CHANGED HOUSEHOLD LIVELIHOOD STRATEGIES IN THE CORDILLERA OF LUZON

DAVID PRESTON

School of Geography, University of Leeds, Leeds LS2 9JT, UK. E-mail: d.a.preston@leeds.ac.uk

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ABSTRACT

This paper identifies and discusses changes in land use and livelihood strategies in two communities on different sides of the Cordillera of Luzon, the Philippines. These include the abandonment of shifting cultivation on many hillsides, the growing of vegetables in pondfields previously used for rice cultivation and the deterioration of pondfield terraces as a result of water and labour shortages. It seeks some explanation of these changes by examining the complex web of activities in which Cordillera households are now involved.

Key words: Luzon, Philippines, farming, livelihoods, abandonment

INTRODUCTION

Households in rural areas throughout the contemporary world are subject to internal and external pressures which result in change. However important these changes are, they affect only some elements of domestic livelihoods, and others, often highly traditional, are retained. A common change identified by many analysts and observers is simultaneous involvement in multiple activities. 'People appear to be involved in several economies', write Koppel and Hawkins (1994). People and households no longer fit analytical categories invented by social scientists, and reductionism increasingly seems both difficult and dangerous. In particular, as Slater has observed for South and East Asia, people are 'consolidating traditional strengths ... and adopting new business practices' (1991, p. 40). The new household livelihood strategies manage to develop new activities as part of a capitalist world economic system, but in a household context that has its own logic and structure.

Bebbington has identified one rural strategy as a 'significant intensification of resource management, enhancing productivity of land and labour, increasing incomes derived from off-farm activities and restoring natural capital in areas where it had been degraded' (Bebbington 1997, p. 191). He refers to highland Ecuador but I argue that such scenarios may be observed elsewhere both in the global North and South.

The issues explored in this paper are related to the diversification of activities of people in rural households in ways that link them more effectively to national social, economic and political situations. This diversification includes increasing off-farm employment, both locally and involving migration (Shand 1986; Slater 1991) even when associated with new land settlement (Sage 1996). Slater argues that a precondition for diversification is intensification of production, using accessible new technologies that facilitate engagement in off-farm work (Slater 1991).

Besides these changes, which have been widely discussed, we suggest that Bebbington's notion of restoring natural capital can be more widely applied, as has been previously described for localities in Java and Ecuador (Preston 1989; 1990). While a recent survey of environmental changes in South-East Asia

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(Parnwell & Bryant 1996) focuses largely on deterioration of the environment in tropical forested areas, in long-settled land there is also evidence of environmental improvements as a direct consequence of the processes referred to above.

CHANGE IN THE CORDILLERA

This paper presents the most clearly established changes in farming and land resource use in the context of domestic livelihood strategies and is based on two periods of field work ten years apart.

The two areas studied lie on either side of the Cordillera (central highlands) of Luzon (Figure 1). Poitan is in Ifugao Province and close to the small centre of Banaue, an area where part of household income now comes from non-agricultural activities (wood-carving and textile weaving). Here some pondfields are no longer being used for rice cultivation and are even being abandoned. For most people, hillside swidden farming is now no longer a part of household activity. Migration from the area takes place as part of the search for wood to be carved, to use recently-cleared land in neighbouring provinces to supplement local land for food production and to work in the mines and urban areas in other parts of Luzon. Some migration overseas also takes place, particularly to the Middle East and urban centres in South-East Asia. Valuable baseline data on farming systems and land use for a major part of Ifugao in the 1960s is derived from the long-term and detailed ethnographic work of Conklin (1980).

On the western side of the Cordillera, in the neighbourhood of Sagada, two striking changes in the land use have occurred in living memory: the widespread planting of pines (*Pinus insularis*) on the hillsides and an increase in the area of prime agricultural land devoted to cash crops, in particular vegetables, rather than rice, for autoconsumption. Each of these changes indicates modifications in the household economy that are different from those in Ifugao. Migration from Sagada has largely been southwards to seek work in the vegetable growing areas and mines of Benguet province as well as overseas. In Sagada, accounts of local history and ethnography occur in the writing of the late William Henry Scott (especially Scott 1958; 1975) and research by Voss and Jefremovas provides further relevant information with relation to the increase in vegetable cultivation (Voss 1983; Jefremovas 1993).

Fieldwork during September 1984 and January and February 1985 was conducted in Sagada and in Poitan, two kilometres south-east of Banaue. In each area, interviews were held with men and women from different localities in order to document personal views and experience relating to changes in farming and in the organization of domestic production since the end of World War II. Some interviews were repeated for additional information and a local field assistant was used to facilitate at least part of the interview being conducted in the local language. In Poitan, prolonged interviews with seven households were used to record the development of livelihood strategies. Further fieldwork in August 1995, in some cases with the same households interviewed ten years earlier, monitored the extent to which the changes observed in the late 1980s had continued.

