

# CCAFS SOUTH ASIA

Site: Bagerhat/Morrelganj, Bangladesh



RESEARCH PROGRAM ON  
**Climate Change,  
Agriculture and  
Food Security**



Photo: M. Yousuf Tushar (WorldFish)

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## Content

● Introduction	3
● Map	4
● Demography and basic site characteristics	5
● Changes in farming practices and drivers of changes in resources	6
● Livelihood diversification	7
● Food security	8
● Collective action in natural resource management (NRM)	10
● Membership of organisations and organisational agendas	11
● Household assets	12
● Networks of information	13
● Organisational priorities	16



## Introduction

The CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) is a strategic partnership of CGIAR and Future Earth led by the International Center for Tropical Agriculture (CIAT). CCAFS brings together the world's best researchers in agricultural science, development research, climate science and Earth System science to identify and address the most important interactions, synergies and trade-offs between climate change, agriculture and food security.

CCAFS is focusing its research for development efforts in five regions, East and West Africa, South and Southeast Asia as well as Latin America, working in 25 research sites. The regions represent areas that are particularly vulnerable to climate change, and the sites are focal locations to generate knowledge and learning that can be applied and adapted to other regions worldwide.

Extensive baselines have been implemented at all CCAFS sites and consist of analysed information collected at three levels: households, communities and organisations. The baselines capture the big picture of how farmers are changing their practices in light of climate change and other pressures. The aim is to revisit the same communities and households in five and again in ten years to document changes in livelihoods, resource management practices and other factors over time

and update these indicator documents accordingly. The CCAFS baseline is a key component of the program's monitoring and evaluation system.

This document series compiles key indicators from the three levels of the baseline for each site. Indicators include: demography and basic site characteristics of each site, rainfall distribution, changes in farming practices and land management, income sources, food security and food sources, asset ownership by households and involvement in organisations and more.

This CCAFS baseline indicator document was developed for the CCAFS site at Bagerhat/Morrelganj, in Bangladesh.

The baseline indicator series is complemented by CCAFS site atlases, that include site maps with climate information, biophysical characteristics and socio-economic factors. Site maps are available at: [www.ccafs.cgiar.org/atlas-ccaafs-sites](http://www.ccafs.cgiar.org/atlas-ccaafs-sites)

Download the baseline tools, data and reports:  
[www.ccafs.cgiar.org/resources/baseline-surveys](http://www.ccafs.cgiar.org/resources/baseline-surveys)

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### Sources

Throughout this document the sources of data for the indicators are colour coded as follows:



CCAFS Household baseline study



CCAFS Village baseline study



CCAFS Organisational baseline study

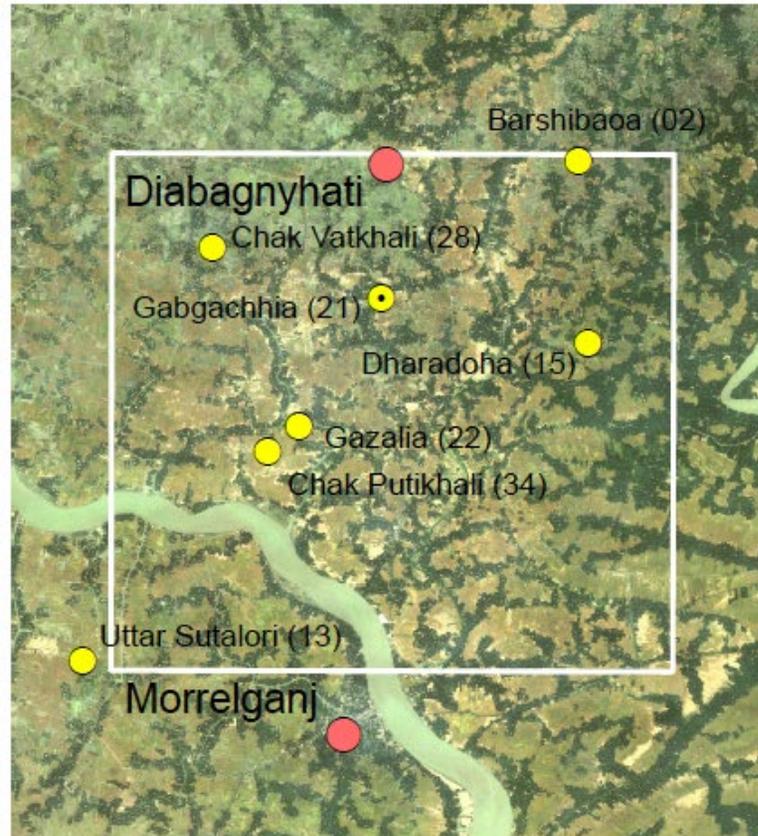
# Map

Country: Bangladesh

CCAFS Sampling Frame: Bagerhat - Morrelganj



□ Site location



CCAFS Site Name (ID):  
Khulna (BA04)

