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SOCIO-ECOLOGY OF NATURAL STRESS, TECHNOLOGICAL CHANGES AND HUMAN RESPONSE IN BHUTAN

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ANIL K GUPTA

CENTRE FOR MANAGEMENT IN AGRICULTURE

INDIAN INSTITUTE OF MANAGEMENT

AHMEDABAD 380 015

DRAFT PROPOSAL

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The Context:

To focus "attention not only on the research as an end in itself, but on research as a way of actually improving the living conditions of the peoples of the third world"[1] any analytical approach must encompass both, the genuine definition of the problem and a considerable interaction with various parties involved including the poor people, community and bureaucratic leaders and policy planners. Ideally one would expect several iterations of such a dialogue to take place in somewhat 'delphi' style so that actual positions of all concerned as against apparent positions may be clearly understood. However time and resources may come in the way. And yet, the UNESCO's concerns with regard to generation of valid knowledge[2] imply that a proper blend of ideographic and nomothetic approaches would be essential for a research endeavour to be relevant to those whose living conditions must be seen to improve.

The way we would try to maintain above context while carrying out a study of implication of environmental changes on small scale rural and urban producers in Bhutan is described below.

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1. Porras Agustin, Opening address on behalf of CEESTEM in a workshop, included in Small Farmers in the Caribbean and Latin America: Explorations into a programme of research and action, UNESCO, Paris, 1984, pp.45
2. Debate amongst the participants of the above workshop particularly R Parris, pp.61-62, Y.Atal, pp.66-67 cited in UNESCO, 1984, Ibid.

We have mentioned the problem and conceptual framework in part-one, objectives of the study in part-two, methodology in part-three and the limitations of the study in part-four.

Part-One: The Problem

Bhutan is a small land locked country having one of the most rugged terrain in the world.[3] However, this limitation of terrain has historically resulted in a sort of isolation which allowed main-environment relationships to emerge somewhat autonomously. Only when links with Tibet were snapped on one hand and aid and trade intensified with India, that ecological setting and economic environment started getting substantially modified.

How these modification affect (a) the long term possiblities of providing enough food for the poor people (b) short term resource adjustments compatible with local skills and (c) inter-sectoral links through factor and product markets in a way that developmental processes did not disturb the ecological balance too

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3. The detailed description of the economy and key developmental indicators are given in the World Bank country study, Bhutan: Development in a Himalayan Kingdom, Washington, 1984. We will only selectively refer to this report here.

much, would determine the destiny of this country in future.[4]

In a subsistence economy with limited monetization, expansion of trade and transport was expected to have significant impact on the time horizons of various classes of people. Although it is assumed that landholding distribution is more or less equitable,[5] the pastoral economy with large scale seasonal mobility of livestock men over long distances coupled with differential vulnerability to ecological stress might have created regions of abundance or scarcity. To what extent individual rights in livestock and cultivated land and collective tenurial rights in pasture lands have generated inequity in access to resources and opportunities remains to be seen. However, it is quite plausible

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4. In this context, it is worthwhile to recall what King Jigme Singye Wangchuck has said, "We are developing for ourselves. The success of our development effort will be determined by the question whether we are happy or not. If the harmony is disturbed, we will have failed,". The challenge of achieving development without disturbing the "harmony" gets reflected in most national planning concerns. Rightly, says Dasho Magrash Gurung, Director of the council for Social and Cultural Promotion, "The goal of development efforts in Bhutan is to arrive at a self-reliant society characterized by individuals who live in harmony, with themselves, their families, their communities, and their environment". However the stress introduction of new technology and markets is creating remains to be seem. Still, one can learn a lot from such a conscious national resolve. See Brauer Dieter, Bhutan - The blessings of a late start into modernity, D+C, 1984 pp 18-21.

5. Ibid., pp.iii.

that differentiation amongst peasantry could emerge not merely through market penetration but also though the differential norms of pooling and redistribution that different settlements had evolved.[6] Essentially, the inter play between risks, resources and skills generated a matrix of opportunities which in a given ecological context, could help us understand why different segments of society did not have the same time horizon while appraising benefits and costs of using different technologies of resource use or environmental management.

The problem, thus, we suggest is to precisely understand the nature of matrix in which environmental risks like dooughts are perceived by people having varying bundle of enterprises or mix of land, livestock, craft and labour activities in characteristically different manner. The historical process of surplus generation and exchange legitimised through certain cultural practices or ethnic rituals might have led to ascendency in the value of certain skills with decline in the value of others.

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6. The difficult communication situation in Bhutan is reported to have devided or"threatens to devide the people into two distinct classes: those near the road and those away from it" (Brauer 1984:19). Thus the physical access differential to public and private institution may exacerbate inequities in society. Dasho Iam Penchor, Dy. Minister of Planning showed awareness of this problem and policies of subsidising those away from the road were mentioned as examples (ibid:20).