Change in Sagada, Mountain Province – The most striking change in Sagada since the early part of the century is the virtual abandonment of swidden farming (shifting cultivation) on the hillsides and the subsequent afforestation on all sides of the valley within which the población of Sagada lies. Photographs taken at the beginning of the twentieth century in the personal archive of the late Eduardo Masferré show the new Sagada mission buildings on a bare hillside. His own photographs, taken in the 1920s, show that the mission was then flanked by well-grown pine trees; further away few trees to be seen – pine trees were planted by villagers at a later date. The majority of the pine forest originates from the period following the end of the war with Japan.

A further series of photographs taken by Masferré to the north-east of Sagada over a 30-year period after the end of World War II show the rapidity of forest growth. By the 1960s trees grew in profusion on all the hillsides adjacent to the town.

The now forest-covered hillsides were previously used for swidden farming, especially where there was adequate soil and moisture for

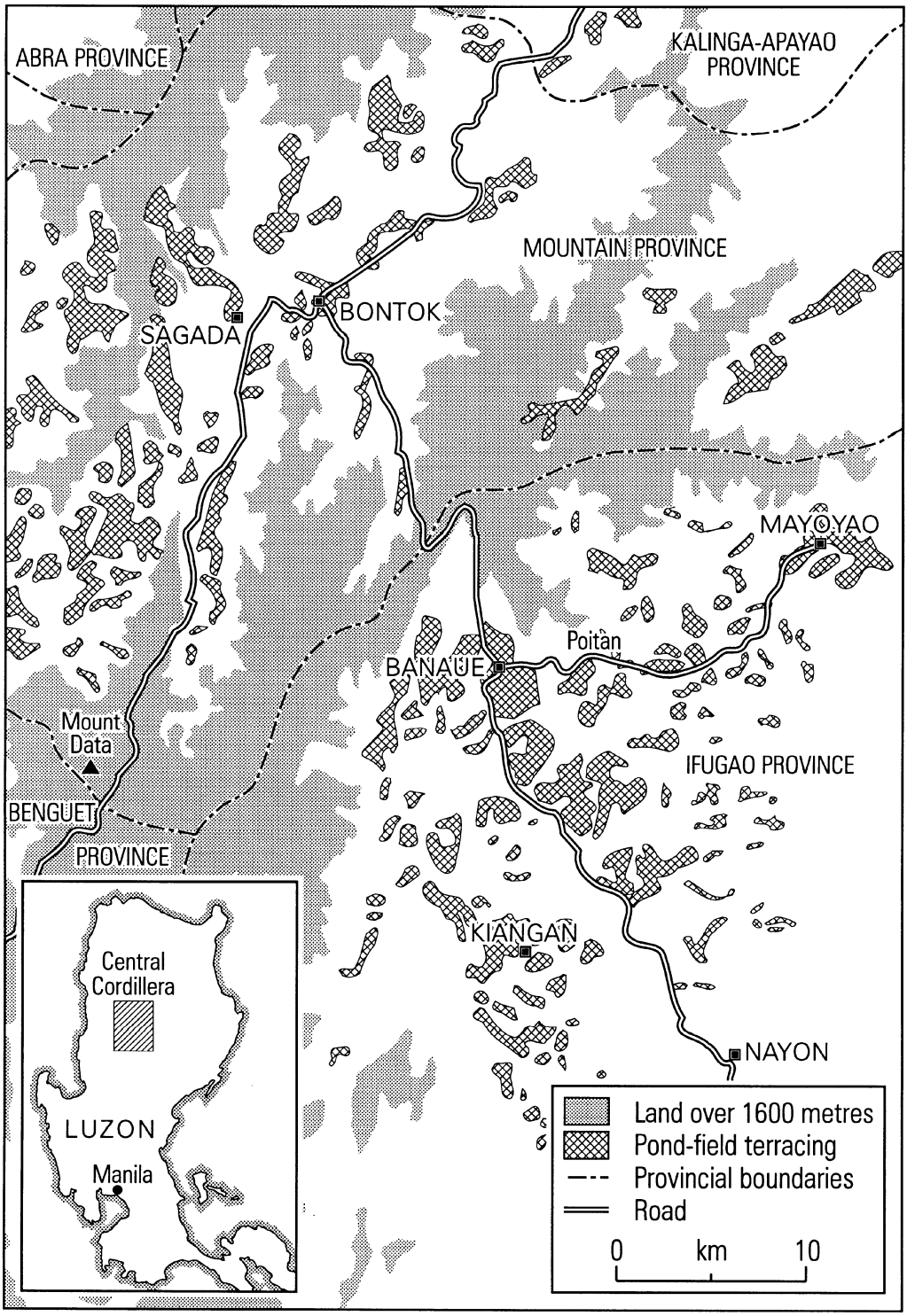

Figure 1.

sweet potatoes to grow well. The area of swiddens planted has decreased markedly and informants believed that less than half of Sagada households still had sweet potato plots in the hills. Sweet potatoes are now grown largely close to houses, on dried terraces and sloping patches of ground without irrigation but close to terraces or houses. Even those who cultivate swidden plots probably farm much less hillside land than they, or similar-sized households, did before the war. Sweet potatoes are no longer a prized food but the leaves are a valued supplementary feed for pigs.

