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ENVIRONMENTAL CHANGE AND HOUSEHOLD LIVELIHOOD STRATEGIES: PRELIMINARY OBSERVATIONS FROM FIELD WORK IN DIFFERENT LOCATIONS

by
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ABSTRACT

The theoretical framework and objectives of a study of environmental change and evolving household livelihood strategies, which will include field work in Central Java, are outlined. Preliminary results of previous, related field work in Luzon (Philippines) and highland Ecuador (South America) are reported. Two changes that seem of importance in both areas so far studied are the increasing importance of commercial farming in central locations (near to village centres) and the decreasing intensity of use of land on the periphery of rural communities. Preliminary observations in Central Java suggest that household livelihood strategies are more diversified than in either case study area in Luzon or Ecuador and that such diversification has increased through time. The relative importance of farming and the use of natural resources does not seem to have diminished.

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INTRODUCTION

This paper outlines a theoretical framework and the objectives of a programme of research which will include fieldwork in a part of central Java. It also reports on preliminary conclusions from earlier stages of this research which studied environmental change and livelihoods in highland Ecuador (Preston, 1985a) and in Cordillera Luzon (Philippines) (Preston, 1985b) which are being used to guide some aspects of the research in Java.

The central concern of this research is the practice of farming and the changes in the organisation of farming which are giving rise to the new patterns of land use. All three field studies are located in areas of smallholder agriculture in different Third World countries. The first objective is to identify the role of farming in the livelihood strategies of people living in rural areas and the changes in its relative importance since 1945 that can be detected. These changes will be related to the degree of incorporation of households and individuals in larger national and international economic and cultural systems.

The second objective is to identify and explain the extent to which environmental change influences the livelihood strategies of rural households. How do people react to soil erosion, floods, droughts, and does their reaction have a longterm effect on the uses made of different land areas or on their overall attitude to farming?

The third objective of this work is to seek to identify changes in the roles of men and women, adults and children in household livelihood strategies and to see whether these changes have resulted in different uses being made of available natural resources. If many men migrate, leaving women with greater control over farming (and other) decisions than previously, do the women farm differently? Or, since many more children now attend school than ever before, does the household need to compensate for the loss of their labor? If so, how? What attitudes do the children themselves have towards participation in different livelihood strategies? There is abundant evidence that they dislike farming, but no research has been carried out which traces what, if any, modification parents make in the work that they encourage the children to do while still part of the household.

It is apparent that the research places great emphasis on two concepts: household, and household livelihood strategy. Both terms have been much used by scholars concerned with particular sorts of anlysis—household by sociologists, demographers and anthropologists concerned with social units (Harris, 1981: 49—68; Stauth, 1984: 90—100), and household livelihood strategy by economic anthropologists and economists (Wood, 1981) interested in what has been called the 'new household economics'. In this paper the definition which

is given to these terms is basically similar to those used by other social sicientists but the use to which they are put is broader.

The household is seen as the smallest group of people who share a common interest in the maintenance of their collective functions of providing shelter and sustenance. It is the primary unit that can be defined both socially and geographically within which decisions are made about how resources are used. The household is a dynamic unit and its composition changes through time just as the basic needs of the household change to reflect the different stages of the human life cycle through which its members pass. The operational definition of household is difficult, particularly when members regularly migrate and yet receive help from the household, and themselves contribute to it from afar.

The household livelihood strategy is the total range of activities in which household members engage that in some way contributes to the maintenance of the wellbeing of both the unit and its members. This includes domestic work as well as work designed to produce money or goods which may be consumed by household members. It is a vital concept to use in order to begin to understand the context in which farming decisions are made and to comprehend the rationale behind the division of labour within the household. It is also vital in the development of a research methodology which treats all members of a household as sources of valid information about any single activity—such as farming, or fishing.

