Perception of the Local community on Climate Change Adaptation Strategies in Mahanadi Delta, Orissa: An Analysis

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Introduction

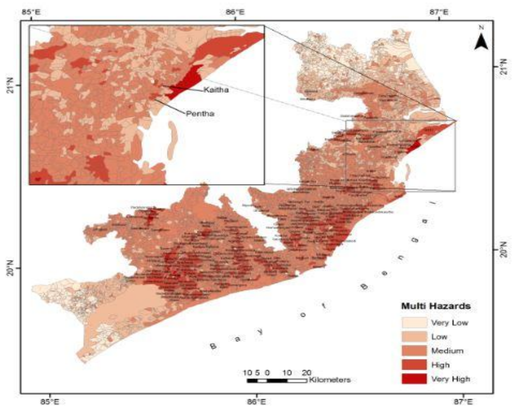
Near about 60% population of Odisha is fully or partially dependent on agricultural sector for their subsistence. In 1950s the share of the sector in GSDP was more than 70% but now according to the advance estimate for the year 2013-14 it has come down to 15.58 %. Currently, the emphasis has been laid on increasing productivity and cropping intensity. (Economic Survey 2013-14). So Agriculture was the highest contributing sector to the total economy and now the sector is facing many challenges and climate disaster is one of them. So the determination of the factors affecting climate adaptation and knowledge of adaptation is a vital one for the farmers of Kendrapara as well as Mahanadi Delta. The study involved survey of 24 households from the two villages (Pentha and Koitha) of Kendrapara District located in the Mahanadi Delta

Objectives

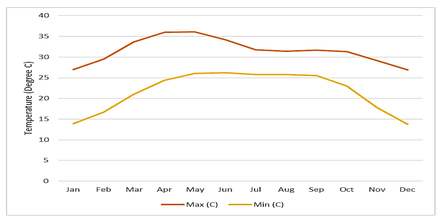
As of now, no study has been made or attempted to identify the factors which are affecting the farmers' adaptation choices and the perceptions on climate change in Mahanadi Delta. As a consequence the objective of this study is to identify the factors and to guide the policy makers for promotion of best suitable adaptation activity.

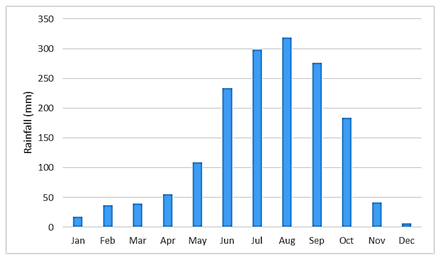
Description of the Study Area

Location Map



Average temperature and rainfall from 1911- 2010





Landuse classification of Pentha , Kaitha and Kendrapara

Land utilization pattern	Kendrapara (Area ('000 Ha)	Percentage	Pentha Area (Ha)	Percentage	Koitha Area ('Ha)	Percentage
Forest area under revenue village	25	9.47	0	0	0	0
Mics. tree crops & Groves	5	1.89	0	0	0	0
Permanent pasture & grazing land	8	3.03	0	0	135	69.23
Cultivable waste	6	2.27	0	0	0	0
Land put to non-agricultural use	49	18.56	0.02	0.010	15	7.69
Barren & uncultivable land	5	1.89	0	0	45	23.07
Current Fallow	11	4.17	0.16	0.083	0	0
Other Fallow	14	5.30	0	0	0	0
Net area sown	141	53.41	191.82	99.90	0	0
total geographical area	264		192		195	

Source: District at a glance Odisha (2013), Directorate of Economics and Statistics, GoO

According to the above table, the percentage of total area which falls under **Net Sown Area** -

- Kendrapara 54 %
- Pentha 99%
- Koitha has no net sown area but has 69% permanent pasture area.

Methods and data

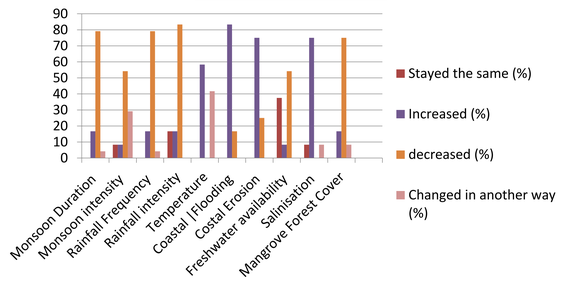
- **Both Primary and Secondary data have been used**
- Primary data were collected through structured questionnaire and the purposive sampling has been employed.