A further reason for the abandonment of many swiddens after 1945 was the migration of men to work in the mines of Benguet and in the newly-opened colonisation zone near Tabuk in North-East Kalinga Province. With many men and some complete households away there was a smaller labour force. It was logical to concentrate effort on the most easily accessible and productive fields, usually the pondfields. Furthermore, households with access to their own new pine forest on former swidden land were able to benefit from the ease of gathering wood needed for cooking and, after a decade or more, from the advantage of having timber for house-building. This was an improvement on the situation in pre-war days when people reported spending a whole day gathering wood in distant parts of Sagada.

One reason for the increase in the area of pine forest is to establish more prolonged personal entitlement to land (Voss 1983, p. 85). Swidden land on which sweet potatoes were planted belonged to the household that farmed it but only so long as it was in cultivation. Once the land was covered with wild plants, it became the common property of the community. When pine trees were planted in swidden plots they were treated as a crop and those planting the trees were entitled to use them and the grass under them for as long as the trees continued to grow. Selective felling and replanting thus effectively conferred semi-permanent entitlement to that land and its trees and other vegetation.

The spread of the forest was apparently not a planned development in Sagada. Even though pines were planted in the land given to the Episcopalian mission, missionaries were not instrumental in encouraging people to plant pine trees on their own land. There were government forestry programmes and a number of people collected free pine seedlings from government nurseries. The seedlings were available either in the Chico river valley, over an hour's journey by bus, or near Mount Data some four or five hours south on the road to Baguio.

Growing vegetables for sale is a recent innovation. Although vegetables had been grown by the mission since the early part of the century, most people traced commercial vegetable growing to its introduction by one individual in 1948. His initial success led others to follow. Migrants from Sagada in the mines of Benguet would have seen the excellent vegetables growing in the Trinidad valley and, later, the area beside the Mountain Trail highway. Some worked for vegetable growers for periods and thereby acquired direct experience of vegetable growing. Now, some households grow vegetables following the harvest of rice but others do so all year in fields where rice used to be grown. The range of vegetables includes cabbages, tomatoes, capsicum, Chinese cabbage, aubergines and many varieties of beans. Vegetables are sent by vehicle to Baguio and other regional wholesale markets. Between 1985 and 1995 there has been a striking increase in the number of jeepneys, which increased competition between owners and resulted in a willingess to relate the transport cost to the market price actually obtained. More growers now take their produce directly to major markets. The monopoly of Chinese wholesalers in the Baguio market has also been broken by the successful entry of some grower co-operatives although none exist in Sagada.

Although prices fluctuate wildly and considerable outlay is needed for agricultural chemicals to promote growth and combat disease, the profits that may accrue from growing vegetables are highly variable but still attractive to the growers (Jefremovas 1993). The cash from vegetable growing serves many purposes. It permits the purchase of rice to replace that which might otherwise have been grown on the land occupied by vegetables, and an increase in rice sales was reported by Sagada shopkeepers during the 1980s. Vegetables have also, in part, replaced sweet potatoes that used to be grown