THEORETICAL FRAMEWORK

Neither people nor the land use patterns they create are free from influence from powerful, higher-level structures that dominate political, economic and social life. Some of these structures must be recognised as operating at a world scale, such as the capitalist world economy, while others operate at national and regional scales. All aspects of life are seen, however, as potentially influenced by these structures at different levels of geographical resolution—from world down to the household itself. It is not intended to assert that people are powerless to determine any aspect of their own destiny, rather we see household livelihood strategies as reflecting a continual struggle, sometimes successful other times not, to guarantee sustenance and shelter for its members, and to offer opportunities for indivicual and group, social and economic improvement in the face of economic, social and political situations in which the weak are frequently dominated by the strong.

Apart from the household and the natural environment to which it has access, the other elements in the political ecological system within which household strategies develop are the state, the economy and culture. The state provides

the political and administrative framework within which people must operate if they engage in any activities which the state seeks to regulate. This includes controls over the movement of people and goods, the compulsion to attend school, to perform military service, to pay taxes on certain activities and, more pervasively, the state encourages some actions while discouraging others. Thus government agencies may provide credit if certain crops are planted but not if others are preferred.

The economy comprises market and exchange mechanisms by which people dispose of some goods and acquire others, and the market place in which they may dispose of their surplus labour power to work for others for financial reward. The terms of exchange are determined by the part of the prevailing economic system in which the commodity is being traded. This takes into account both intra-community exchanges following traditional practice, and the sale of basic foodstuffs whose price is controlled by government. It also includes commodities destined for export whose price may be determined by the policies of the corporation controlling the trade or the situation prevailing in the world market. Differences in the demand for commodities may also reflect national and regional situations. Thus, when exchange rates change, new demands may suddenly appear from countries with weaker currencies, only to disappear when exchange rates fluctuate in the opposite direction.

Culture is a major component of this system because it embodies tradition and practice in local, regional and national societies. The content of culture and the value placed upon its different elements changes, sometimes rapidly, and values differ markedly according to the social class and age of the individual. Culture is a vitally important element in household livelihood strategies because it determines the values placed on actions, inter-personal relations and symbols of status. It contains both traditional and modern elements.

The central thrust of this research is to identify changes in the role of the physical environment in household livelihood strategies in a series of different political and cultural contexts. In addition, the effects of pressures from macro-level structures such as political or economic systems, and from micro-level structures, such as community organisations and the landholding system on households to develop specific livelihood strategies will be compared. By carrying out field work in a series of different localities it will be possible to detect general trends in the evolution of livelihood strategies in relation to environmental resources.

GEOGRAPHICAL FOCUS

Initial field research in relation to this programme of investigation started in

Ecuador. There, personal field experience in to patterns of change in rural areas covers a period of over 20 years. The physical and social environments of highland Ecuador are similar in many respects to other parts of the Andes, from Colombia to northern Argentina. The field work undertaken in the Philippines, and planned from Papua New Guinea and Java will enable an investigation of the situation of small-scale farmers in a series of locations with major differences in physical and cultural environments. The Philippines shares with Latin America a Spanish colonial heritage, but the mountain environment of Central Luzon where the native population of Ifugao and Bontoc people were little affected by the Spanish, is exploited very differently from similar environments in the Andes, in spite of the fact that their agricultural system includes New World crops, such as sweet potatoes and maize. The selection of Java as a location for research was prompted by the wish to see how farming had been developed in an area of high population density and distinctive regional cultures, overlaid by a period of Dutch colonialism although controlled now by a powerful modern state. Papua New Guinea shares many environmental similarities with Java but is culturally and politically very different. Its much denser population has only been affected by contact with Europeans during the past 100 years, and is subject to very rapid and recent social change.

