

# CCAFS SOUTH ASIA

Site: Haryana/Karnal, India



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



Photo: P. Vishwanathan (CCAFS)

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### Contact:

CCAFS Coordinating Unit - Faculty of Science,  
Department of Plant and Environmental Sciences,  
University of Copenhagen, Rolighedsvej 21, DK-1958  
Frederiksberg C, Denmark. Tel: +45 35331046; Email:  
[ccaafs@cgiar.org](mailto:ccaafs@cgiar.org).



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## 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 Haryana/Karnal in India.

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)

Get in touch:  
Science Officer Wiebke Förch ([w.foerch@cgiar.org](mailto:w.foerch@cgiar.org))

### 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



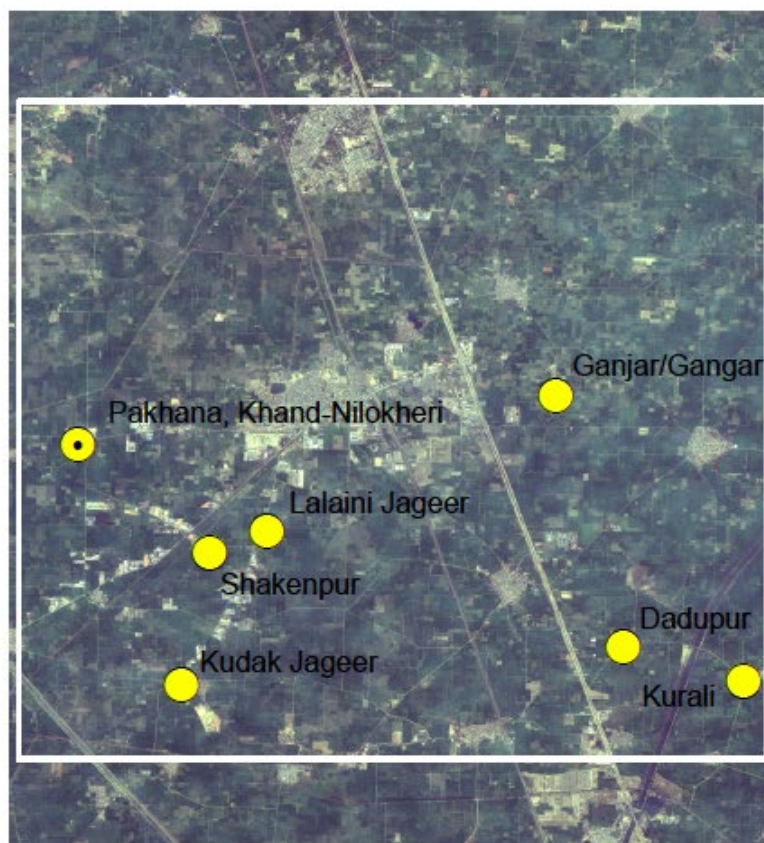
## Map

Country: India

CCAFS Sampling Frame: Karnal



□ Site location



CCAFS Site Name (ID):  
Karnal (IN17)

CCAFS Sampling Frame  
Name (ID): Karnal (41)

CCAFS VBS / OBS Village



CCAFS HBS Village



Coordinates of the CCAFS  
Sampling frame

76.888E	29.842N
76.993E	29.842N
76.993E	29.750N
76.888E	29.750N

Source: L. 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	3%		

### % households of different sizes

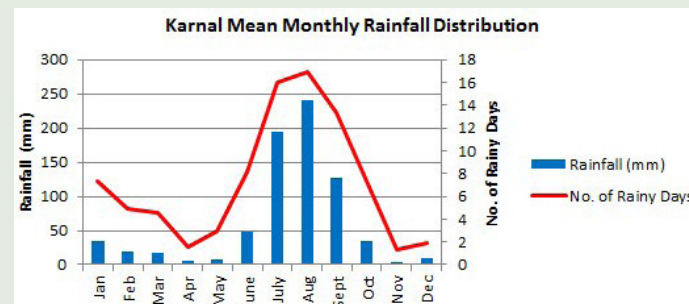
Number of people in the household	Baseline	Mid-term	Final
1	1%		
2	2%		
3	14%		
4	23%		
5	19%		
6	12%		
6+	29%		