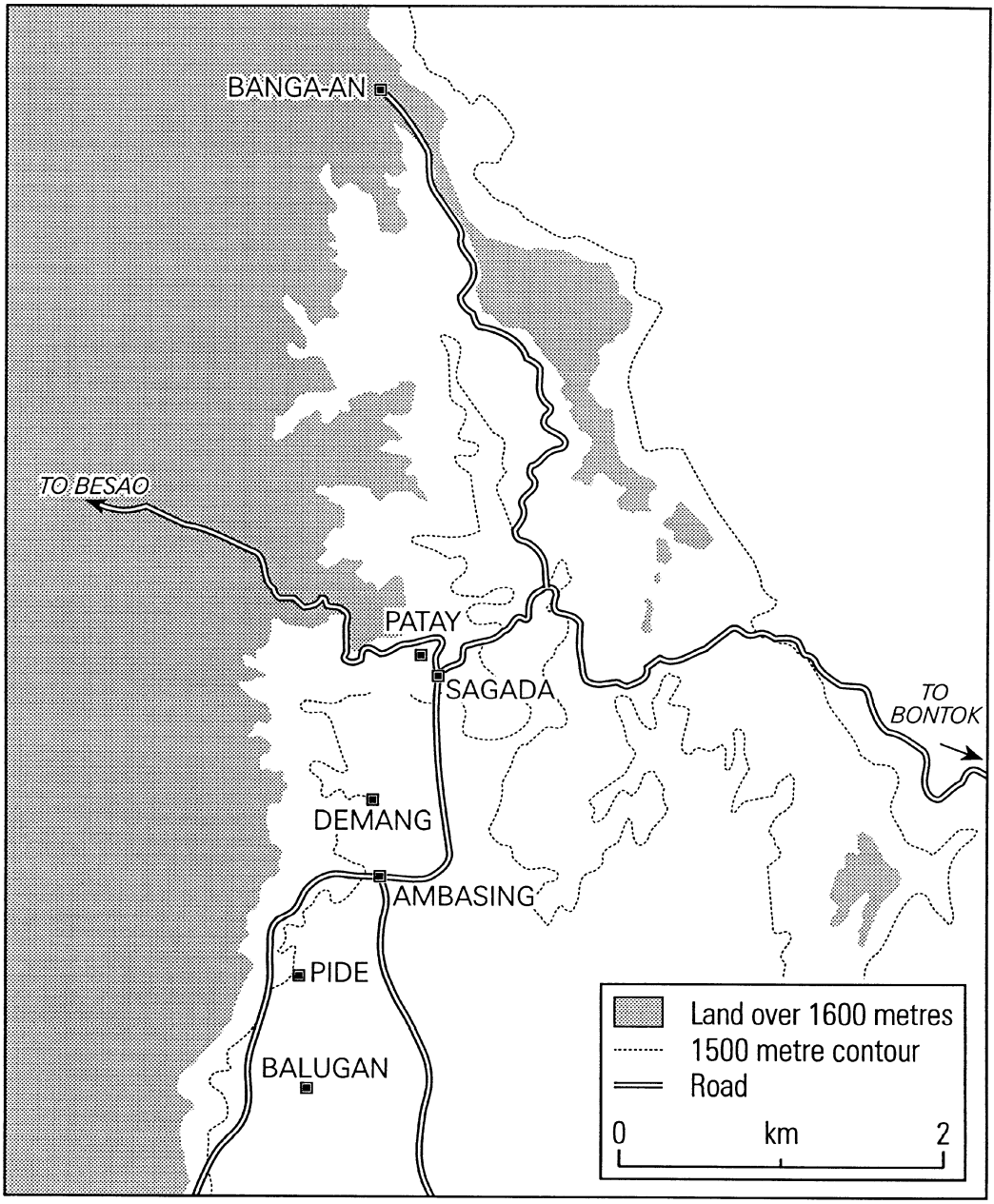

Figure 2.

in drained former rice fields. Although vegetables are grown throughout Sagada, they are particularly important in Ambasing and the two districts further south: Pide and Balugan (Figure 2).

Vegetable growing is seen in the villages to be a good way of making money. The largest Ambasing dealer is now reputedly a millionaire. The value of production per hectare of successive crops of vegetables is greater than

for a single crop of rice, or even rice followed by sweet potatoes. Vegetable crops are seasonally staggered so harvesting (and thus income) takes place several times in a year. Dependence on several crops and year-round harvesting also diminishes the risk of loss although Jefremovas suggests that losses are frequent but that inter-family support and diversification of activities help minimise the importance of losses (Jefremovas 1993, p. 1).

A further important change in Sagada is a decrease in the irrigated area. It is impossible to walk more than a kilometre through the terraces without encountering formerly irrigated land which is either uncultivated, or which now can only support a crop during the wet season. Rice is customarily planted in an irrigated pondfield before the onset of the rainy season: without irrigation rice cannot be planted until much later. The precise extent to which there has been a decrease in the irrigated area cannot be calculated and, to some extent, land lacking water may be productively used for growing vegetables during the wet season. Informants agree that there is a shortage of water and that it is becoming progressively more serious.

The shortage of water for farming is noted in both sides of the Cordillera. The serious earthquake, which caused destruction and loss of life in Baguio in June 1990, is widely believed to have resulted in some springs drying up. A network of plastic pipes are visible in many places between Sagada and Balugan, some bringing water to houses but others leading to fields. The tapping of upstream sources will obviously have a negative effect on downstream users without such pipes. Increasing village populations and probably new domestic habits will probably also lead to increased water consumption. Some informants also related the shortage of water to the growth of pines on the adjacent hillsides.

In several localities the creation of new pondfields upstream diverts water that would otherwise reach the older pondfields. While this may be contrary to custom law (see, for example Barton 1919, p. 59, on the relevant law pertaining to Ifugao), it is unlikely that the owners of land downstream would be able to inflict any form of retribution where a minor local water source was involved and the owner of the newly-developed pondfield was economically powerful and socially respected. This contrasts with the more highly organised control of water rights in the northern part of Sagada (Bacdayan 1974) where the construction of a new channel stimulated a higher degree of co-ordination of community regulation of water use. This has not happened in Sagada *población* nor in the hamlets to the south.

