

People's perception on climate change in coastal odisha

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ABSTRACT: The poorest countries and the poor communities in any country are the ones who suffer most from the disasters brought about by climate change, because of the lack of means to cope with it. The rural communities all over the world are also the ones to bear the brunt of adverse impacts of climate change, mainly because their livelihoods is dominantly dependent upon natural resources based activities, which in turn, are directly impacted hindered by the climate. Very often, the experiences and observations of the communities living in these remote rural areas can be the source of information for the scientific communities. It is also important for policy makers and development workers to first assess how such changes in climate patterns are understood by the community. Unless the adaptation options put forth by the organizations matches with the perceptions of the community, it cannot be expected that those options will be adapted by the community. It is, thus, important to study the perceptions and views of the general public such that they provide insights in formulating mitigation as well as adaptation strategies. Coastal areas of Odisha State in the northeastern part of the Indian peninsula are potentially vulnerable to climate change. The present study therefore is an attempt to focus on public perceptions and opinions about climate change by reviewing relevant surveys and studies conducted on selected villages of Jagatsinghpur and Kendrapara.

KEY words: livelihood, communities, public perception, disaster, climate change, natural disasters, vulnerable

Introduction

Perception of climate change among rural communities:

Community perceptions, views, and opinions regarding climate change matters both in designing mitigation policies as well as formulating adaptation strategies. According to Leiserowitz (2007), public opinion is important because it forms the background within which policies are formulated, and policies are supported or opposed by the public based on how they perceive the associated risks of climate change. If the public perception of risks differ from the view of policy makers ,policy implementation will be misunderstood ,neglected ,or even opposed(Lorenzoni and Pidgeon,2006).On the mitigation side ,measures like limiting the use of fossil fuels and promoting renewable energies might require changes in the energy tax policies ,which cannot be implemented unless the act is accepted as necessary and supported by the general public. Thus, public views and opinions must be assessed and considered by the government before designing and implementing any such mitigation measures. On the other side, the adaptation issue is crucial especially for the vulnerable communities who are more affected by adverse impacts of climate change. For such communities, how they perceive the ongoing changes determines how they formulate strategies to cope with the changes in the short run and to adapt to the

long term changes. In other words, it is necessary to realize that some changes are going on in order to take actions to adjust to those changes (Deressa, Hassan, and Ringler, 2011).

Although climate change is a universal phenomenon, its indicators and manifestations are entirely local, so are the adaptation choices, strategies and practices. There has, thus, been increasing emphasis on the bottom-up approaches that climate change studies should be conducted at the local level where adaptations ultimately take place (Smit and Wandel, 2006). There are few studies done among the rural communities in developed countries (Patino and Gauthier, 2009). However, many studies have been conducted in the rural localities in Africa (Deressa, Hassan and Ringler, 2011; Gbetibouo, 2009; Maddison, 2007) and Asia (Chaudhary and Bawa, 2011; Byg and Salick, 2009; Vedwan, 2006; Dahal, 2005; Vedwan and Rhoades, 2001). In Asia, all these studies are conducted among the Himalayan communities of India, Nepal, and Tibet, probably because much of the attention in Asia has been received by the melting glaciers in the Himalayas (IPCC, 2007d).

Study area

Methodology

Keeping in view the objectives of this field study basic information on how household and rural communities perceive about changing climate are gathered. Parameters like rainfall frequency, quantity, number of rainy days and its impact on their crops, animal is considered.

Sampling design and analytical tool

Sample villages (jambu, kendrapatia, bateni of jambu block from Mahakalpara block) and Villages under Gupti grampanchaya. 1. Okilapala 2. Bagpataia 3. Adasala of Rajnagar block of kendrapara. Village Ramtara, Kalabedi and Padmapur of Ersama block and village Nadera and Tentulibelari of balikuda block of Jagatsinghpur were selected randomly. The areas selected are highly vulnerable to CINDS due to their proximity to sea. The villages are vulnerable to a number of natural hazards, but most particularly flooding and storm surges (cyclone) in the Bay of Bengal.

The farmers, fishermen, landless laborers, women SHG, elderly person of the villages were interviewed for the study. Simple statistical methods for tabulation and analyses were used.