Technological change[7] coupled with import of food might have created disparities in the degree of certainty with which an urban or rural poor could expect to get food and employment. This is to be expected given the tendency of public bureaucracies world over to show distinct urban bias. However, large scale experiments on decentralised development through popular participation, local sharing of costs and/or labour requirements of different projects might make the situation in Bhutan better than in most countries. The issue still remains to see as to how exactly production relations in agriculture and animal husbandry sector have been influenced through ecologically defined limits to which resource use pattern could be modified. Technological change which was not compatible with the ecological resource renewal pattern might even affect the traditional norms of labour pooling or sharing of draft power implements etc.[8] The key principle again was, the time frame in which different people individually or in groups draw balance sheets of mutual exchanges. Differential stakes in environmental protection thus stemmed from following factors:

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7. During 1970-80, the fertilizer consumption has increased from nearly nil level to 11 kg per cultivated acre of land. Average index of food production stood at 107 during 1979-81 with 1969-71 as base year. 93 per cent of workforce was still engaged in Agriculture. Food imports had increased from 23000 m.ton to 30000m tons. during 1974-1981. See, World Development Report-1983, pp.158.

8. Rice & wheat cultures have been known to trigger different patterns of property rights in land, status of women, boundary of common versus individual rights in natural resources or public goods etc. Mukarjee R, Regional Sociology, The Century Co. New York, 1926 pp.171 quoted in Dastur Aloo J.Man and his environment, The popular Book depot, Bombay 1954, pp.116-117

a) Mix of different enterprises like crop, livestock, craft, labour (mobility, sex composition, skill base etc). Thus range of this mix is defined by the ecological context. The scale however, is a function of access to factor and product markets besides several other aspects mentioned below:

b) Mean-variance nature of the enterprise mix. At the given level of technology, various combinations could be understood as follows:

Mean level of outputs

Variance or Fluctuations around mean	HIGH	LOW
HIGH	HMHV	LMHV
LOW	HMLV	LMLV

c) Perception of risk, as against actual or objective level of risk will vary amongst different households depending upon the access to individual, communal and public risk mitigating mechanisms; history of losses vis-a-vis gains; immediate past experience as against the expectations; degree of deficit in the household budget; access to exchange mechanisms/RAM both ethnic and kinship, etc. It may be worthwhile to clarify here that intra-Household RAM risk adjustment mechanisms would include asset disposal, migration, reshuffling of enterprise mix etc., the inter-Household RAM would include tenancy credit and labour contracts. The communal

risk adjustments referred to mechanisms of collective sharing of risks, pooling of resources, maintaining communal food reserve, etc. The public risk adjustment policy could include drought relief, public works, employment guarantee etc.

d) The definition of various physical characteristics of environment as resources depended upon the demographic pressures and the degree of insurance which each settlement wanted to have for its future survival.[9]

e) The dynamic pressures of adoptation had been evolved by the peasants to deal with the ecological changes. There are several features of these adaptations such as replacement of grazers by browsers,[10] disposal of grazers first and browsers later in the event of drought etc.[11] Several other interesting cases of these adaptation mechanisms are available in literature.[12]

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9. Coughenour C Milton - Social Ecology and Agriculture, Rural Sociology, 1984, 49 (1), pp 1-22.

10. Barlett Peggy F. What shall we grow? : A critical survey of literature on Farmers' Decision Making BPPC, USAID, 1978, Washington.

11. Anil K Gupta, Small Farmer Household Economy in Semi Arid Regions A Socio-Ecological Perspective, CMA Monograph mimeo, 1984.

12. Gerlach luther P & Gary B.Palmer, Adaptation through evolving inter-dependence in Paul C Nystron and William H Starbuck, Hand book of Organizational Design, Vol.I, Oxford University Press, 1981, London pp 323-384.

f) Perception of environmental quality depend upon cultural framework within which perception evolved and also the functional role of given environments, besides the status and orientation of the individual

A part from the etic and emic considerations, it is also important that the information processing capacities are analysed not merely from the point of view of optimization or satisficing aspects but the historical reserve of insights manifested in form of rituals, folklores, belief system, norms and values.

g) It is believed that "most hill population in Southern Asia mountain system have traditionally followed an efficient, ecologically sound system of land management. By carefully protecting their forests and natural grass-lands they maintained an ecological balance, and thus erosion and landslides were relatively insignificant. In addition, diseases and the limited producing capacity of these agricultural systems have helped to restrict population growth."[14] However, the changes in birth rate and death rate due to improved health facilities, drinking

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13. UNESCO, Management of Natural Resources in Africa: Traditional Strategies and modern Decision Making, MAB technical note No. 9, Paris 1978.