FIELD RESEARCH METHODOLOGY

In each of the case studies so far carried out, work has started with a rapid reconnaissance of a variety of areas within which some important environmental changes, and/or changes in livelihood strategy are believed to have occurred. Initial visits to village leaders and to some households are used to collect information about the characteristics of farming and other components of local livelihood strategies. Questions are asked about specific changes in farming systems, about environmental hazards and about other incidents that may have affected people since 1945. More detailed investigation is then made of locations within which a range of changes seem to have taken place. In a short period of field work, such as that in Luzon, systematic interviews are held with a sample of households to elicit specific information about variations in ways of making a living and about how each household has implemented changes and overcome specific difficulties. The content of the interview guide is modified as more information is gathered and new topics appear to be of importance. Eventually, a synthetic picture appears of how households have changed their farming and other livelihood activities over time which enables conclusions to be reached relating to the research objectives.

In the case studies involving detailed field work—in Java and Papua New Guinea—the same initial strategy is adopted to identify a locality for study. A particular community is then selected for close study. Detailed demographic and household livelihood data are collected by means of a questionnaire applied to a large sample of households. These data are analysed to identify a small number (4—6) of households for intensive study selected because they typify or deviate from common community characteristics. The intensive study of a small number of households allows the construction for each household of a detailed individual and household livelihood activity diagram. Individual household members are interviewed at various times to obtain historical information about the different ways in which they have occupied themselves in the past. This enables critical decisions to be identified and the different perceptions of members of the household of the reasons for the selection of different livelihood strategies to be recorded. Each of the plots of land currently used by each household is visited and a similar detailed account of the present and past use of that land is prepared as well as the evaluation of different members of the household of each parcel of land.

This field work strategy is intended to provide the raw material for a detailed appraisal of how households, occupying different land, and experiencing different levels of living, have evolved their strategies for life.

COMMON CONCLUSIONS FROM WORK IN ECUADOR AND THE PHILIPPINES

It is apparent from preliminary analysis that two changes in the spatial organisation of farming have transformed the landscape and affected the organisation of household work in both the mountain areas so far visited.

Farming in the central areas, that is those nearest the main settlement, where there is best quality land, has become more intensive and increasing importance has been attached to cash crops. In the Ecuadorian case, cash cropping was already commonplace in the 1940s but has become more intensive, in particular after the sub-division of large estates. In Sagada, (see Figure 1) one of the two Luzon case studies, intensification meant switching from growing traditional crops for home consumption in the dry season on the rice terraces to growing vegetables—tomatoes, sweet peppers, etc. for sale to urban markets. In Poitan the second community studied in Luzon, this change was also occurring but not on such a large scale. Households there earn money by weaving and wood carving which, in a sense, makes earning extra money from farming less urgent.