A further influence over land use is the shortage of labour. This must be contrasted with the frequent assertions that there is often a surplus of labour in rural areas (Slater 1991; Koppel & Hawkins 1994). This difference in view can be ascribed to the view of the investigator. In rural areas labour is attracted to opportunities to earn more than is possible at home. In economic terms this is surplus labour, but its movement, especially when prolonged, creates a labour shortage in the sending community. As a consequence, some areas of good land are no longer farmed, or are farmed less intensively, because the land-owning household lacks available labour. In one such case a husband is working in the mines. His wife has small children and cannot conveniently travel to the field. Rather than rent it and risk alienation of the land by the tenant, she prefers to abandon it and allow neighbours to pasture water buffalo on it. Other causes of labour shortage include more of the children attending school for longer periods and migration for periods of varying length both within Luzon and overseas. In some cases, available labour may simply be concentrated on the most productive activities and other jobs, such as terrace maintenance, may have lower priority.

Changes in agricultural production in Sagada since at least 1945 have profoundly affected the physical environment. The increase in pine forest has provided a valuable fuel and building material closer to hand than before. The virtual abandonment of shifting cultivation has released men and women from the work of clearing and cultivating that once demanded much time. Both sexes, but particularly men, have transferred some of this time saved to the growing of vegetables. The whole family is now regularly involved with harvesting and packing vegetables for transport to market.

Sagada livelihood changes – During the past century, increasing numbers of households have a range of links with other parts of Luzon and household livelihood strategies frequently encompass work and/or study in the Baguio area, in Manila and overseas. This reflects improved communications technology and a better quality road network. Although some of those who have left Sagada are working on farms, most are employed in mines or other urban-industrial jobs unrelated to farming or other activities with which they were familiar in Sagada. Some of the migration is a direct consequence of the high quality of education available in Sagada as a result of the schools associated with the Episcopalian Mission. Pupils from Sagada schools have been exceptionally well prepared to obtain entry to any of a range of universities, colleges, and technical institutes, and many Sagada families now have professionals among their absent sons and daughters. However, neither tertiary education nor urban jobs are available in Sagada: would-be college and university students and workers with skills only in demand in cities have therefore to migrate. Overseas migration certainly has some importance because two of the grandest new houses built on the edge of Sagada between 1986 and 1995 belonged not to vegetable dealers but to households some of whose members had worked overseas.

The changes in household productive strategies have resulted in modifications in the gender division of labour. There is clearly a greater amount of farm work appropriated by men than previously, as in other areas where valuable cash crops are introduced (Koppel & Hawkins 1994). Several older people commented spontaneously that the opportunities for earning money through different forms of farm work attracted men, particularly younger men, who previously were underemployed. Tasks previously performed by men for cash elsewhere – such as stone walling – are now less sought after, and the nature of changes in local cropping systems demands more labour during much of the year.

Women probably have less work in the fields and certainly have less responsibility for farming than formerly. They are still important in rice cultivation, but the area of rice cultivation has decreased. With the decline of swidden farming they have much less work to do cultivating hillsides and, although men organise vegetable growing, women also contribute time to such work. Possibly associated with a reduction in time devoted to farming, women have begun to spend more time in collective action. Women's groups have been formed to promote hamlet activities, such as improving the footpath network, but little evidence was found to support Voss' implication that the status of women in the hamlet had been greatly enhanced by these changes (Voss 1983, p. 172).

These changes show how Sagada people have sought to adopt more of the values prevailing in contemporary urban Philippine society. The decrease in importance of sweet potatoes balancing the growth in importance of vegetables for cash sale is partly a consequence of the recognition that money is necessary to buy a range of goods that enable the quality of rural life to more nearly approach that in the city. Money is acquired by modifying production systems in response to the needs of markets external to the region and by increasing use of technology developed elsewhere. Planting pines, on the other hand, reflects an individualist as opposed to corporatist attitude to property which likewise mirrors the State's view of property. Sagada people have retained a high degree of control of their resources by ensuring that Sagada businesses are still wholly controlled by Sagada families. A well-off, well-educated group of Sagada merchants and business people has emerged which controls much of local economic activity although Voss argues that economic differentiation is restricted (Voss 1983, p. 100ff.). The bus line that links Sagada with Baguio (four times a day in 1995 compared with once daily in 1985) is owned by a local family, and the plethora of jeepneys that are parked on and off the roads around Sagada indicate their local ownership.

In Sagada new resource use strategies applied to both hillsides and pondfield terraces represent an intensification in the use of most easily accessible resources and much less intensive use of an environment whose use is now seen as irksome and not highly productive.

Change in Poitan, Ifugao Province – In Poitan, on the eastern side of the Cordillera

from Sagada, similar changes have taken place but non-farming income plays an increasingly important part in livelihood strategies.

