Climate Change, Rural livelihoods and Fisheries: A case study of Rajnagar block in Kendrapada district of Odisha, India

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Introduction

Indigenous communities are vulnerable to climate change mainly due to their lesser access to financial resources, lack of social capital, and limited knowledge and information on climate change variability. The slightest change in the weather pattern has the potential to create problems like droughts, floods, cyclones, and other extreme weather conditions, which have a direct impact on the livelihoods of these communities. The paper aims to study the overall impact on household level livelihoods in Rajnagar Block of Kendrapada District of Odisha, India, under the influence of climate change.

Objectives

To study the impact of climate variability on livelihoods of native Fisherfolk and farmers, particularly focusing on their access to critical resources.

Study Area

Kendrapada district, a part of central Odisha, is characterized by hilly terrain, coastal plains, and islands. The district has six sub-districts, and Rajnagar Block is one of the most affected by the cyclonic storms. The study was undertaken in Rajnagar Block because it is one of the coastal districts in Odisha.

Methodology

Two sample villages (Dubinda and Puthapali) from Rajnagar Block were selected and the study was carried out with the help of key informant interviews and a detailed review of literature. The interviews were conducted with community leaders, local council members, and experts from different organizations. The geographical location of each village was mapped using a Geographic Information System (GIS). The data was then analyzed to understand the changes in climatic patterns and the impact on the community.

The study was based on the Climate Variability Perception timelines of Local Communities (CVP). The CVP was used to understand the perceptions of local communities about the impact of climatic changes and the associated socio-economic changes. The study was carried out during the period from 1980 to 2015.

Framework for Analysis

The framework for analysis was divided into four main components: Livelihood Assets, Vulnerability, Polity and Institutional Processes, and Livelihood Strategies. The framework was used to analyze the impact of climate variability on the livelihoods of the community.

Livelihood Assets

Livelihood assets are defined as the resources that can be accessed and used to generate income and reduce vulnerability. The study focused on four types of livelihood assets: Natural Capital, Financial Capital, Human Capital, and Social Capital.

Natural Capital

- Land and water bodies
- Forest and wildlife

Financial Capital

- Household savings
- Farm income
- Non-farm income

Human Capital

- Education and skill development
- Health

Social Capital

- Community networks
- Social support systems

The study found that the natural capital assets were highly affected by the cyclonic storms and droughts. The forests and water bodies were affected, leading to a decline in the availability of natural resources.

Impact on Asset Base: (Key Findings)

- Natural Capital: Decline in fish catches, decline in genetically valuable species, and information on mangrove forest.
- Financial Capital: Household lacks necessary of sufficient productive assets due to lack of income.
- Human Capital: Changes in human capital due to changes in information and socio-economic aspects, such as education and skill development.
- Social Capital: Decline in social support systems due to the lack of communication and networking.

Status of Mangroves Forest

The status of mangroves forest is shown in the figure below. The mangroves forest was highly affected by cyclonic storms and floods. The forest has been degraded, leading to a decline in the overall status of the forest.

Livelihood Outcomes

- Reduced income leads to less expenditure, leading to a decrease in household savings.
- Migration to urban areas for employment and education.
- Changes in community networks and social support systems.

Adaptation Strategies

- Establishment of early warning systems and emergency management plans.
- Introduction of appropriate technologies and practices.
- Development of community-based organizations and networks.
- Promotion of sustainable livelihoods and practices.

The study concluded that the community needs to adopt appropriate adaptation strategies to cope with the impact of climate variability on their livelihoods.

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Reference