including literacy rates and income distribution
Cultural and Social Context	Local customs, traditions, gender roles, community structures	Researching the traditional water management practices and the role of women in water usage in a village
Policy and Governance	Water rights, land use policies, governance structures, local authorities	Reviewing local water governance frameworks and land ownership laws affecting water access
Environmental and Ecological	Biodiversity, ecosystems, water quality, pollution sources	Assessing the impact of agricultural runoff on water quality and aquatic life in a specific watershed
Technical and Infrastructure	Existing water infrastructure, irrigation systems, sanitation facilities	Documenting the types and conditions of irrigation systems used by farmers in the region
Stakeholder Information	Key stakeholders, interest groups, local NGOs, community leaders	Identifying key stakeholders, such as farmer cooperatives and local NGOs involved in water management
Economic Context	Agricultural practices, economic dependence on water resources, market access	Understanding the economic reliance of a community on water for agriculture and the impact of market access on water usage
Legal and Institutional Context	Laws and regulations on water use, institutional frameworks, enforcement mechanisms	Reviewing national and local water laws, and the effectiveness of institutions in enforcing these laws

STEP 5

- Identify the Study Area/ Region
- Select Broad Indicators
- Assess available Resources
- Collect Background Information
- **Select sample size**
- Decide Sampling Framework and Sampling Plan
- Design Survey Instruments
- Pilot Testing and modification
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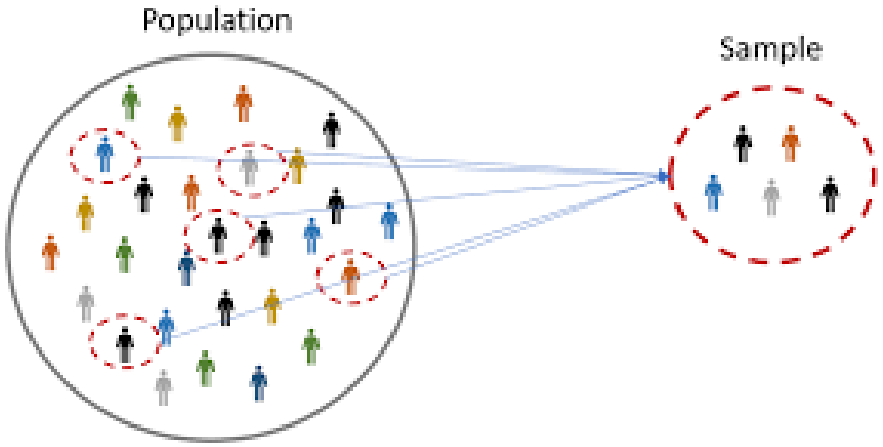
POPULATION AND SAMPLE

Population

- Is an entire collection of people, firms, states or things, that we are interested in, which we wish to describe, explain or predict. Population distribution is usually unknown; we make inferences about its characteristics such as the parameter.



Sample

- A sample that is representative of the population that we actually observe and is used to infer about the population.

Sampling frame

- Sampling frame refers to the population of interest from which a representative sample is drawn for the study.

STRATEGIES USED TO SELECT THE STUDY SAMPLE

- **Probability**
  - Simple Random
  - Systematic
  - Stratified
  - Cluster
- **Non-probability**
  - Convenience
  - Snowball
  - Quota
  - Purposeful

Sampling Method	Description	Example
Simple Random Sampling	Every individual has an equal chance of being selected.	Randomly selecting water sampling points along a river to assess overall water quality.
Stratified Random Sampling	Population is divided into subgroups, and random samples are drawn from each.	Dividing a region into urban and rural areas and randomly sampling households in each group.
Systematic Sampling	Selecting every nth individual from a list.	Sampling every 10th farm from a list to analyze irrigation practices in a region.
Cluster Sampling	Population is divided into clusters, and a random sample of clusters is chosen.	Randomly selecting villages in a rural area and testing groundwater from wells in those villages.
Convenience Sampling	Samples are drawn from a part of the population that is easily accessible.	Surveying households in the local community for a pilot study on water consumption.
Purposive (Judgmental) Sampling	Researchers select participants based on judgment of who will provide valuable data.	Interviewing residents from areas hardest hit by a flood to study its impact on water resources.
Snowball Sampling	Current participants recruit future participants from their acquaintances.	Starting with key informants in indigenous communities to study traditional water management.
Quota Sampling	Population is divided into groups, and a set number of participants is selected from each.	Ensuring inclusion of a set number of participants from different income groups to study water access.