CCAFS Sampling Frame  
Name (ID): Morrelganj (16)

Settlement



CCAFS VBS / OBS Village



CCAFS HBS Village



Coordinates of the CCAFS  
Sampling Frame

89.911E 22.552N

89.911E 22.461N

89.812E 22.461N

89.812E 22.552N

Source: Förch W et al. 2013. Core Sites in the CCAFS Regions: East Africa, West Africa and South Asia, Version 3. Copenhagen: Denmark. CCAFS

## Demography and basic site characteristics

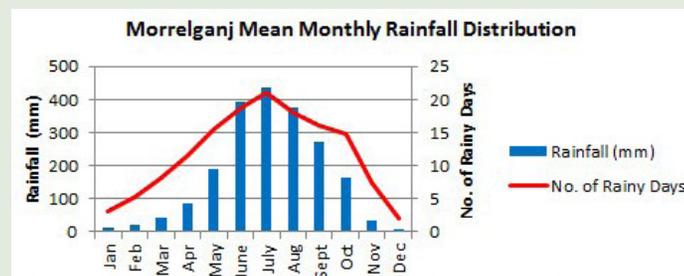
	Baseline	Mid-term	Final
Ratio of women headed households	0%		

% households of different sizes			
Number of people in the household	Baseline	Mid-term	Final
1	0%		
2	3%		
3	8%		
4	30%		
5	28%		
6	16%		
6+	15%		

	Baseline	Mid-term	Final
Area of land cultivated (ha)*	73.26		
Average (mean) per household (ha)	0.52		

Highest level of education obtained by any household member			
No formal education	3%		
Primary	17%		
Secondary	51%		
Post-secondary	29%		

\*Area of land cultivated (ha) is the total amount of owned or rented land used for growing food or aquaculture



Source: MarkSim<sup>1</sup>

Ratio of local organisations to total number of organisations named\*

	Baseline	Mid-term	Final
Men's group	5/36		
Women's group	5/28		

\* Organisations have been recoded by CCAFS researchers from original data (participant perceptions of community, local and beyond local) to categories of local and external.

<sup>1</sup>Source: Jones P G, Thornton P K, Diaz W and Wilkens P W. 2002. MarkSim, a computer tool that generates simulated weather data for crop modeling and risk assessment. Version 1, 2002. CD-ROM and Users Manual. CIAT, AA6713, Cali, Colombia, 87 pp.

## Changes in farming practices and drivers of changes in resources

### % households introducing 3 changes or more

	Baseline	Mid-term	Final
Crop	16%		
Water	0%		
Soil	1%		
Tree/agroforestry	59%		
Livestock	49%		

### Adaptation

% households reporting changes to their agricultural practices

	Baseline	Mid-term	Final
0-1 change	3%		
2-10 changes	75%		
11 or more changes	22%		

### Mitigation

% households doing

Tree management\*

	Baseline	Mid-term	Final
Yes	59%		
No	41%		

Soil management

	Baseline	Mid-term	Final
None	33%		
Some	67%		

Intensification

	Baseline	Mid-term	Final
None	30%		
Low	46%		
High	24%		

Productivity

	Baseline	Mid-term	Final
No Increase	61%		
Some increase	39%		

### Drivers of changes to crop production and land management

% households reporting this driver

	Baseline	Mid-term	Final
Markets	41%		
Weather/climate	91%		
Pest and Diseases	48%		
Labour	8%		
Land	29%		
Projects	0%		

### Drivers of changes to livestock production\*

% households reporting this driver

	Baseline	Mid-term	Final
Markets	41%		
Weather/climate	73%		
Pest and Diseases	80%		
Labour	5%		
Projects	0%		

