

GENDER, POPULATION AND ENVIRONMENT IN THE CONTEXT OF DEFORESTATION: A MALAYSIAN CASE STUDY

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1 INTRODUCTION¹

This article examines the impact of environmental change on competing livelihood systems in the Limbang District of Sarawak, Malaysia. A conjunction of processes, primarily logging combined with attempts by the government to promote settled agriculture via changes to customary land tenure arrangements, has brought about environmental change within the District. With consequent male outmigration from the area, livelihood systems have been transformed.

Gender relations within local communities have mediated and, in some instances, accommodated these changes, but not always in ways which enhance environmental interests. In particular, the article looks at the way in which gender interests, in manoeuvring around new environmental vulnerabilities, are being played out through population variables. In some communities within Limbang District future opportunities for pursuing environmental management strategies which coincide with gender interests within changing patterns of livelihood may be limited, with important consequences for environmental sustainability.

2 LIVELIHOOD SYSTEMS IN LIMBANG AREA²

Sarawak is the largest of Malaysia's thirteen states, comprising 38 per cent of its land area. It has a small total population of 1.76 million, over half of which is concentrated within the coastal region. Historically, most of Sarawak was covered by tropical rainforest. Today, standing forest still covers 67 per cent of total State land area, much of which has been selectively logged in the recent past. Large tracts of secondary forest can now be found within the lower lying regions due to extensive logging. The remainder of the land area is under conventional swidden or shifting agriculture with pockets of large-scale permanent estate and plantation agriculture, smallholder cultivation and hill and wetland padi rice.

Limbang District, located in the north of Sarawak State and interposed between the two separate land areas which comprise Brunei, is home to several communities. The *Penans* and *Kelabits* live upstream of the Limbang River, while the *Murats*, otherwise known as *Lun Bawang*s, and the *Ibans* live mid-stream, close to the Sarawak/Brunei border. Different livelihood systems cross-cut the upstream and mid-stream divide; the *Penans* are hunters and gatherers and the *Kelabits*, *Murats* and *Ibans* are chiefly shifting agriculturalists.

The characteristic feature of the hunter gather communities is nomadism which strongly influences the nature of *Penan* social organization. *Penans* live in small bands and define themselves in territorial terms as inhabitants and owners of a foraging range. The natural resource base on which *Penan* society depends is viewed as collective or communal property in the sense that the whole band has an obligation to defend territory against encroachment by strangers. Ownership of land is defined as a right to use resources within a territory. Frequent movement of *Penan* camps occurs in accordance with game movements and camps are set up in areas where the main staple, sago, can be found in abundance. This lifestyle requires that possessions are kept to a minimum.

The family, as the basis of *Penan* social organization, is characterized by a clearly differentiated gender division of labour; men hold responsibility for hunting at distance from the camp while women forage close to home for vegetable products and small game, activities which do not compromise their ascribed social reproduction tasks. The staple crop, sago, is processed by women. Since the division of labour does not appear to translate into an imbalance in the value attributed to these tasks, *Penan* society is thought to have one of the most egalitarian systems of gender relations in East Malaysia.

¹ This article was compiled from Heyzer (1991) and (1992) by Cathy Green, Research Officer, IDS.

² Data for this article were collected during two field visits to Limbang District between December 1991 and February 1992. A sample survey was conducted in four communities, covering between 25-50 per cent of the households, depending on the population size.

In contrast, shifting agriculturalists in Limbang are chiefly food producers, although they may combine this with some hunting, fishing and gathering. Two types of shifting cultivator communities exist. The *Kelabits* live adjacent to the *Penans* in *kampongs*, or settled villages in upstream areas, and the *Murats* and *Ibans* live midstream in longhouses, a conglomeration of *biliks* (rooms), occupied by distinct family units. Their livelihoods consist of slash-and-burn cultivation coupled with the collection of foods, medicines, building materials and firewood from the forest. These gathering activities are combined with fishing and rearing domestic animals such as chickens and pigs. Shifting cultivation is highly labour intensive. Men and women work on *ladangs* (cleared fields), generally located several kilometres away from *kampongs*, where they grow their yearly supply of hill paddy. Preparation of fields takes place during the dry season with cultivation timed to catch the rains. Cleared plots of one hectare in size, when cultivated, are often enough to supply a family of five to eight people per year. Until recently, land was left fallow for between five to ten years after harvest.

Although there are differences³ in divisions of labour by gender within the three shifting cultivator ethnic groups, a generalized division is apparent between seed selection, sowing, weeding (women's tasks) and clearance of primary forest, transportation of sago logs and other heavy loads (men's tasks). Land preparation, harvesting and threshing are undertaken by both groups. However, all work customarily assigned to men is generally undertaken by women if male labour is unavailable. The flexibility expected of women when labour is short characterizes men's work regimens to a lesser degree since there are certain 'women's' tasks (i.e. weeding) which men are very reluctant to do. A further feature of prevailing gender divisions of labour rests on the continuous nature of women's activities (made possible by the unbroken presence required of their social reproduction tasks) compared with the intermittent nature of men's activities.

Both sexes have ownership and/or usufruct rights within the various land tenure systems affecting these groups. Women's rights are often on a par with men's but the actual quantity of land owned by women may be as low as a quarter that of men. Couples farm the property brought into a marriage as a single unit, although individual rights of

ownership are generally retained in the event of a spouse's death or divorce.