The hamlet of Poitan is within a half hour walking distance from the town of Banaue. This gives members of the community easy access to a small town that is a centre for foreign tourists. Banaue has regular bus services to Manila via the Cagayan valley and to Baguio, across the Cordillera to the west via Bontoc, and increasingly via Nueva Vizcaya. Several buses and some jeepneys and motorcycle trishaws pass through Poitan each day linking it to Banaue town and its weekly market at which producers and consumers from much of north-central Ifugao meet. Poitan is thus more strongly influenced by cultural and economic changes than other villages further from Banaue.

Poitan is only a small hamlet. Its houses are scattered over hillsides at altitudes from 880 to 1500 metres above sea level. While about 30% of households live close to the road, more live away from the road and some up to 40–45 minutes walk away. In the past decade increasing numbers of people have constructed houses along the roadside, further facilitating access to the town. A marked improvement in paths within the community has also made access between localities within the community easier as well as making it easier to reach the road.

Poitan is an interesting contrast to Sagada because it has been influenced by the local opportunities for diversifying productive activities outside farming in both wood carving and weaving. The most important set of changes that occur in Poitan are associated with the pondfield terraces. There seem to be two parallel trends, on the one hand towards a deterioration in the productive capacity of the terraces as a consequence of poor maintenance and water shortages and a shift towards the production of vegetables for cash sale on both drier and well-irrigated terraces, but these changes are both more recent and less widespread than in Sagada. There is a decrease in area of swidden farming, as observed in Sagada, but this is not associated with widespread planting of pine trees. In the early 1980s Eder examined the nature of some of the agricultural problems in a hamlet near Banaue (Eder 1982) and made similar observations concerning the deterioration of the pondfield terraces. He did not consider other aspects of land-use change nor did he review these changes in the context of the overall development of household livelihood strategies. Eder estimated that one-third of the terraces visible in an old photograph were now abandoned. In my own work in 1986 I considered that this exaggerated the trend but most recent field work suggests that this may now be accurate. The deterioration of the pondfield terraces can be observed on the ground by identifying areas where wet rice has not been grown for several seasons and by identifying fields whose size has been reduced by landslips whose repair has not fully restored the field to its original dimensions. Conklin's study of Ifugao land use confirms which areas were farmed in 1963. The problem of eroded and dried pondfields is not new: he commented that in most years a third of pondfields in one area, Bayninan, were lacking sufficient water for rice to be cultivated (see also Conklin 1980, p. 81). Close study of his maps of pondfields and their use in nearby Poitan, suggests that, in 1963, very few pondfields were lacking water. Rapid field survey, using photographs taken a decade earlier as well as Conklin's 1963 maps, suggests that there are more dried pondfields than 30 years ago.

Changes in pondfield use occur for many different reasons. Informants gave many explanations for the changes in terrace use. These emphasise the wide range of personal as well as environmental factors that affect household decisions. Changes too vary from the complete abandonment of cultivation to the substitution of vegetables for cash sale for subsistence rice growing. The main cause of the changed use is usually shortage of water. However, the perception of the seriousness of this as a problem is a function of the range of other activities in which members of the household engage. The problems facing pondfield users are not new but their responses to them are different from 20–30 years ago.

The shortage of water may be the result of infestation of the field by large earthworms, which penetrate the retaining wall and allow percolation of water; because of breaching of the wall by landslips, possibly aided by earthquakes; or because of the drying up of springs

or other sources of water as a result of many possible contributory factors.

The change in land use may also be wholly or partly the result of the unavailability of some members of the household labour force – either working locally or far away, and so not available to help in field tasks – or even the reduction of the household to just two old people who have neither the energy to do the necessary work nor the need for the produce from the field. Informants also stress the dislike of many younger people for any dirty and strength-sapping outside work if more congenial and remunerative alternative work is available.

Rice is of great importance for Ifugao people, for food, as a source of ceremonial drink and as a component in many rituals. Conklin has documented this exhaustively. Although rice is important, the amount of labour needed to produce it is always considered before deciding whether or not to invest the considerable amount of work necessary to make the pondfield capable of producing a good crop of rice. In many cases people prefer to work for cash, some of which is used to purchase rice.

A second change is the reduction in areas used for swidden farming. Conklin's examination of the agricultural cycle in Bayninan, adjacent to Poitan, led him to conclude that sweet potatoes were as important an element in local diet as rice, comprising 38% (by weight) of the food input per person annually (compared with 40% for rice). Sweet potatoes are grown both on permanently cultivated land, in particular drained pondfields, and on swiddens. Evidence from interviews suggests that swiddens are less common than previously, largely because people prefer to cultivate land nearer home and because they prefer, or believe it more profitable, to engage in either wage labour or cottage industry, rather than to clear and cultivate a swidden garden. Sweet potatoes are now largely grown on banks on the margins of pondfields or on dried terraces. Those who carved or wove regularly seldom cultivated a swidden field and others not regularly working as carvers or weavers also preferred waged work rather than to farm their own swiddens. Hillside land is readily available for clearing but as fewer people make clearings the probability of losses of crops from rats, monkeys and pigs increases since they now have fewer fields to raid.