Area of land cultivated (ha)*	353.20		
Average (mean) per household (ha)	2.52		

### Highest level of education obtained by any household member

No formal education	2%		
Primary	14%		
Secondary	41%		
Post-secondary	43%		

\*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	0/13		
Women's group	2/8		

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

<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	74%		
Water	0%		
Soil	1%		
Tree/agroforestry	21%		
Livestock	42%		

#### Adaptation

% households reporting changes to their agricultural practices

	Baseline	Mid-term	Final
0-1 change	9%		
2-10 changes	4%		
11 or more changes	87%		

#### Mitigation

% households doing

Tree management\*

	Baseline	Mid-term	Final
Yes	21%		
No	79%		

Soil management

	Baseline	Mid-term	Final
None	10%		
Some	90%		

Intensification

	Baseline	Mid-term	Final
None	10%		
Low	2%		
High	88%		

Productivity

	Baseline	Mid-term	Final
No Increase	10%		
Some increase	90%		

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

% households reporting this driver

	Baseline	Mid-term	Final
Markets	100%		
Weather/climate	86%		
Pest and Diseases	50%		
Labour	66%		
Land	60%		
Projects	33%		

### Drivers of changes to livestock production\*

% households reporting this driver

	Baseline	Mid-term	Final
Markets	98%		
Weather/climate	2%		
Pest and Diseases	41%		
Labour	6%		
Projects	27%		

### 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	0			3		
Deforestation	0			0		
Pest and Diseases	0			0		
Information/Knowledge	1			0		
Land Demarcation/fragmentation	1			0		
Soil degradation/Erosion	0			0		
Rainfall Changes	0			1		
Charcoal Burning/Fuel	0			0		
Government	0			1		
Forest Fire/Bush burning	0			0		
Overuse	0			0		
Spiritual/Cultural/Religious	1			1		
Invasive tree species	0			0		
Increase in wealth	0			0		
Increase in livestock	0			0		
Social/Community conflicts	1			1		
Infrastructure	1			0		

\*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	9%		
Other off-farm employment	41%		
Business	19%		
Remittances/gifts	18%		
Payments for environmental services	0%		
Payments from government or other projects/programs	60%		
Loan or credit from a formal institution	44%		
Informal loan or credit	71%		
Renting out farm machinery	26%		
Renting out your own land	9%		
No off-farm cash source	0%		
<b>Product diversification</b>			
% of households			
1-4 products (low)	15%		
5-8 products (intermediate)	84%		
9 or more products (high)	2%		
<b>Selling/Commercialization Diversification:</b>			
% of households			
No products sold	5%		
1-2 products sold (low)	45%		
3-5 products sold (intermediate)	49%		
6 or more products sold (high)	1%		



## Food security

### Food Security Index

% households	Baseline	Mid-term	Final
More than 6 hunger months/year	0%		
5-6 hunger months/	1%		
3-4 hunger months/	1%		
1-2 hunger months/	0%		
Food all year round/No hungry period	99%		

### Food security organisational linkages

Men groups			
Organisation receives	Baseline	Mid-term	Final
Funding	4		
Capacity Building	2		
Food	0		

Organisation provides			
Funding	1		
Capacity Building	3		
Food	0		

Women groups			
Organisation receives	Baseline	Mid-term	Final
Funding	3		
Capacity Building	1		
Food	1		

Organisation provides			
Funding	1		
Capacity Building	1		
Food	1		

### 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	90%		
% households mainly consuming from own farm in the month of lowest shortage	90%		