A second change is the decreasing intensity of use of the land at the

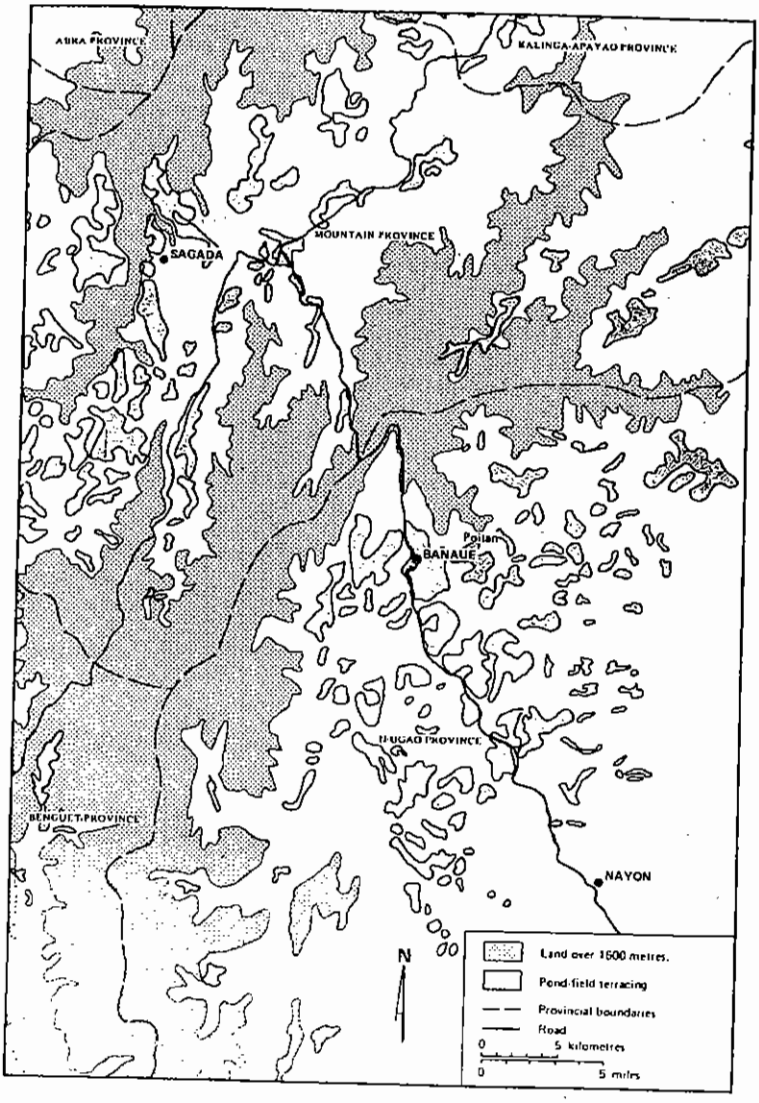

Figure 1. Cordillera Luzon

periphery of the communities. This land is more distant from the settlements, often on steeper slopes, and is terrain on which intensive farming has never been practised. In the Philippines this land is used for *kaingin*, shifting cultivation, principally for sweet potatoes. In the Sagada case study in Luzon, the mountainside on which gardens had once been made regularly, has been planted with pine trees since the 1940s. This allowed land users to ensure their continued right to access to the land. Previously, when hillside land was fallowed, it traditionally remained common land, until such time as it was cleared again. Now, with pine trees being regarded as a 'crop', the land remains as quasi-private property until the trees are felled, which may not be for 30 or 40 years.

In the Ecuadorian case study, the area where intensity of use had decreased was an hour by poor road from the local centre (Pimampiro), deep in the eastern Cordillera with sufficient rainfall that crops could grow all the year round (Figure 2). Here most farmland was on slopes of 20 degrees or more. This land had been cleared of forest in the early decades of this century. As a result of soil erosion and land exhaustion, crop yields have declined, many people have migrated—often to Pimampiro itself—and the remaining people now keep more livestock and some of what appears in 1961 photographs as cropland is now pasture or scrub.

In each of these two areas the decreasing intensity of use of peripheral land was the consequence of people deciding that the returns from their investment of labour in such areas were not sufficient to justify continued use in the same way. These decisions were facilitated by the opportunity to obtain better returns by working elsewhere or by intensifying their farming of more potentially productive land.

Some changes in the role of members of the household in farming and other activities can be noted in each area. In Sagada (Philippines) women have always planted, weeded and (usually) harvested rice, while men cleared the swidden gardens and men and women planted, weeded and harvested the swidden crops. Now the dry season pondfield terrace crops are vegetables, the cultivation of which is largely directed by men. Although women work in the vegetable plots, they do so in a subordinate role, compared with their predominant role in the rice fields. In Poitan, women planted the swidden gardens which were cleared by men. Wood carving is the more important activity commercially, is predominantly engaged in by men (although women assist), and weaving, exclusively a woman's job, takes less time and raises less money.