A further change that can be noted is planting pine trees in woodlots or in abandoned swiddens. While this has not transformed the environment in the way that it has in Sagada, it is still noteworthy. As supplies of pines from the higher mountain slopes to the west decrease and become more costly then planting fast-growing pines in areas near to house sites becomes logical. The work of CECAP (Central Cordillera Agricultural Programme) in the 1990s has included further encouragement for planting several species of fast-growing and useful trees. Planting trees in woodlots is a common practice but Poitan informants commented that the planting of pine trees was recent, certainly post-World War II. The areas of pines are scattered and small, few stands containing more than a dozen trees, but pines are more common in woodlands than they were 50 years ago. Informants suggested that pine trees were now sometimes planted in previous swidden plots to establish their prolonged use-right to the area planted, thus corresponding to practice in Sagada.

Poitan household livelihood evolution – Changes in household livelihoods have been closely associated with changes in the rural environment although such changes are difficult to quantify without prolonged observation and good baseline data. Very few households now cultivate swidden plots, either because people prefer to work for others as paid workers or because they prefer to concentrate time and energy in cultivating pondfields and nearby dried terraces or in domestic manufacture of textiles or woodcarvings. Although the area in which swidden farming is possible is smaller in Poitan than surrounding communities, a generation ago most households had several swidden plots.

A strong preference for rice over sweet potatoes as a major component in meals has contributed to the decrease in swiddens. This change has occurred as more households have access to the money to buy rice, once their own supplies have been exhausted. Few households produce enough rice to satisfy their domestic needs for more than two or three months. As a

larger proportion of households eat rice more frequently, others wish to emulate them and engage in strategies to facilitate this. Since swiddens neither produce rice nor cash crops, their importance in domestic production strategies is likely to decrease, so long as there are alternative income-producing opportunities. Young people are particularly influential in changes in consumption and discarded packets of drinks and snacks on the side of roads and pathways indicates the increasing importance of convenience foods.

The lifestyles of modern rural young people are influenced by the regular flow of young foreign tourists and travellers who arrive daily in Banaue town and who transverse the countryside on foot to admire the rice terraces. If a young person with a motorcycle can earn an agricultural worker's daily wage by carrying a single tourist on a short trip to the viewpoint along the road to Bontok then it is hardly surprising that agricultural work has become unattractive to the young unless it offers superior financial rewards. Carving wooden figures that can be sold locally for a reasonable price is an attractive job, carried out under cover and beside a radio or cassette player. Demand for carvings seems buoyant, prices are stable and the main problem associated with carving is obtaining the wood. The availability of transport between Poitan and Banaue means that Poitan is more profoundly influenced by such changes than more distant settlement. The string of new homes along the road passing through the upper part of Poitan indicate the resettlement of some Poitan households in locations with better access to town.

Migration, schooling and small-scale industry contribute to the removal of a part of the labour force. There is now an absolute shortage of labour for rice growing if the husband is busy carving either in the village, in the forest or in the city, and if the elder children are occupied in full-time education either locally or in a distant urban centre. Some use their earnings to employ others to work for them on the terraces and maintain pondfields in good condition. On the other hand, various terraces were reported to have been abandoned because the owner was fully occupied elsewhere and no-one wished to rent or sharecrop them. Some of the damage to terraces caused by the 1990 earthquake was not repaired for shortage of domestic labour and the high cost of employing people to carry out repairs. It is even said that some pondfields are deliberately not rented to avoid the possibility that the tenant might not relinquish the land at the end of the tenancy. Terrace land with adequate water and free of pests would probably always be cultivated if the domestic labour existed to do the work.

Both men and women make wood carvings. Girls and older women do not generally carve wood but they work in the finishing, sanding, staining and polishing. Women also weave blankets and smaller items, largely for sale to tourists. Although both men and women work at home to earn money it seems that male labour is more concentrated in income-earning activities. This gender bias has been widely reported in other areas (see, for example, Hart 1980). For women, weaving is frequently a spare time occupation and since women spend more time than men in rice cultivation and in domestic activity they are likely to have less time available than men to produce goods for sale. Male and female informants asserted that there had been no major changes in the sexual division of labour. Just as in Sagada, males now seem to work more.

The major changes in Poitan household livelihoods have resulted in less time spent farming. There is some indication that the quality of the work done when farming has also deteriorated. Several older men said the rice fields were less well maintained, less carefully prepared for planting with less attention to ritual. What is possibly more important is less care is taken in timing the planting of rice. Ministry of Agriculture staff attributed the poor harvest in 1984 to the rice being sown too late. In 1980 a previous poor harvest had also resulted from late planting and in the three succeeding years planting had taken place at the correct time with official encouragement. Similar comments were made in 1995. Many people commented that craft work often took preference over farm work.