Heckman Probit model was initially considered for the identification of factors for farmers perception and best suitable adaptation activity. But since the number of observations were very low, the degrees of freedom were also very low. Hence some trend analysis was used to get a trend of the variables.

The study involved survey of **24 households of farmers/fishermen community from the two villages (Pentha and Koitha) of Kendrapara District located in the Mahanadi Delta**

Results and Discussion

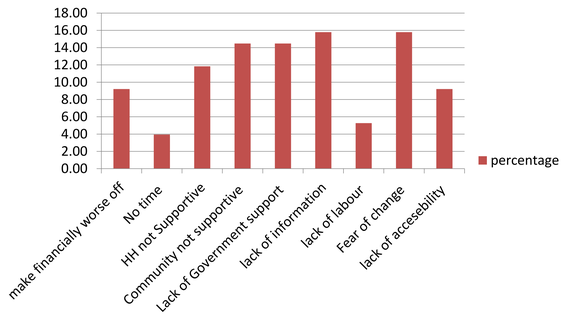
Perception on environment



According to the above Graph it has been found that major percentage of the people said that

- **monsoon onset**, **monsoon intensity**, **rainfall frequency** and **rainfall intensity** have **decreased**
- **coastal flooding**, **coastal erosion**, **temperature** and **salinization** have been **increased**.

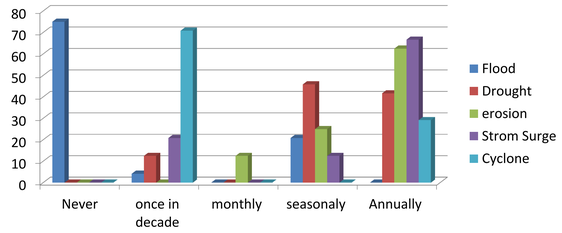
Major Bariers of Adaptation



Major barriers of adaptation in the study area

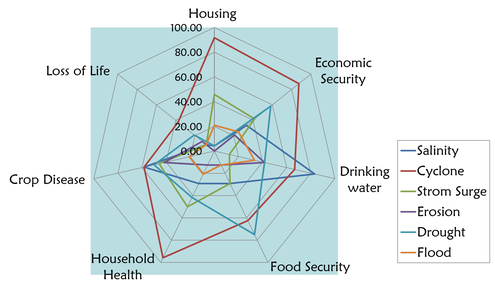
- Lack of information on adaptation options and fund availability
- Fear of change to implement adaptation options
- Lack of community and government support

Exposure to Environmental Stress in the Study Area



Out of 6 exposure to environmental stress only Erosion, storm surge and cyclone are the major exposure of the Study site

Sensitivity to environmental stress in the study Area



Out of 7 sensitivity to environmental stress only Housing, Household Health, Drinking water and economic security are the major sensitive to cyclone, where as drinking water and crop disease are sensitive to salinity.

No adaptation activities have been found through household survey but some of the adaptation activities have been observed in the field.

Conclusion

The study found that monsoon onset, monsoon intensity, rainfall frequency, rainfall intensity coastal flooding, coastal erosion, temperature and salinization are the major environmental factors for the perception of climate change adaptation.

Since lack of information, lack of support and fear to change are the major barriers for adaptation, the **government and policy makers may incorporate some awareness programme and encourage farmers to get the government support in order to increase the farmer's adaptability of climate change**.

According to the study, only 3 exposure to environmental stress only erosion, storm surge and cyclone are the major exposure of the study area. The Government can take initiatives to formulate policies which should aim to reduce the impact of these climate variabilities.

Out of 7 sensitivity to environmental stress only Housing, Household Health, drinking water and economic security are the major sensitive to cyclone. Pucca house in the coastal fringe areas and primary health center in the villages may reduce the sensitivity. Since drinking water and crop disease are sensitive to salinity, pipe water and salt tolerant crop varieties may be the solution to reduce the sensitivity.

Although some adaptation activities could be observed during field visit, no mention of those activities were made by respondents in response to the survey questionnaire. To enable further study on this, maybe the questionnaire can be slightly modified to help extract appropriate responses.

Photos of Adaptation

Acknowledgement:

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