### Drivers of change in the community

Frequency with which they were mentioned in group discussions

	Men			Women		
	Baseline	Mid-term	Final	Baseline	Mid-term	Final
Population Growth	1			2		
Deforestation	1			1		
Pest and Diseases	0			0		
Information/Knowledge	0			0		
Land Demarcation/fragmentation	0			1		
Soil degradation/Erosion	1			2		
Rainfall Changes	2			2		
Charcoal Burning/Fuel	0			0		
Government	0			0		
Forest Fire/Bush burning	0			0		
Overuse	1			1		
Spiritual/Cultural/Religious	0			0		
Invasive tree species	0			0		
Increase in wealth	0			0		
Increase in livestock	0			0		
Social/Community conflicts	0			0		
Infrastructure	1			2		

\*For tree/agroforestry changes these are the households who have either planted or protected trees within the last year

\*For livestock changes these are the households who have made 3 of more of the changes in the livestock section

## Livelihood diversification

	Baseline	Mid-term	Final
<b>Source of Cash Income other than own farm</b>			
Employment on someone else's farm	56%		
Other off-farm employment	17%		
Business	35%		
Remittances/gifts	2%		
Payments for environmental services	1%		
Payments from government or other projects/programs	41%		
Loan or credit from a formal institution	30%		
Informal loan or credit	74%		
Renting out farm machinery	0%		
Renting out your own land	11%		
No off-farm cash source	1%		
<b>Product diversification</b>			
% of households			
1-4 products (low)	16%		
5-8 products (intermediate)	49%		
9 or more products (high)	35%		
<b>Selling/Commercialization Diversification:</b>			
% of households			
No products sold	26%		
1-2 products sold (low)	31%		
3-5 products sold (intermediate)	36%		
6 or more products sold (high)	8%		

## Food security

### Food Security Index

% households	Baseline	Mid-term	Final
More than 6 hunger months/year	19%		
5-6 hunger months/	12%		
3-4 hunger months/	16%		
1-2 hunger months/	13%		
Food all year round/No hungry period	40%		

### Food security organisational linkages

Men groups		Baseline	Mid-term	Final
Organisation receives				
Funding		7		
Capacity Building		0		
Food		4		

Organisation provides				
Funding		4		
Capacity Building		0		
Food		3		

Women groups		Baseline	Mid-term	Final
Organisation receives				
Funding		0		
Capacity Building		0		
Food		0		

Organisation provides				
Funding		0		
Capacity Building		0		
Food		0		

### Source of food during highest and lowest shortage months

	Baseline	Mid-term	Final
% households mainly consuming from own farm in the month of highest shortage	19%		
% households mainly consuming from own farm in the month of lowest shortage	54%		

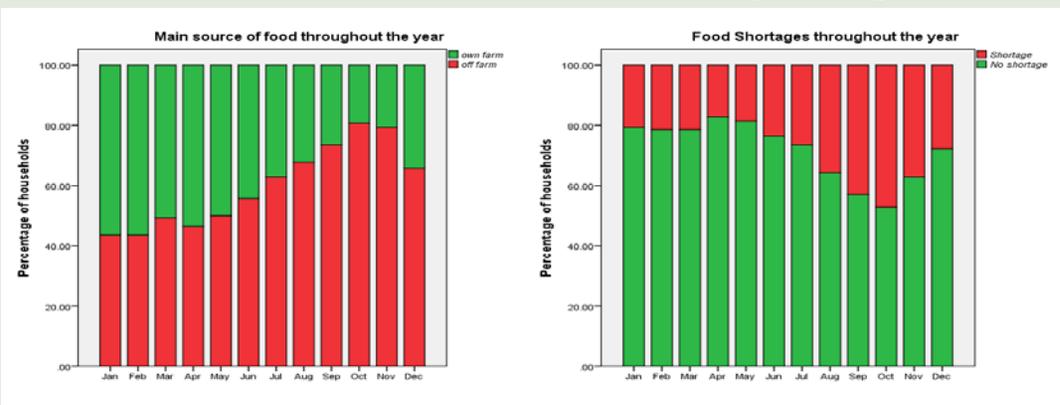
### Ratio of local organisations to total number of organisations named in each area of food security work\*

Men's group	Baseline	Mid-term	Final
Availability	1/8		
Access	0/7		
Utilisation	0/5		

Women's group	Baseline	Mid-term	Final
Availability	0/8		
Access	0/12		
Utilisation	0/7		

\* Organisations have been recoded by CCAFS researchers from original data (participant perceptions of community, local and beyond local) to categories of local and external.