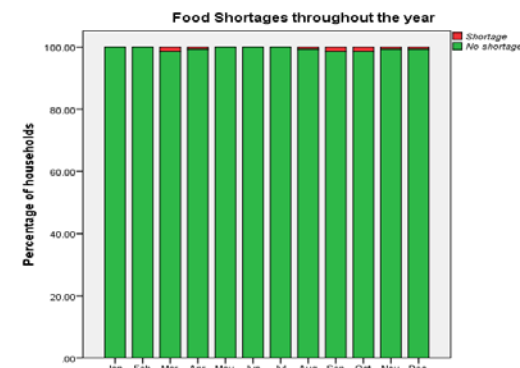
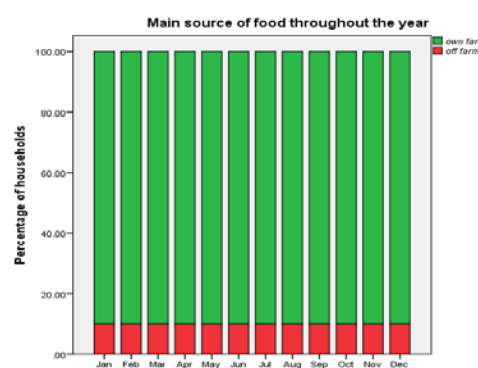
### Ratio of local organisations to total number of organisations named in each area of food security work\*

Men's group	Baseline	Mid-term	Final
Availability	0/4		
Access	0/1		
Utilisation	0/3		

Women's group	Baseline	Mid-term	Final
Availability	2/5		
Access	1/4		
Utilisation	0/3		

\* 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	Ponds are not hygienic, canals are seasonal, no support from government		
	F	Yes	Semi-functional, dries up		
<b>Farmland</b>	M	Yes			
	F	Yes			
<b>Forest</b>	M	No			
	F	No			
<b>Pasture</b>	M	No			
	F	No			
<b>Markets</b>	M	No			
	F	No			
<b>Is there a problem of access to the resource?</b>					
<b>Irrigation</b>	M	Yes	Community/government owned		
	F	Yes			
<b>Farmland</b>	M	Yes	Privately owned		
	F	Yes	Privately 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	No			
	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	0%		
Water catchment/management	0%		
Soil improvement related	0%		
Crop improvement related	0%		
Irrigation	0%		
Savings/credit related	4%		
Agricultural product marketing	4%		
Agricultural productivity enhancement related	16%		
Seed production	0%		
Vegetable production	1%		
Other group not mentioned above?	3%		
No groups	76%		

### 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>	0/5		
<b>Women's group</b>	0/0		

\* 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	0%		
Intermediate level	4%		
High level	96%		

### % households ownership

#### Transport

Bicycle	66%		
Motorcycle	79%		
Car or Truck	29%		

#### Production

Tractor	46%		
Mechanical Plough	42%		
Mill	4%		
Water pump/Treadle pump	72%		
Thresher	16%		
Boat	0%		
Fishing Nets	1%		

#### Energy

Solar Panel	4%		
Generator	21%		
Battery	61%		
Biogas Digester	4%		
LPG	84%		

#### Information

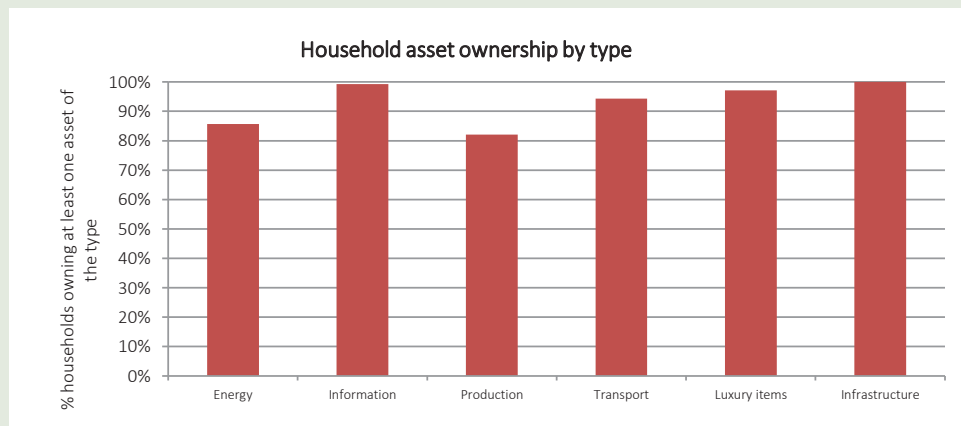
Radio	15%		
Television	94%		
Cell Phone	99%		
Computer	17%		
Internet Access	9%		