STEP 6

- Identify the Study Area/ Region
- Select Broad Indicators
- Assess available Resources
- Collect Background Information
- Select sample size
- **Decide Sampling Framework and Sampling Plan**
- Design Survey Instruments
- Pilot Testing and modification
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Multi-stage sampling framework, method and sample size

Research Objective

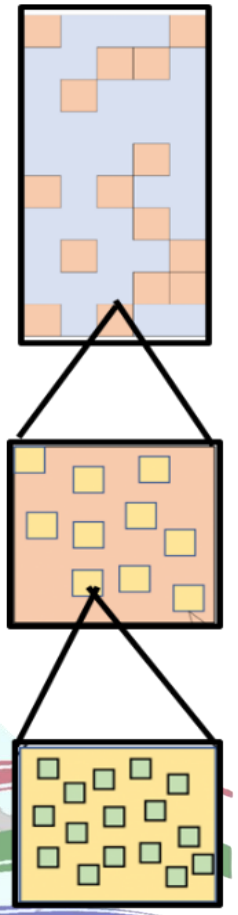
Impact of climate change in the Sundarbans in the areas of mother and child health, tackling and preventing the risks and dangers linked to climate-induced migration and trafficking

First Stage Sampling

Selection of blocks representing all sub-regions

to ensure a wider representation of narratives across different sub-regions within the Sundarbans region

Basis: Geographic/ Administrative



Second Stage Sampling

Primary Sampling Units

villages for rural areas and wards for urban areas

Basis: Probability Proportional to Size

Final Stage Sampling

Household Selection

The systematic random selection of households and the eligible persons.

Basis: Systematic Sampling after house listing

- Households with migrants
- Households with ANC mothers or mothers with young children
- Households with migrants and ANC mothers or mothers with young children
- Households without migrants and ANC mothers or mothers with young children

SAMPLING: EXAMPLE

To carry out a survey it is important to define the extent of the **geographical areas to be covered under the survey and the target population**.