3. People's perception about changing rainfall

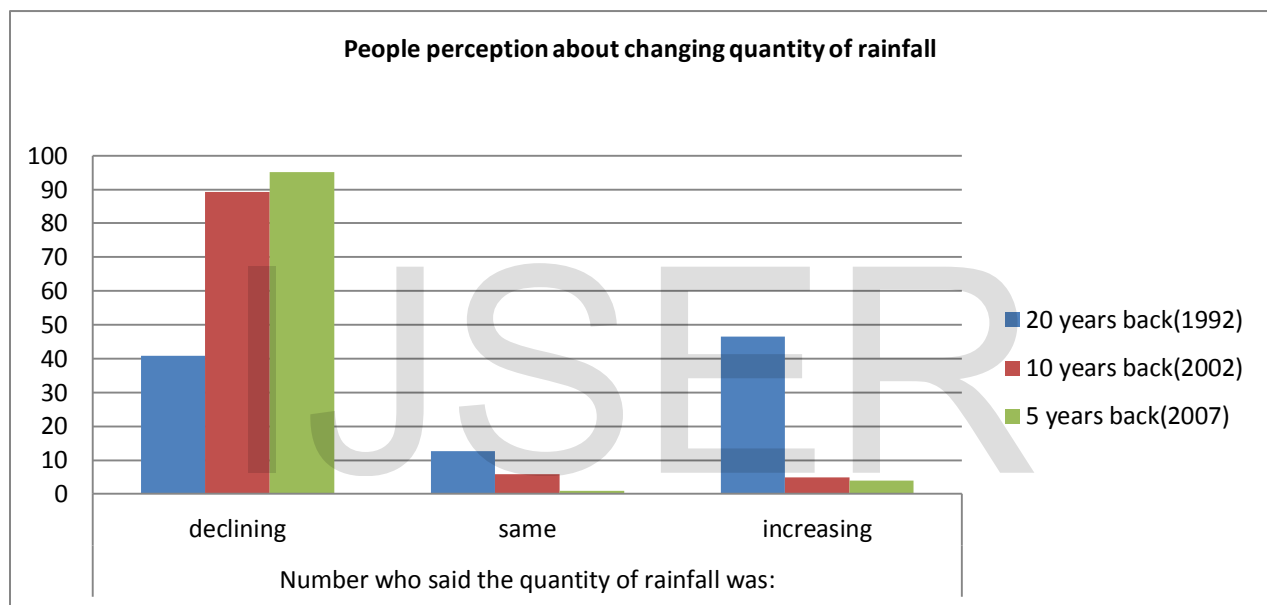
Change in rainfall could have three aspects namely, quantity of rainfall, number of rainy days in a season and spread or duration of rainy days. Since our objective was to study people's perception about changing rainfall, and we made a time analysis. The respondents were asked to state about the situation 20 years back, 10 years and 5 years back. The respondents were asked to give their assessment about the changing rainfall in the area. Was the rainfall was increasing, decreasing or was it almost the same 20 years back i.e. in 1992. 84(40.8%) respondents were of the opinion that, the rainfall was declining, 96(46.6%) said the rainfall was increasing and another 26(12.6%) said they did not perceive any change

in the rainfall 20 years back .the same question was repeated to assess the quantity of rainfall 10 years back(2002) and 5 years back(2007).the responses are stated below in tabular format.

Table 1: People perception about changing quantity of rainfall

Time	Number who said the quantity of rainfall was:		
	declining	same	increasing
20 years back(1992)	(40.8)	(12.6)	(46.6)
10 years back(2002)	(89.3)	(5.8)	(4.9)
5 years back(2007)	(95.1)	(1.0)	(3.9)

Note: figures in bracket indicate percentage



Twenty years back i.e. in 1992, only 40.8 percent perceived the rainfall to be declining. As time progressed ,the perception about declining rainfall increased to 89.3 percent in 2002 and 95.1 percent in 2007.on the other hand ,20 years back 46.6 percent perceived that the rainfall was increasing. This perception however declined to 4.9 percent in 2002 a declining and 3.9 percent in 2007.the data not only indicates that the rainfall is not only declining but the decline was also accelerating.