In Ecuador, changes in labour use within the household are more complex. In the central areas, the spread of intensive vegetable growing has created more employment and, for tomatoes especially, women and children are particularly in demand. Many of the small farms created by the sale of estate

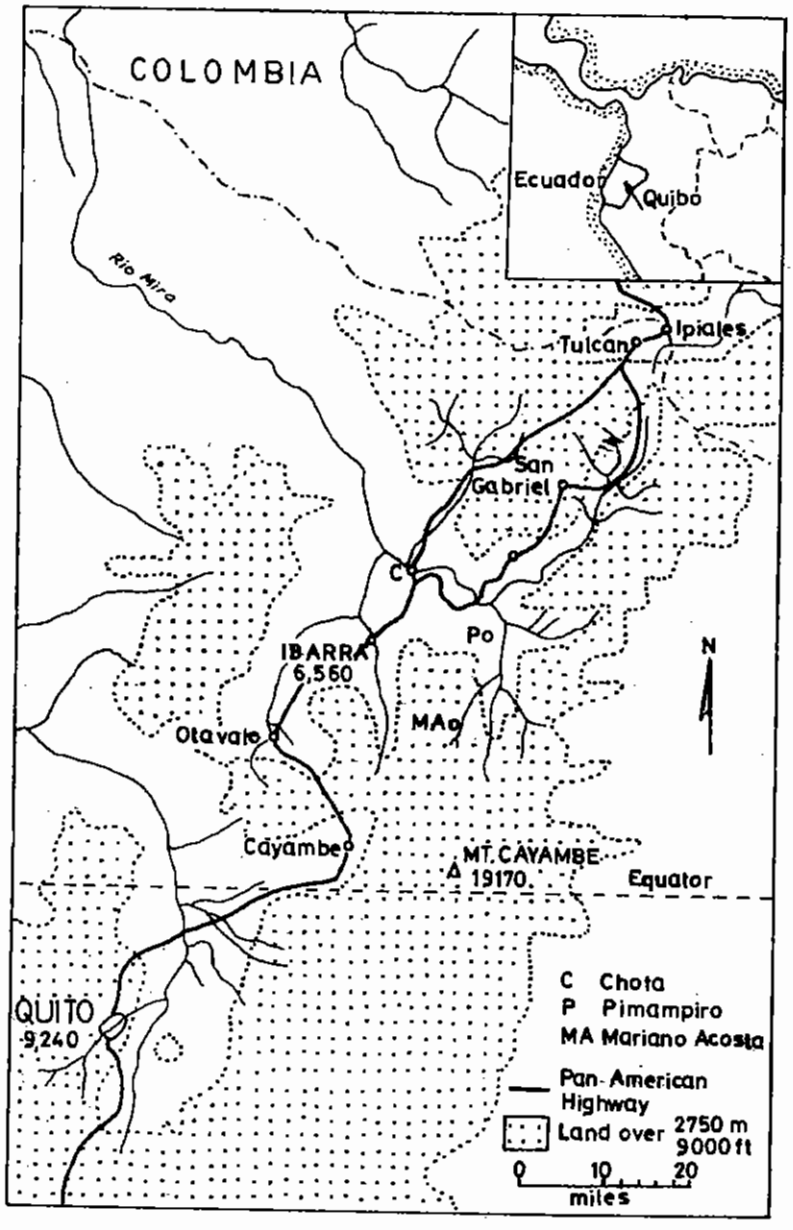

Figure 2. Ecuador

land have been bought by capitalists from Pimampiro town who have passed the land to share-croppers and this also created more employment. Many share-croppers are poorer people, both from the Pimampiro area and from the mountainous area to the south. In the area of eroded land of the periphery of Pimampiro, out-migration has affected both men and women. Those farms managed by female-headed households may be particularly likely to raise cattle, rather than grow crops, possibly to enable women to avoid the arduous, and traditionally male job of ploughing. The evidence on this point is not conclusive.