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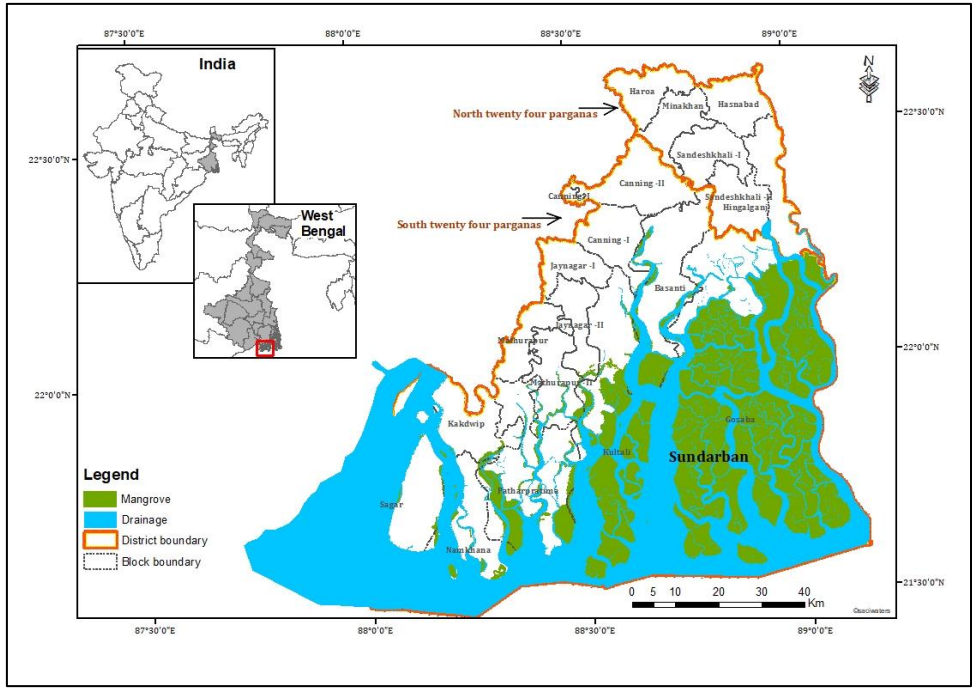
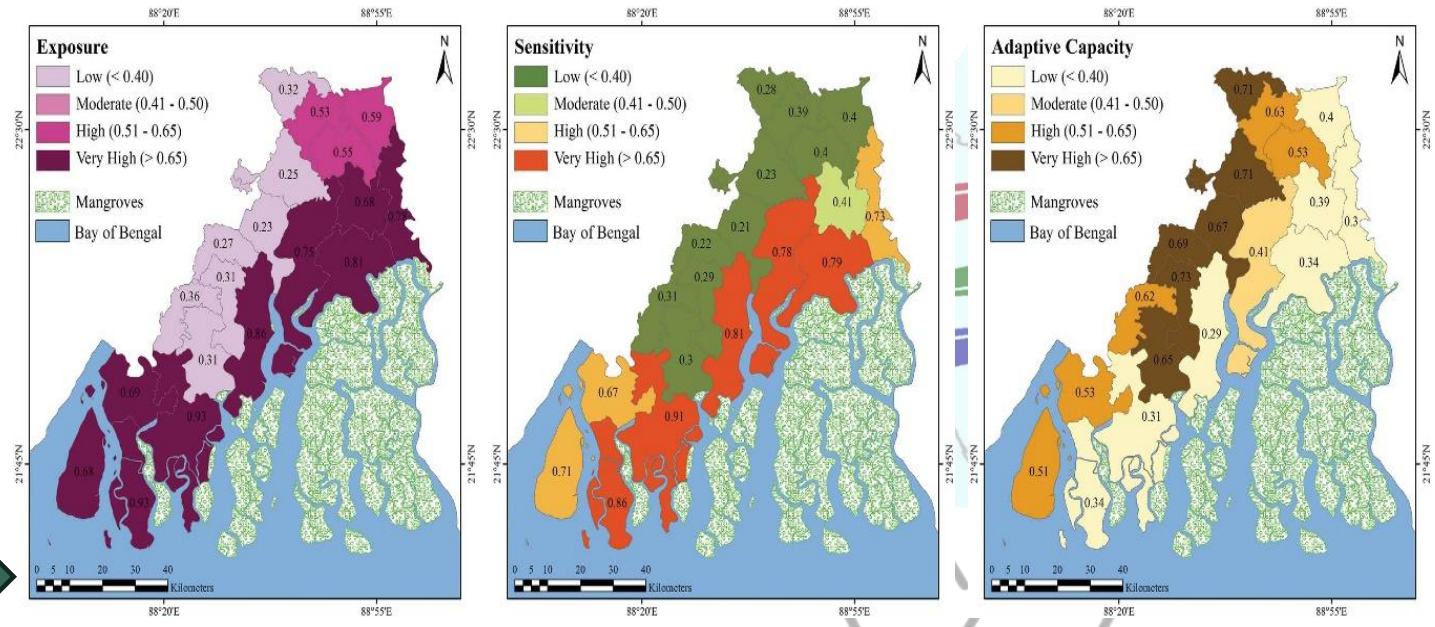


Different sub-regions of Indian Sundarbans based on its exposure to natural hazards, sensitivity and adaptive capacity among the population.



Selection of Blocks

Levels of Vulnerability	Exposure	Sensitivity	Adaptive Capacity	Selected Blocks	Justification
Low	Mathurapur I, Mathurapur II, Haroa, Jaynagar I, Jaynagar II, Canning I, and Canning II	Minakhan, Mathurapur I, Mathurapur II, Jaynagar II, Haroa, Canning II, Jaynagar I, and Canning I	Hasnabad, Sandeshkhali II, Namkhana, Gosaba, Patharpratima, Hingalganj, and Kultali	**Canning I**	Less vulnerable and connected to the mainland
Moderate	Sandeshkhali I and Minakhan	Sandeshkhali II, Hasnabad, and Sandeshkhali I	Sagar and Basanti	**Sandeshkhali I**	Moderrately Vulnerable
High	Basanti, Kakdwip, Sagar, Sandeshkhali II, and Hasnabad	Hingalganj, Sagar, and Kakdwip	Minakhan, Mathurapur I, Kakdwip, and Sandeshkhali I	**Sagar**	High exposure and sensitivity with high adaptive capacity
Very High	Patharpratima, Namkhana, Kultali, and Gosaba	Patharpratima, Namkhana, Kultali, Gosaba, and Basanti	Jaynagar II, Haroa, Canning II, Jaynagar I, Canning I, and Mathurapur II	**Patherpratima, Gosaba**	High exposure and sensitivity with low adaptive capacity. Two blocks are picked from this category based on their location (one from east and one from West)