14. UNESCO 1975. Regional Meeting on Integrated ecological research and training needs in the southern Asian Mountain system particularly the Hindu Kush-Himalayas. MAB Report series No. 34, Final Report, Paris, pp.23.

water supply, sanitation or even better food availability may lead to higher population growth rates.[15]

Some of the above considerations influencing environmental perception and stakes of different classes of rural and urban producers in environmental protection have been summarised in Figure given in annexure.

The essential problem therefore is to describe and analyse the interface between issues in environmental management, demographic changes and developmental alternatives. It will require careful documentation of historical reserves of coping mechanisms vis-a-vis various levels of risks inherent in various ecological contexts.

PART II

Objectives of the Study

As a part of UNESCO Research Contract No 375.298.4 Dt Nov 21, 1984 following objectives have been spelled out:

The objective is to carry out multidisciplinary studies on natural and human resources management systems and on the relationships between technological progress, production and consumption patterns and the design of human settlements in the less and more industrialized countries.

The research work to be undertaken in 1985 and which forms the basis of this contract is expected to analyse in Bhutan the impact of environmental factors, (such as drought and desertification, etc.) in terms of the following two broad areas of concern:

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15. During 1970-1980 population growth rate was 2.0 percent p.a. as against 1.8 during 1960-1970. It has been anticipated that the growth rate would increase to 2.3 during 1980-2000: World Development Report, 1983, World Bank.

A. (i) the human, social and institutional consequences for different groups in both rural and urban areas (e.g. shanty towns)

(ii) the impact, in particular, on small-scale agricultural production

B. (i) What is the nature of the institutional group, or individual responses, in particular, how do members of the affected population organize themselves to manage the situation of crisis and its aftermath?

(ii) How could these environmental problems be better managed in the future, in particular how could small-scale agricultural production be made more ecologically efficient, through the adoption of better technologies and improved management of energy and water resources.

It is obvious that given the limited period of time it may not be possible to comprehensively study all aspects of the concern mentioned above. However, effort will be made to conceptualise relationship amongst individual, institutional, ecological and technological variables in context of Bhutan so that the ultimate purpose of improving the level of living of small producers without adversely affecting long term ecological considerations could be achieved.

PART-III

Methodology

Mainly the analytical approach would comprise of interviews with policy planners in Ministryof Agriculture, Food, Planning; discussions with developmental officers at various levels and development of case studies in possibly 2 or 3 ecologically distinct

villages. Attempt would be made to have atleast 2 or 3 rounds of discussions with the senior officials, so that the insights emerging from the field could be contrasted with the perception and response of policy planners and administrators to this perceptions from below. It is expected that the concept of disaster management and differential vulnerability of various classes would be reconceptualised once the contradiction between the way policy planners define the problem and the way poor people understand them are precisely stated. To illustrate a typical technocratic - managerial perception of planners in one of the countries of South Asia, note, "If hill people can be brought to understand the precarious situation to which they are exposed by depletion of the resource base, and introduced to a way of thinking which leads to a perception of the need for change, they would often themselves demand the very changes which are required."[16]

The assumpgion that it is the lack of awareness amongst the victims of ecological degradation which led to the observed apathy and indifference needs to be questioned. Perhaps by building up on some of the traditional resource conserving strategies and values it would be possible to activate the collective resolve to maintain ecological balance. It must be noted that this 'resolve' gets subdued when the planners and bureaucratic officials decide to ignore the traditional insights and skills.

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16. Planning Commission, Report of the Taskforce for the study of Eco-development in the Himalayan Region, Govt. of India, March 1982.

Apart from the discussions with villagers and officials, attempt would be made to pursue reality-mapping by asking people in villages to draw maps of their reality as understood and perceived by them. Later the differences in the way different people will draw different features of the physical environment would be discussed in the group to understand as to how same physical phenomena was perceived differently by different people. Some have suggested that an individual's cognitive map is closely integrated with his personality, experience and motivations.[17] This method mentioned above has been tested out by us in a drought prone region of Maharashtra with excellent results.

Apart from the discussions while collecting data, attempt will also be made to organize the seminar both at village level and at the ministerial level to validate various assumptions and inferences of the study. However, for organizing seminar at the ministerial level help of local UNDP office may become quite necessary.[18]

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17. Anne V.T. Whyte, Guide Lines for Field Studies in Environmental Perception, pp: 9;119 MAB Technical Notes 5, UNESCO, Paris 1977.

18. UNESCO may request UNDP office directly under intimation to the researcher in this regard.

PART IV

Limitation of the Study

As is well known, there is serious derth of literature on various aspects of developmental possibilities in Phutan. Attempt will be made therefore to collate to what-ever extent possible, various reports that are available. Given the limitation of time, it may not be possible to do a very exhaustive survey in this regard. Also given the terrain of the country it may not be possible to represent different ecological typologies while selecting the sample of villages. However, effort will be made to have a few contrasting situations so that the intelligent speculation about various patterns on the spectrum could become possible.