A CENTRAL JAVA PRELIMINARY STUDY

A case study in this research programme will be carried out in central Java. Java has been chosen for study because it presents a specific Southeast Asian situation of high population densities associated with rice cultivatioin, varied intensities of cultivation of hillsides, depending on rainfall rather than irrigation, and a broad pattern of agricultural evolution which has been influenced by the period of Dutch rule. Considerable changes have taken place since the Japanese War and following Independence, in particular the widespread introduction of new crop varieties, improvement of water control and other measures that have allowed increased productivity in many areas. This study will take place in a part of central Java where a variety of environmental hazards exists: seasonal floods, periodic droughts, and, on the slopes of Mt. Merapi, *lahar* flows following regular volcanic eruptions.

Preliminary field work during November and December 1985 involved visits to a series of areas where villages (*kelurahans*) included both wet rice land, gardens and rainfed hillside fields. A limited range of information was collected about typical livelihood strategies of people in selected hamlets (*dukuhs*), the range of sources of income and how the community and individual households responded to the various environmental stresses. Nine localities were visited in the Yogyakarta Special Region and in Central Java (Figure 3): two communities were on the upper slopes of Mt. Merapi, one was in the coastal plain south-east of Kebumen, one in the Sarayu Mountains north of Kebumen and five at various points between Kebumen and Wates at the junction between the wet rice land of the coastlands and the lower slopes of the interior hills. Following these visits, five days were spent working in one hamlet in Kulonprogo (near Wates) where households had access to *sawah*, *tegalan* and to partly-forested hillsides. Six households with different socio-economic positions were visited and four selected for a series of interviews with each household member over 12 years of age to find out the range of household strategies adopted and specific responses to

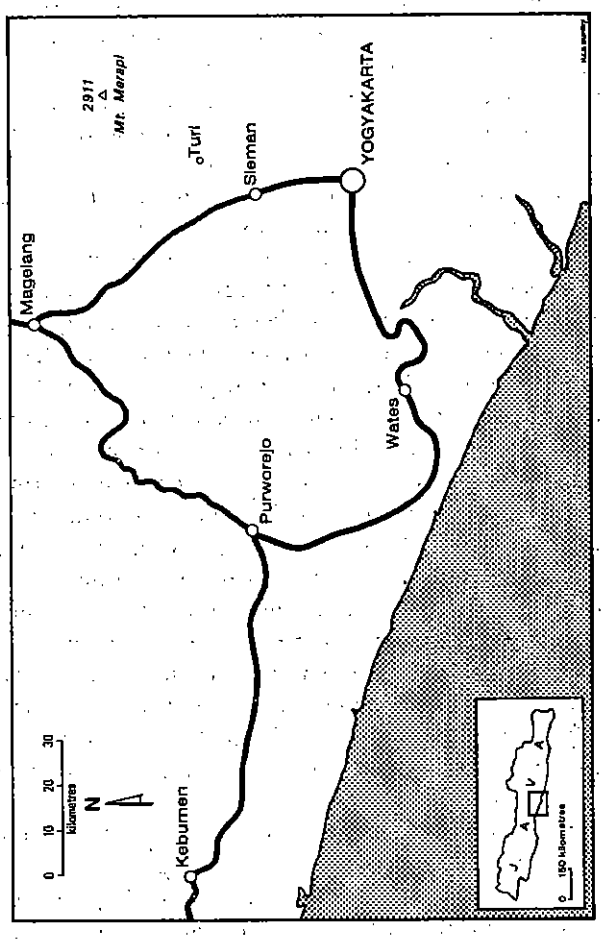

Figure 3. Localities in Yogyakarta Special Region and Central Java

recent environmental hazards such as drought and flooding as well as the degree of use of forest land.