Exercise

Prepare a sampling framework

1. Explain Research question
2. Define study area
3. Clearly define the population from which you will draw your sample
4. Choose appropriate sampling method for your research
5. Determine an appropriate sample size
6. Develop a complete sampling framework

STEP 7

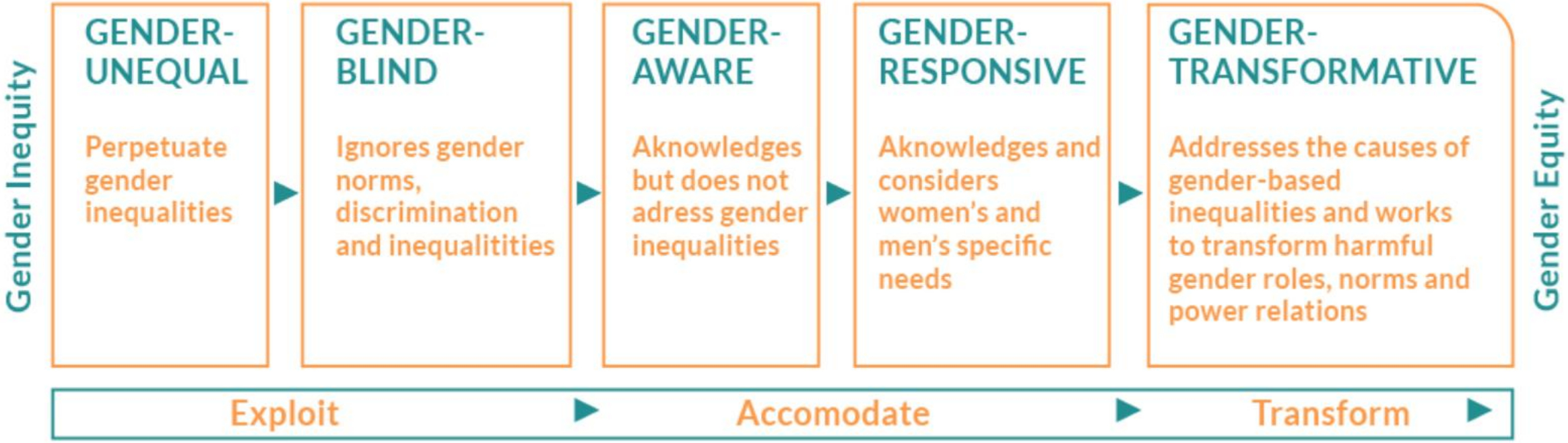
- Identify the Study Area/ Region
- Select Broad Indicators
- Assess available Resources
- Collect Background Information
- Select sample size
- Decide Sampling Framework and Sampling Plan
- **Design Survey Instruments**
- Pilot Testing and modification
- Set code of conduct and obtain ethical clearance

QUESTIONS:

1. Who do you intend to ask the questions to?
2. Identify three key indicators based on your research question for which you will gather data.
3. Develop a questionnaire consisting of at least 12 questions, with 4 questions for each of the three indicators. Ensure the questionnaire includes a variety of question types (multiple choice, binary, rating, ranking, open-ended, matrix, filter, and contingency) as discussed.

GENDER SENSITIVE/ RESPONSIVE WATER RESEARCH AND SURVEY DESIGN

GENDER INTEGRATION CONTINUUM FRAMEWORK



Source: Adapted from UNFPA, UNICEF and UN Women, 2020 (https://droughtclp.unccd.int/node/37/printable/print)

GUIDELINES FOR GENDER SENSITIVE/ RESPONSIVE RESEARCH

- Identify the **human and social components** of the research objectives
- Define a **conceptual framework reflecting men's and women's experiences**
- Acknowledge our own bias
- Avoid male bias, prejudices and double standards
- Develop a **gender sensitive/ responsive methodology**
- Choose a **sample that can capture both men and women's experience**
- Give **value to both men's and women's experiences and differentiated experiences**
- Use and produce at-least **sex-disaggregated data** (Gender disaggregated data is more complicated and it allows see and quantify the different experiences between genders)
- Conduct a **gender analysis**
- **Anticipate impacts of new policies or practices on men and women**
- Use **gender sensitive language** in the research report