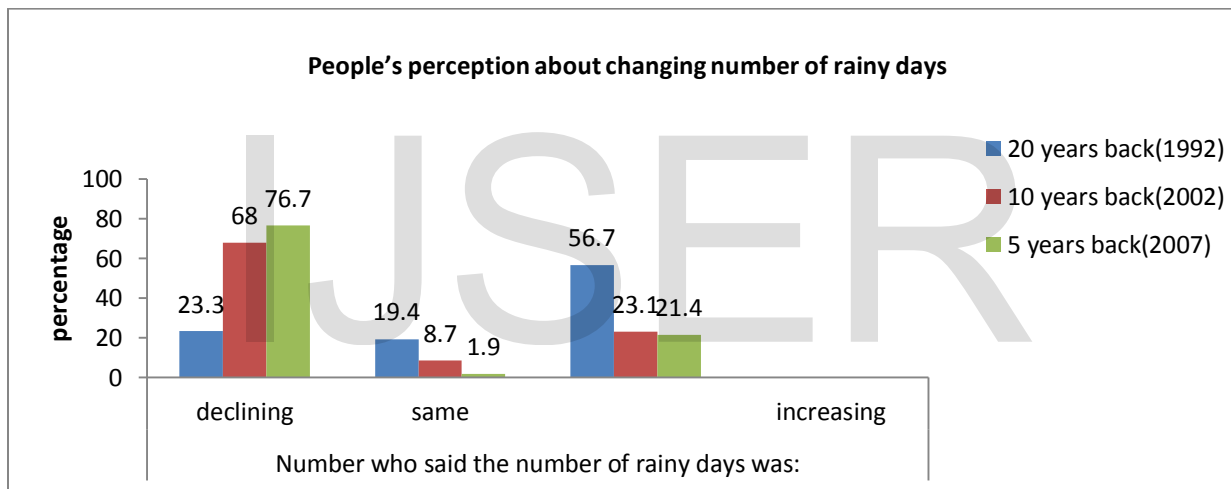
Was the decline in quantity of rainfall associated with decline in the number of rainy days ? we asked the respondents to state if the number of rainy days was increasing, decreasing or has remained almost the same? People were asked to make an assessment for 1992 (20 years back) ,2002 (10 years back) and 2007 (5 years back).our data suggests that in the year 1992 ,only 23.3 percent thought that number

of rainy days was declining. This perception increased to 68 percent in 2002 and further increased to 76.7 percent in 2007. along with this increase ,there was a corresponding decline in those who thought that the number of rainy days remained the same or was increasing. Thus the number of rainy days also showed a continuous decline along with the quantity of rainfall.

Table 2: People’s perception about changing number of rainy days

time	Number who said the number of rainy days was:		
	declining	same	increasing
20 years back(1992)	(23.3)	(19.4)	(56.7)
10 years back(2002)	(68)	(8.7)	(23.1)
5 years back(2007)	(76.7)	(1.9)	(21.4)

