

## *Chapter-9*

# Summary and Conclusion

Anshuman Jena, S K Acharya, G C Mishra and Lalu Das

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### Summary

The up surging issues of extension science are increasingly focusing on the aspects of social ecology along with its transformation as well as transition of concept and commodity as related to technology socialisation process. Every ecosystem has got its own structural and functional constructs which are in constant interaction and exchange with each other. The transforming extension paradigm is keeping up with structural issues, while the functional components are entirely the space retained by the structure and that's why without ecological paradigm, no such interaction can be elucidated or estimated. The present study is on Change dynamics of social ecology in Chilika coastal ecosystem part of India which has been characterized with polymorphic interactions amongst and between three sets of sub- ecological cybernetics viz physical ecology, biological ecology and social ecology.

### **Research setting**

The village Malud and Satapada of Krushnaprasad Block and Brahmagiri and Bentapur village of Brahmagiri Block, around Chilika coastal ecosystem of Puri district of Odisha, were selected purposively and a total number of 80 respondents were selected by simple random sampling method. The independent variables selected for the study were, Age ( $X_1$ ), Education ( $X_2$ ), Family Size ( $X_3$ ), Family Education Status ( $X_4$ ), No. of Vehicles changed ( $X_5$ ), Change in Consumption of Kerosene ( $X_6$ ), Change in Consumption of Petrol ( $X_7$ ), Changing Family Expenditure ( $X_8$ ), Changing Expenditure Allocation on Farming ( $X_9$ ), Changing Expenditure Allocation on Education ( $X_{10}$ ), Changing Expenditure Allocation on Health ( $X_{11}$ ), Change in Listening to Radio ( $X_{12}$ ), Change in Watching T. V ( $X_{13}$ ), Changing Interaction with Input Dealers ( $X_{14}$ ), Changing Interaction with Extension Agent ( $X_{15}$ ), Change in Farm Size ( $X_{16}$ ), Changing Cropping Intensity ( $X_{17}$ ), Changing Cultivable Land ( $X_{18}$ ), Change in Fertilizer Application ( $X_{19}$ ), while eleven dependent variables selected for the study were, Change in Perceived Effect of Radio ( $Y_1$ ), Change in Perceived Effect of T. V ( $Y_2$ ), Change in Perceived Effect of Input dealer ( $Y_3$ ), Change in Perceived Effect of Extension agent ( $Y_4$ ), Change in Productivity ( $Y_5$ ), Change in Family income ( $Y_6$ ), Change in Weed diversity ( $Y_7$ ), Change in Crop disease intensity ( $Y_8$ ), Change in Insect-pest intensity ( $Y_9$ ), Perceived Climate change effect ( $Y_{10}$ ), Perceived Climate changing effect on Agriculture ( $Y_{11}$ ).

All these. have been done to establish and estimate the pattern, direction and intensity of interaction to ultimately estimate the ecological behaviour

of that coastal ecosystem to ultimately derive and elicit their behavioural traits in the changing climatological, biological and physical setup.

### **Research Methodology**

After collection of data, data were processed and analysed in accordance with the outline laid down for the purpose at the time of developing the research plan. Process implies editing, coding, classification and tabulation of collected data. The main statistical tools and techniques used in the present study are as follows:

1. Mean
2. Standard deviation
3. Coefficient of Variance
4. Correlation of coefficient
5. Multiple regression analysis
6. Path analysis
7. Factor analysis
8. Canonical covariate analysis

A Pilot study was conducted before construction of data collecting schedule.

The Coefficient of Correlation recorded the relationship of Dependent variables with Independent variables. The regression analysis has been carried out to show the effects of the causal variables on the Dependent ones. The Factor Analysis presented for conglomeration of apparently different variables into a clustered factor based on intrinsic homogeneity called Eigen values. Canonical covariate analysis (also called the canonical

correlation analysis), designed to obtain maximum (canonical) correlations between the predictor and criterion canonical variates.

### **Conclusion**

The ecological function and dynamics are the driving forces for ushering changes in economy and sociology of farming. The availability of water, changing pattern of rainfall, the changes in atmospheric temperature, all are setting together to characterise agro-ecological functions as well. Any ecological function, postulates and promotes multi-tier structural configuration with status and hierarchy, which ultimately achieve some system goals.

The present study has envisaged the paradigm of social ecology and the empirical study had been set out in the one of the coastal system, Chilikalake ecosystem of Odisha. The system characteristics of Chilikalake are comprising of its hydrology, biodiversity counts, salinity status, micro flora, fauna, avian population and the pattering agriculture in the catchment areas.

The decadal observations have been recorded in the study as to elucidate the change pattern of agricultural production, productivity, fertilizer consumption, watching habits of Television, listening to Radio etc. and all these being done as to estimate, how people have perceived the meteorological changes, have impacted on the production and productivity in agriculture and also at the same time, how do fertilizer consumption has got an impact on production scenario of the crops.

The multivariate statistical analysis has presented a strong paradigm based on identification of critical factors contributing substantially on climate

change perception in coastal ecosystem and it's deteriorate impact, which has been neglected to the surrounding agro-ecological niche. Starting from production, family income, change in weed diversity, change in disease and insect-pest intensity etc., which ultimately lead to a change in effect of extension agent. The variables as have been written in step down regression analysis like, change in cultivable land, change pattern of watching television, listening to radio and change in education, all have been redeemed into a dependable estimator of climate change scenario.

Almost every year, within a cohort of last 53 years, coastal agriculture of Odisha has experienced brunt of 40 years of drought, flood or cyclones. This has been reflected in the stagnating yield of food crops over the couple of decades, even though the application of fertilizer in crop field is increasing and at the same time, a shift of occupation from farm to nonfarm economy has been well discernable. This has also negated the positive impact of modern technology in the operating farms.

It was observed that nearly 33.75 per cent of the respondents had heard about climate change. People were more aware about the phenomena like increase in temperature, reduction in agricultural and livestock production, increase diseases, increase sea level etc. than global warming or climate change phenomena.

The anthropogenic role in creating new ecological niche, for example, the cultivation of shrimp by allowing brackish water into the traditional crop fields, has added an ecological imbalance "earned" against the income revenue. This has invited a problem of salinity as well, the ingress of saline water means withdrawal of field crops and other allied vegetative

population including some weeds as well. The dynamics of Chilikalake are well relegated to its crop-geometry, its undulating yield behaviour as replicated to its topography of income and livelihood. This all has amounted to a complex perceptual disposition of value and opinion i. e. the transforming eco-dynamics of Chilika.

It was found that some farmers around Chilika area, took to fishing accretion because of failure of crops due to flooding in the last ten consecutive years. This has led, on the one hand, to conflict between the traditional and the neo-fishing communities. The farmers were anxious to get back to farming if flooding could be controlled and adequate measures are made to ensure irrigation but the fishermen would like to continue with farming.

The opening of the artificial sea mouth and the desiltation of the lead channel not only rejuvenated the lagoon ecosystem but also immensely benefited the fisher folk, by increasing their average annual income. This is facilitating the auto-recruitment of the fish, prawn, and crab juvenile into the lagoon resulting in remarkable improvement of the fishery resources.

With all this, the study needs more refinement and replications so as to ultimately create an empirical paradigm to organise study in such complexes, disposition of climate society.