#### Luxury

Refrigerator	81%		
Air Conditioning	18%		
Electric Fan	96%		
Bank Account	92%		

#### Infrastructure

	Baseline	Mid-term	Final
Improved storage facility for crops	92%		
Water storage tank	93%		
Well/borehole	51%		
Running/tap water in dwelling	81%		
Electricity from a grid	97%		
Improved housing	99%		
Improved roofing	85%		
Separate housing for farm animals	91%		





## Networks of information

### Networks of information - Men Group

	Baseline	Mid-term	Final
<b>Weather</b>			
Friends/relatives	Yes		
Neighbours	Yes		
Middleman	No		
Agro Metro Dept.	Yes		
IFFCO Sanchar	Yes		
PACS	No		
Gov't Call Centre	Yes		
Agro Dept.	No		
ICAR	No		
Radio/TV	Yes		
Newspaper	Yes		
Observation	No		
Agro-Vet	No		
Trainings	No		
Market	No		
Grain market	No		
Agro Fairs	No		
Input Traders	No		
Agro Campaigns	No		

### Networks of information - Men Group

	Baseline	Mid-term	Final
<b>Agricultural Marketing</b>			
Friends/relatives	Yes		
Neighbours	Yes		
Middleman	Yes		
Agro Metro Dept.	No		
IFFCO Sanchar	No		
PACS	No		
Gov't Call Centre	No		
Agro Dept.	Yes		
ICAR	No		
Radio/TV	Yes		
Newspaper	Yes		
Observation	No		
Agro-Vet	No		
Trainings	No		
Market	No		
Grain market	Yes		
Agro Fairs	No		
Input Traders	No		
Agro Campaigns	No		

### Networks of information - Men Group

	Baseline	Mid-term	Final
<b>Agriculture</b>			
Friends/relatives	Yes		
Neighbours	Yes		
Middleman	No		
Agro Metro Dept.	No		
IFFCO Sanchar	Yes		
PACS	No		
Gov't Call Centre	Yes		
Agro Dept.	No		
ICAR	Yes		
Radio/TV	Yes		
Newspaper	Yes		
Observation	No		
Agro-Vet	No		
Trainings	No		
Market	No		
Grain market	No		
Agro Fairs	Yes		
Input Traders	Yes		
Agro Campaigns	Yes		

## Networks of information

### Networks of information - Women Group

	Baseline	Mid-term	Final
<b>Weather</b>			
Friends/relatives	Yes		
Neighbours	Yes		
Middleman	No		
Agro Metro Dept.	No		
IFFCO Sanchar	No		
PACS	Yes		
Gov't Call Centre	No		
Agro Dept.	No		
ICAR	No		
Radio/TV	Yes		
Newspaper	No		
Observation	Yes		
Agro-Vet	No		
Trainings	No		
Market	Yes		
Grain market	No		
Agro Fairs	No		
Input Traders	No		
Agro Campaigns	No		

### Networks of information - Women Group

	Baseline	Mid-term	Final
<b>Agriculture</b>			
Friends/relatives	Yes		
Neighbours	Yes		
Middleman	No		
Agro Metro Dept.	No		
IFFCO Sanchar	No		
PACS	Yes		
Gov't Call Centre	No		
Agro Dept.	No		
ICAR	No		
Radio/TV	Yes		
Newspaper	No		
Observation	Yes		
Agro-Vet	No		
Trainings	No		
Market	Yes		
Grain market	No		
Agro Fairs	No		
Input Traders	No		
Agro Campaigns	No		

### Networks of information - Women Group

	Baseline	Mid-term	Final
<b>Livestock</b>			
Friends/relatives	Yes		
Neighbours	Yes		
Middleman	No		
Agro Metro Dept.	No		
IFFCO Sanchar	No		
PACS	No		
Gov't Call Centre	No		
Agro Dept.	No		
ICAR	No		
Radio/TV	Yes		
Newspaper	No		
Observation	Yes		
Agro-Vet	Yes		
Trainings	No		
Market	Yes		
Grain market	No		
Agro Fairs	No		
Input Traders	No		
Agro Campaigns	No		