These charts are taken from the Household Baseline Survey - Food Security Section



## Collective action in natural resource management (NRM)

Resource	Gender	Discussed	Baseline	Mid-term	Final
<b>Is there an issue with the resource?</b>					
<b>Irrigation</b>	M	Yes	Rivers and canals are polluted, full of silt, dead. Fresh water available only in rainy season and 3 months after.		
	F	Yes	Canal dries up 3 months in dry season		
<b>Farmland</b>	M	Yes	Salinity increasing while production decreasing		
	F	No			
<b>Forest</b>	M	Yes	Degrading. Danger due to wild tigers and crocodiles		
	F	No			
<b>Pasture</b>	M	No			
	F	No			
<b>Markets</b>	M	No			
	F	Yes	Functional		
<b>Is there a problem of access to the resource?</b>					
<b>Irrigation</b>	M	Yes	Community owned and managed, however only rich farmers benefit from canal water		
	F	No			
<b>Farmland</b>	M	Yes	Privately owned		
	F	Yes	individually owned		
<b>Forest</b>	M	No			
	F	No			
<b>Pasture</b>	M	No			
	F	No			
<b>Markets</b>	M	No			
	F	No			
<b>Is there any local action in place to address the problem?</b>					
<b>Irrigation</b>	M	Yes	A man made irrigation canal was build		
	F	No			
<b>Farmland</b>	M	No			
	F	No			
<b>Forest</b>	M	No			
	F	No			
<b>Pasture</b>	M	No			
	F	No			
<b>Markets</b>	M	No			
	F	No			

## Membership of organisations and organisational agendas

### % households with at least one member belonging to organised groups

	Baseline	Mid-term	Final
Tree nursery/tree planting	1%		
Water catchment/management	0%		
Soil improvement related	0%		
Crop improvement related	0%		
Irrigation	0%		
Savings/credit related	4%		
Agricultural product marketing	0%		
Agricultural productivity enhancement related	0%		
Seed production	0%		
Vegetable production	0%		
Other group not mentioned above?	1%		
No groups	95%		

### Ratio of local organisations involved in Natural Resource Management to total number of organisations involved in NRM\*

	Baseline	Mid-term	Final
<b>Men's group</b>	0/9		
<b>Women's group</b>	0/8		

\* Organisations have been recoded by CCAFS researchers from original data (participant perceptions of community, local and beyond local) to categories of local and external.

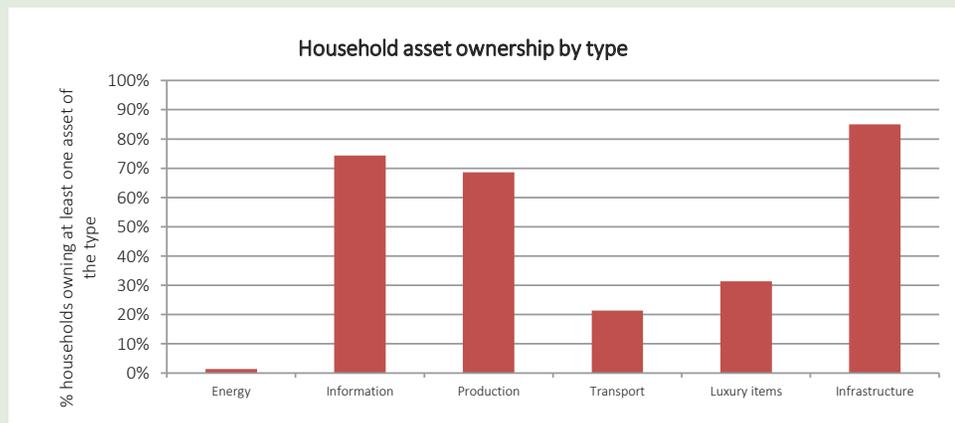
## Household assets

% household with assets by type	Baseline	Mid-term	Final
Basic level	9%		
Intermediate level	61%		
High level	29%		

### % households ownership

% households ownership			
<b>Transport</b>			
Bicycle	21%		
Motorcycle	0%		
Car or Truck	0%		
<b>Production</b>			
Tractor	0%		
Mechanical Plough	7%		
Mill	0%		
Water pump/Treadle pump	1%		
Thresher	1%		
Boat	9%		
Fishing Nets	64%		
<b>Energy</b>			
Solar Panel	1%		
Generator	0%		
Battery	0%		
Biogas Digester	0%		
LPG	0%		
<b>Information</b>			
Radio	20%		
Television	25%		
Cell Phone	72%		
Computer	0%		
Internet Access	0%		
<b>Luxury</b>			
Refrigerator	3%		
Air Conditioning	0%		
Electric Fan	23%		
Bank Account	20%		