FIFTY YEARS OF CHANGE IN THE CENTRAL CORDILLERA 1945–95

A period of rapid change spans the lifetime of living Cordillera people. In local market places

old women bent double as a result of demanding field work in home-woven skirts walk alongside men wearing T-shirts and g-strings. A few metres away young people from their communities listen to international popular music from radios, wearing clothes that are little different from those worn in Manila or Hong Kong. The built environment of the villages has also been transformed as traditional houses have their thatch replaced by GI (galvanised iron) and modern-style homes are built alongside traditional granaries. The fields and hillsides have changed too but often in less obvious ways.

Three broad changes in environmental use emerge clearly. There is less intensive use of the hillside land away from the terraces: its use for periodic cultivation has virtually disappeared in Sagada and is greatly diminished in Poitan. Hand in hand with this is the use of former swidden land for the provision of timber and fuelwood needs, particularly in Sagada. Hillside land elsewhere in the Cordillera has not been so fortunate. Extension of swidden cultivation in the north of the Cordillera has been associated with considerable soil erosion as larger areas on steep slopes have been farmed. Further south along the Mountain Trail highway towards Baguio the extension of intensive vegetable farming on mountain slopes has led to widespread deforestation and environmental deterioration (Lewis 1992). The particular circumstances of Sagada and Poitan are different. In Sagada labour formerly invested in swidden farming has been transferred to vegetable production on existing terraces while, in Poitan, work has switched from hillside to woodcarver's workshop.

The use of the most productive land – the pondfields – has changed to become more intensive with high-intensity modern vegetable cultivation in place of sweet potatoes or even rice in Sagada and, to a much lesser extent, in Poitan. In Sagada the knowledge of the transformations taking place further south, where migrants had worked and visited, facilitated innovation as did the high quality of local education and promotion of a form of capitalism by the US protestant mission since the beginning of the century. It is difficult otherwise to explain the successful adoption of vegetable production in an area that had few competitive advantages.

The use of some of the potentially most productive land has also changed to become less intensive. In physical situations where intensive work was necessary to maintain or restore pondfield terraces after landslips or deterioration after vermin infestation, work has not been carried out and the terrace has only been able to be planted with crops not needing irrigation. The competing demands for the time of the land owner or user – whether for vegetable production in Sagada or woodcarving in Poitan – who may well have other terraces making less demand on his time lead to less time being spent on the less-productive terraces.

During the period in which these changes have occurred most people in communities such as Sagada and Poitan have become more closely linked with national society and economy. Roads have improved, allowing the easier movement of goods and people in most directions. Schooling has become more widespread and effective and itself has caused migration to other areas as pupils seek education beyond what is locally available. Migration has also become more general and widespread as knowledge of work opportunities diffuse more widely. There is little evidence that migration has led to population decrease in these two communities. In Poitan census data suggests an increase in resident population of about 25% in each of the last two decades. This retention of population is possible only because opportunities exist in the locality and through periodic migration.

The implications of the changes that have been outlined for the regional resource base are varied. In both areas the regeneration of forest and other vegetation on the hillsides is clearly visible and likely to be continued since very little erosion has occurred that will hinder plant growth although research currently in progress will document this more precisely. The increasing population and improving living standards will place greater demands on water sources at the same time as some farming practices also need water for irrigation. In the absence of detailed hydrological studies it is only possible to report the widely-shared perception that water shortages are more

common in both rural and urban areas. The development of intensive, agro-chemical-based farmings systems in Sagada and, on a limited scale, in Poitan will alter both soil and water resources. Sagadans already widely use a rice variety that will tolerate enriched soils inimical to traditional varieties. In neither area is accelerated soil erosion likely so long as vegetables are grown on terraces.

The deterioration in the former pondfield terraces that Eder highlighted over a decade ago seems likely to continue. The labour needed to maintain terraces in the fashion described by Conklin (1980) is not likely to be available in the foreseeable future. The work is hard, dirty and demands considerable knowledge of low-technology engineering skills not widespread among younger people. It is likely that the combination of scarcity of water resources and physical deterioration of terraces will advance in tandem and will allow the best-watered and most productive – probably largest – terraces to be maintained. Other terraces will gradually become smaller, as a result of unrepaired landslides, used for rain-fed crops and some will eventually cease to be used at all.

This paper has identified a series of changes in resource use. They reflect a re-evaluation of how people spend their time. As the range of opportunities for making a living has increased, it is hardly surprising that farming has sometimes become less important and some land has become used differently. It is necessary to remember that rural life does not necessarily place farming in a primary position. The land-use changes that have been described should also be seen in a historical perspective as land that is being used less intensively is usually capable of being brought back into more intensive production to satisfy changing household needs.

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