## Networks of information

### Networks of information - Men Group

	Baseline	Mid-term	Final
<b>Climate Change</b>			
Friends/relatives	Yes		
Neighbours	Yes		
Middleman	No		
Agro Metro Dept.	No		
IFFCO Sanchar	Yes		
PACS	No		
Gov't Call Centre	No		
Agro Dept.	Yes		
ICAR	No		
Radio/TV	Yes		
Newspaper	Yes		
Observation	No		
Agro-Vet	No		
Trainings	No		
Market	No		
Grain market	No		
Agro Fairs	Yes		
Input Traders	No		
Agro Campaigns	Yes		

### Networks of information - Women Group

	Baseline	Mid-term	Final
<b>Health &amp; Nutrition</b>			
Friends/relatives	Yes		
Neighbours	Yes		
Middleman	No		
Agro Metro Dept.	No		
IFFCO Sanchar	No		
PACS	Yes		
Gov't Call Centre	No		
Agro Dept.	No		
ICAR	No		
Radio/TV	Yes		
Newspaper	No		
Observation	Yes		
Agro-Vet	No		
Trainings	Yes		
Market	No		
Grain market	No		
Agro Fairs	No		
Input Traders	No		
Agro Campaigns	No		

## Networks of information

% of households receiving weather-related information			
	Baseline	Mid-term	Final
Start of the rains	80%		
Forecast of extreme events	64%		
Forecast of pest or disease outbreak	73%		
2-3 month weather forecast	22%		
2-3 day weather forecast	36%		

Of households receiving information, who in the family receives it			
	Baseline	Mid-term	Final
Start of the rains			
Men	80%		
Women	4%		
Both	16%		

Forecast of extreme events			
Men	84%		
Women	0%		
Both	16%		

	Baseline	Mid-term	Final
2-3 month weather forecast			
Men	74%		
Women	0%		
Both	26%		

2-3 day weather forecast			
Men	80%		
Women	0%		
Both	20%		

	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	8%		
High	0%		
Medium	42%		
Low	17%		
None	33%		
<b>Allocation of staff</b>			
Very high	0%		
High	8%		
Medium	25%		
Low	33%		
None	33%		
<b>Allocation of budget</b>			
Very high	0%		
High	8%		
Medium	8%		
Low	50%		
None	33%		

## 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>Ponds:</b> not hygienic nor satisfactory	No mention of pondees in activities of the organisations		
<b>Canals:</b> dries up in dry season, owned by government whos does not give any support	Promotion of water conservation and less water hungry crops. Flood irrigation is discouraged in favour of drip and micro-irrigation		
<b>Wells:</b> functional, with good quality water	wells are bored; water conservation through water recharge system and underground pipe line		
<b>Farmland:</b> large landholdings, functional	Provision of modern agricultural technology; promotion of fodder production; soil management: soil testing, soil conservation, discouraging the burning of straw and crop residue, promotion of of water soluble fertilisers and green manure, reduction of pesticides, and adoption of Integrated Pest Management; promotion of diversification of crops; training in agronomic practices;		
<b>Roads:</b> functional	Construction and repair of roads		
<b>Schools:</b> in general in good condition and provide good quality education	Promotion of child education and vaccination, promotion of girls and women education; provision of services to infants, preschoolers, expecting and nursing mothers in need of immunization, healthy food, clean water, clean toilets and a learning environment; Providing free education;		
<b>Temple, Gurudwara and Cremation grounds:</b> in good condition			
<b>Market:</b>	Creation of market infrastructure;Run Public Distribution Shops; Protect farmers from middle men, Sahukaars and distress sales; set up a marketing infrastructure for better regulation of the purchase, sale, storage and processing of agricultural produce		
<b>Forests:</b>	Forest conservation, afforestation, social forestry and the distribution of seedlings, Tree planting; use of afforestation techniques to reclaim salt affected areas; Promote plantation in agricultural fields in order to increase forest cover		



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