Infrastructure			
	Baseline	Mid-term	Final
Improved storage facility for crops	1%		
Water storage tank	0%		
Well/borehole	29%		
Running/tap water in dwelling	13%		
Electricity from a grid	34%		
Improved housing	6%		
Improved roofing	64%		
Separate housing for farm animals	57%		



## Networks of information

### Networks of information - Men Group

	Baseline	Mid-term	Final
<b>Waether</b>			
Friends/relatives	Yes		
Neighbour	Yes		
Astrologist/priest	No		
Agri. Dev. Office	No		
Dairy	No		
Block/State	Yes		
Government	Yes		
PACS	No		
Radio/TV	Yes		
Observation	No		
Agro-vet	No		
Trainings	No		
Field visit/tour	No		
Markets	No		

### Networks of information - Men Group

	Baseline	Mid-term	Final
<b>Markets</b>			
Friends/relatives	Yes		
Neighbour	Yes		
Astrologist/priest	No		
Agri. Dev. Office	No		
Dairy	No		
Block/State	No		
Government	No		
PACS	No		
Radio/TV	Yes		
Observation	No		
Agro-vet	No		
Trainings	No		
Field visit/tour	No		
Markets	No		

### Networks of information - Men Group

	Baseline	Mid-term	Final
<b>Natural Disaster</b>			
Friends/relatives	Yes		
Neighbour	Yes		
Astrologist/priest	No		
Agri. Dev. Office	No		
Dairy	No		
Block/State	Yes		
Government	Yes		
PACS	No		
Radio/TV	Yes		
Observation	No		
Agro-vet	No		
Trainings	No		
Field visit/tour	No		
Markets	No		

### Networks of information - Men Group

	Baseline	Mid-term	Final
<b>Agriculture</b>			
Friends/relatives	No		
Neighbour	Yes		
Astrologist/priest	No		
Agri. Dev. Office	Yes		
Dairy	No		
Block/State	Yes		
Government	Yes		
PACS	Yes		
Radio/TV	Yes		
Observation	No		
Agro-vet	No		
Trainings	Yes		
Field visit/tour	No		
Markets	No		

### Networks of information - Men Group

	Baseline	Mid-term	Final
<b>Temperature/Rainfall</b>			
Friends/relatives	Yes		
Neighbour	Yes		
Astrologist/priest	No		
Agri. Dev. Office	No		
Dairy	No		
Block/State	No		
Government	Yes		
PACS	No		
Radio/TV	Yes		
Observation	Yes		
Agro-vet	No		
Trainings	No		
Field visit/tour	No		
Markets	No		

### Networks of information - Men Group

	Baseline	Mid-term	Final
<b>Floods/Tides</b>			
Friends/relatives	Yes		
Neighbour	Yes		
Astrologist/priest	No		
Agri. Dev. Office	No		
Dairy	No		
Block/State	Yes		
Government	Yes		
PACS	No		
Radio/TV	Yes		
Observation	No		
Agro-vet	No		
Trainings	No		
Field visit/tour	No		
Markets	No		

## Networks of information

### Networks of information - Women Group

	Baseline	Mid-term	Final
<b>Weather</b>			
Friends/relatives	Yes		
Neighbour	Yes		
Astrologist/priest	No		
Agri. Dev. Office	Yes		
Dairy	No		
Block/State	Yes		
Government	Yes		
PACS	No		
Radio/TV	Yes		
Observation	Yes		
Agro-vet	No		
Trainings	Yes		
Field visit/tour	No		
Markets	Yes		

### Networks of information - Women Group

	Baseline	Mid-term	Final
<b>Aquaculture</b>			
Friends/relatives	Yes		
Neighbour	Yes		
Astrologist/priest	No		
Agri. Dev. Office	No		
Dairy	No		
Block/State	Yes		
Government	Yes		
PACS	No		
Radio/TV	Yes		
Observation	No		
Agro-vet	No		
Trainings	No		
Field visit/tour	No		
Markets	Yes		

### Networks of information - Women Group

	Baseline	Mid-term	Final
<b>Agriculture</b>			
Friends/relatives	Yes		
Neighbour	Yes		
Astrologist/priest	No		
Agri. Dev. Office	Yes		
Dairy	No		
Block/State	No		
Government	Yes		
PACS	Yes		
Radio/TV	Yes		
Observation	No		
Agro-vet	No		
Trainings	Yes		
Field visit/tour	No		
Markets	No		