Note: figures in bracket indicate percentage

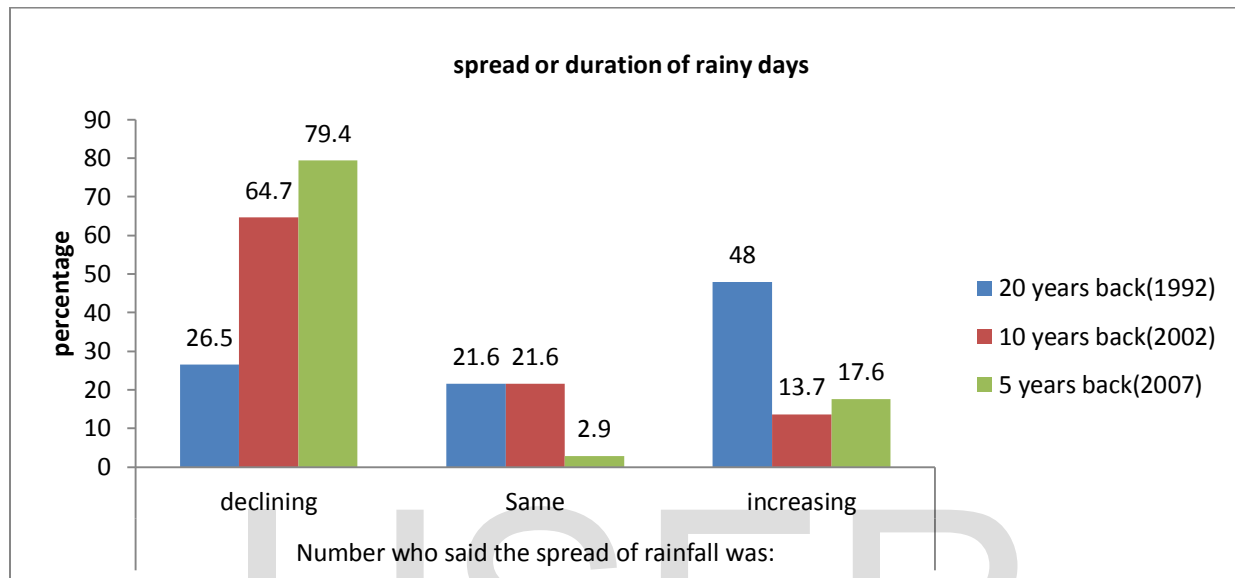


The next question was to find out if the rainy season was shrinking that is if the season that was expected to last for nearly 60 days is now being reduced to lesser number of days. we asked the respondents to state if they could perceive a change in the spread of rainfall 20 years back, 10 years back and 5 years back .the response is placed in table 2 .20 years back i.e. in 1992 ,26.5 percent respondents thought that the spread of rainy season was being reduced .by 2002, this increased to 64.7 Percent and by 2007 ,76.7 percent thought that the season was shrinking

Table 3: spread or duration of rainy days

Time	Number who said the spread of rainfall was:		
	Declining	Same	Increasing

20 years back(1992)	(26.5)	(21.6)	(48)
10 years back(2002)	(64.7)	(21.6)	(13.7)
5 years back(2007)	(79.4)	(2.9)	(17.6)



4 After asking the respondents about change in days, quantity and duration in rainy days they were asked about the impacts those changes brought in their livelihoods. As majority of the respondents perceived decline in rainfall, many felt crop production is declining. The impact of late rainfall shows impact on the shift on sowing and transplanting time of paddy, some felt that the land preparation for sowing paddy is hampered due to late pre-monsoon rains. The unpredictable nature of rains is also affecting the productivity of crops. There are mixed responses obtained from those perceiving higher rainfall. Some respondents said the crop production is higher and fodder is more available due to higher rainfall, while few of them said that too much rain causes lodging of crops, problems of water logging and higher incidence of crop diseases.

Table 4: Impacts of changes in rainfall

Impacts of	Type of impacts
Lesser rainfall on crops	Less production due to lesser rainfall{66},drying of fruit and vegetables{23}
Lesser rainfall on livestock	Lesser fodder availability{4}
Shifts in rainfall pattern on crops	Cannot sow /transplant on time(33),hamper land preparation for sowing(4)
Unpredictable rainfall on crops	Crops dry and wet periods hamper crops(5)
Higher rainfall on crops	Lodging(2),lesser crop production due to water

	logging(5),more diseases in fruits/crops(3),higher crop production(10)
Higher rainfall on properties	Properties/crops washed away by heavy rains/landslides

Conclusion

It's good to see that people are becoming aware of changing climate patterns. What more required is to take it more into grass root level. To make every layman from children, women to every person of the area aware of the changing climate so that they take it seriously and start adapting to it. Government initiatives required to make this more effective. There are several steps taken on adaptation mechanism but more incentives need to be taken on making common men aware of the changes so that he can really feel the necessity of adaptation and follow it. Unless the community realizes that there have been changes going on in the weather patterns, they cannot be motivated to take appropriate measures to adapt to their farming systems according to these changes. Studies have shown that information dissemination and community level extension services are very effective to inform the people about such changes and to convince them to take necessary adaptation actions. The NGOs and local government working at the grass root levels can play a very important role for disseminating the relevant information and conducting awareness raising campaigns. Rural communities need information about seasonal weather forecasts and they should be assisted to design their crop calendar in accordance with these forecasts .only broadcasting such information through radio and television is not sufficient as not all the rural households possess radio or television; and their time schedule may not be flexible enough to listen to those broadcasts. These types of information will be more effective if broadcasted by extension agents through direct interaction with the community and such programs should emphasize participation of both male and female.

Finally, monitoring climate changes in rural areas in developing countries is hindered by the lack of sufficient weather stations and recorded data. Establishment of small hydrological stations at the local level in rural areas is recommendable. As already recommended by Dahal (2005), training the staffs and students at local schools or members of local community _based organizations to obtain readings from rain -gauge and thermometers would not only make it possible to generate datasets on local climate, but it would also be easier to raise awareness among the local communities about the changing climate,and the appropriate measures that can be taken to tackle its adverse impacts.

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