In conclusion some tentative comments concerning patterns of household livelihood strategies are presented. The wide range of goods sold that were grown in each of the ecological areas of the hamlet was impressive. Likewise, subsistence crops were also produced from each of the plots of land to which households had access. Perhaps coincidentally, very little of the *sawah* land was irrigated and thus frequent droughts affected wet rice production. An alternative source of income that seemed to have increased in importance in the past decade was "business". This involved small-scale trading which produced small but regular profits and was largely, but not exclusively, practised by women. It was highly prized by them. Goods traded included home-made *tempe*, fruit and vegetables. Men also traded bananas and coconuts. For all, trade seemed to take second place to farm work when the latter was necessary or available. The amount of domestic craft production varied. Many households had a member who had a particular skill, as dress-maker, carpenter, weaver of rope or maker of bamboo screen, but such skills were largely used when there was little demand for farmwork either on their own land or as labourers for other landowners.

There was no evidence that the overall importance of farming in the complex household livelihood strategies had changed, perhaps because the past decade saw striking increases in productivity as a result of the widespread use of improved seed varieties and a range of agro-chemicals. Emigration was a less important feature of household experience than expected and, in sample households in the hamlet studied in some detail, only 19 per cent of the children over 15 years age lived away from the hamlet. In such a brief study it was impossible to gain any impression of changes in the division of labour within the household although there was some evidence that people who had completed primary schooling tended to avoid farmwork if alternatives existed.

Although important environmental changes had taken place during the past fifty years, particularly in the hills, there was little evidence of bad soil erosion in the areas bordering the coastal lowlands. In a number of areas new terraces had been constructed to reduce soil loss but their quality and age varied. Most such changes had been initiated by government agencies. The environmental hazards indicated earlier proved to be dealt with by people without any perception of 'disaster'. Farmers reported responses to both drought and *lahars* casually and there seemed little long-term effect of either of these two commonest sources of environmental stress.

The use of and real access to areas legally declared 'forest' proved difficult to determine but undoubtly illegal use of highland trees takes place and the quantity of charcoal seen to be taken away from the sample hamlet seemed greater

than would be surplus to household garden production. The actual experience of those households forced to move from their land when it was declared forest would merit further study to determine the range of options that they used in developing alternative livelihood strategies.

The importance of the influence of the state on the paths of change experienced by rural people in Java is clearly considerable, in particular because of the permeation of all levels of rural settlement by state organisations. Much more experience and research would be necessary to determine their actual influence on the ways in which people developed their livelihoods. None of the range of commodities produced in our hamlets seemed greatly subject to fluctuations in demand that were the consequence of national as opposed to local economic factors. Good historical price data were collected from informants which suggested that this could be used to determine how prices at a local level had changed over a ten year period and the reaction of people to these changes.

The period of detailed field work, scheduled to take place during 1986, will be used to collect more detailed information about a few households in one hamlet, in particular to plot histories of household livelihood strategies and to gather data that may make it possible to compare the influence of a series of factors on the evolution of livelihood strategies.

CONCLUSIONS

On the basis of field work in Ecuador, Philippines and a brief survey in Central Java some general observations can be made concerning the sort of conclusions that are begining to emerge.

It is clear that the importance of the use of the physical environment through farming in household livelihood strategies is changing but not always in the same way. Where access to land resources is restricted, livelihood strategies have always embraced a range of activities. In the past 40 years such activities have changed to include a greater variety of ways of earning money, only a small proportion of which are associated with farming, as household economies need more commodities that can only be purchased. Except in areas of shrinking or deteriorating land resources, farming had not become less important but it frequently has played one or both of two roles: it provides part of the subsistence needs for the household and a part may even be traded with others to obtain a wide range of goods needed for subsistence; and also it provides goods that can be sold for cash which itself is needed to provide the necessary extra food requirements as well as manufactured goods not made locally.

The most important pressure on households at a macro-level is to become

more involved in the cash economy. Depending on land resources available, this may cause the more intensive use of some environmental resources and the less intensive use of others. At the same time some local and regional social institutions prove resilient against change and provide a stable element in household livelihoods.

Environmental stresses caused by drought, river course changes and volcanic eruptions appear to be easily surmounted whatever are the national-level perceptions of these events.

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