### Networks of information - Women Group

	Baseline	Mid-term	Final
<b>Livestock/Poultry</b>			
Friends/relatives	Yes		
Neighbour	Yes		
Astrologist/priest	No		
Agri. Dev. Office	No		
Dairy	No		
Block/State	Yes		
Government	Yes		
PACS	No		
Radio/TV	Yes		
Observation	No		
Agro-vet	Yes		
Trainings	Yes		
Field visit/tour	No		
Markets	Yes		

## Networks of information

% of households receiving weather-related information			
	Baseline	Mid-term	Final
Start of the rains	11%		
Forecast of extreme events	64%		
Forecast of pest or disease outbreak	12%		
2-3 month weather forecast	0%		
2-3 day weather forecast	51%		

Of households receiving information, who in the family receives it			
	Baseline	Mid-term	Final
Start of the rains			
Men	75%		
Women	0%		
Both	25%		

Forecast of extreme events			
Men	62%		
Women	1%		
Both	37%		

	Baseline	Mid-term	Final
2-3 month weather forecast			
Men	N/A		
Women	N/A		
Both	N/A		

2-3 day weather forecast			
Men	56%		
Women	1%		
Both	42%		

	Baseline	Mid-term	Final
Forecast of pest or disease outbreak			
Men	94%		
Women	0%		
Both	6%		

## Organisational priorities

Relative importance in the portfolio of organisations  
 placed on climate or weather related activities

	Baseline	Mid-term	Final
<b>Allocation of time</b>			
Very high	0%		
High	0%		
Medium	10%		
Low	50%		
None	40%		
<b>Allocation of staff</b>			
Very high	0%		
High	0%		
Medium	0%		
Low	50%		
None	50%		
<b>Allocation of budget</b>			
Very high	0%		
High	0%		
Medium	0%		
Low	40%		
None	60%		

## Organisational priorities

Match of organisational activities to perceived needs of communities			
Community issues about natural resources and infrastructure	Organisation activities		
	Baseline	Mid-term	Final
<b>Rivers:</b> Rivers are narrow and polluted, some full of silt and dead. Water is fresh only during rainy season and 3 months later. Then salinity arises due to tidal waves.	Water management through water levels measurements, controlling the river situation, the seasonal variability and salinity levels.		
<b>Roads:</b> functional	Repairing/maintaining rural roads; Improve road connectivity		
<b>Farmland:</b> Salinity increasing while production decreasing	Prevention of soil erosion and deterioration; coastal embankments maintenance and improvement to protect against tidal surges, erosion and to reclaim land from the sea. improve soil quality through compost fertilizer, reducing the use of chemicals and fodder production. Promoting the plantation of salinity, flood and cyclone resistant trees and plants		
<b>Ponds:</b> Production and quality of shrimp and fish decreasing. Dry up in dry season, some floods in rainy season	Drinking water supply from ponds; training on pond sand filtration; management of ponds, gher and water for fish production; training for fishers, pond owners and fish traders; Fish seed production in ponds and fish nursery management		
<b>Vegetable garden:</b> Production and quality decreasing due to wet soil and saline water	Promotion of increasing diversity of livelihood activities; Information and support in vegetable cultivation		
<b>Sugarcane:</b> Decreasing production due to increased salinity and erratic rainfall; No big industries around	no activities directly related to sugarcane, however, most of those aimed to soil erosion and salinity apply		
<b>Aquaculture:</b> Decreasing production due to increased salinity and erratic rainfall	Coastal embankments maintenance and improvement to protect against tidal surges		
<b>Poultry:</b> Decreasing production due to increased salinity and erratic rainfall; Disease and cold problems	Training and skill development programs in poultry; Vaccination of poultry		
<b>Livestock:</b> Low productivity due to lack of feed and fodder; no support services.	Promotion of fodder production; training and skill development programs in livestock, Transfer appropriate technology training in livestock; Vaccination and veterinary services; Artificial insemination		
<b>Forest:</b> Degrading; Tiger and crocodile danger	Afforestation, social forestation, planting nurseries, and capacity building among through training and technical support; Prevention of soil erosion and deterioration;		
<b>Irrigation canals:</b> some are dead, full of silt, water becomes saline because of tidal wave, some dry up, some can only be used by rich farmers.	Re-excavating and maintaining canals, enhancing canal connectivity, enhancing drainage and maintenance of sluice gates and boxes; water management through cooperative participation; promotion of small scale irrigation facilities		
<b>Schools:</b> Not enough teachers, no toilets, and lack of drinking water	Promotion of education; support to primary education programs; physical infrastructure of educational institutes and schools development		



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