In general, women have considerable control over everyday domestic expenditures and decision making, with varying inputs into major decisions such as the education of children or major household purchases. Women appear to have a strong voice concerning agricultural production, such as where, when and what to plant. Their role in the production of hill paddy, on which the existence of the community depends, and ritual activity surrounding the protection of the 'paddy pun' (paddy spirit) has contributed to women's economic and political status. Their decision making role is also enhanced when men are either physically absent or employed in non-agricultural occupations. Well-developed systems of cooperation and labour exchange operate on an inter-household level within these communities, complementing systems of social organization operative within (often multigenerational) households. Longhouse communities, for instance, act as a labour collective when they need to build community property or construct services such as water supply.

Within mid-stream communities, therefore, women have generally equal interests in and decision making responsibilities for, and therefore broadly similar incentives for maintaining, the traditional forest farming system as men.

3 PROCESSES OF ENVIRONMENTAL CHANGE

There are two powerful forces of change affecting the four communities studied - logging of the tropical rainforest by companies who have been given timber concessions and, more recently, changes in government policy regarding shifting agriculture.

3.1 Logging

Unlike revenue from petroleum and gas which is controlled by the Malaysian Federal government, States receive all logging royalties. Control of timber and land therefore lies at the heart of Sarawak's political economy. Sarawak's leaders dispense timber concessions to their clients free of charge who then lease them on to Chinese logging companies. One newspaper remarked that 'timber tycoons have become so powerful that removing them would bring down the State government' (New Straits Times, 15 March, 1992).

³ For example, life-cycle differences.

The pace of logging increased dramatically in the 1980s⁴. In 1984, 5.8 million hectares (three-fifths of the total forest area of Sarawak) were licensed for logging. In 1991 alone, 100,000 cubic metres of timber were logged from the Limbang forest, generating earnings of about M\$35 million⁵. One of the major contributing factors to the current high level of environmental degradation through logging appears to be an almost complete lack of implementation of forest policy and regulations, despite the fact that a State-level legislative framework for forest protection exists⁶. Licensees therefore have no incentive to embark on sustainable investment in forest resources, particularly to build good practice extractive techniques into logging operations.

Much of the current logging being carried out in Sarawak occurs on steep lands dominated by surface materials that are highly susceptible to erosion on disturbance. Soil erosion, predominantly caused by the indiscriminate construction of logging roads and skid trails, logging camps and staging and shipping facilities, has contributed to water quality degradation by increasing suspended sediment loads. This, in turn, has contributed to declining fish stocks. Moreover, destruction of forests has resulted in the loss of forest products and wildlife habitats.

3.2 Policy approaches to livelihood systems in Limbang

3.2.1 Shifting agriculture

The State government has singled out shifting cultivation rather than logging as the major cause of deforestation in Sarawak⁷. This strategy serves two ends - it is seen as a means of placating Western environmental groups who have put pressure on the government to protect the rainforest, whilst at the same time safeguarding the forest so as to maximize potential future logging revenues.

In consequence, shifting cultivators in the Limbang area are being pressured by the government to settle and take up permanent cultivation of cash crops in

combination with animal husbandry. Schemes such as oil palm, cocoa, coconut and pepper cultivation and paddy irrigation are currently being promoted.

As thinking on shifting agriculture changes, there is increased operationalization of the 1979 Land Code Amendment Ordinance, a refinement of the 1958 Land Code which effectively restricted the creation of further customary rights to land. Any party claiming native customary rights to land after 1st January 1958 is now seen to be committing an offence for unlawful occupation of State land. The 1979 amendment broadened the meaning of occupation to include land clearance, ploughing, digging, enclosure or cultivation and the erection of buildings. The amendment also gave wide powers of arrest, eviction, removal or demolition of implements, buildings or crops to senior State officials.

These changes to land tenure arrangements at the legislative level often mean little to indigenous people who cannot read or write, and who live in remote areas. In many cases, natives who have lost their land under these changes are not aware of their loss until they face prosecution as illegal shifting agriculturalists.

3.2.2 Hunting and gathering

The government is also pushing for the assimilation of the *Penans* into the 'modern' economy as settled agriculturalists, operating from *kampongs*, and as wage workers. The education of children is expected to increase receptivity to change within *Penan* communities, particularly increasing exposure to agricultural extension. Children are encouraged to attend boarding schools where they are fed a rice-based diet to break the custom of sago consumption, returning home at weekends.

In Long Napir, home of the *Penans* and *Kelabits*, a number of notices have been displayed regarding the illegality of shifting cultivation. Many paddy huts have been bulldozed and people brought to court.

⁴ Sarawak's unprocessed log exports rose to 15.8m cubic metres in 1991 from 6.7m in 1980.

⁵ US\$1 = M\$2.6.

⁶ The fact that the State Minister of Environment has the largest timber concession in the area also makes it difficult for junior officers to pursue implementation given existing social hierarchies and culture.

⁷ Considerable controversy exists in Sarawak over which activities are primarily responsible for environmental degradation. Based on a review of existing literature and field observations, it is apparent that both current forestry and shifting cultivation practices often result in land and water degradation because of poor management practices. In some areas, impacts from the two resource uses are inseparable because shifting cultivation has followed logging due to ease of access, land availability and substantially reduced clearing requirements.

4 A GENDER PERSPECTIVE ON ENVIRONMENTAL CHANGE IN LIMBANG DISTRICT

The different livelihood systems within Limbang District have shown varying degrees of vulnerability, and thus capacity for adaptation to, environmental change in recent years. Perceptions of change vary markedly between the upstream and midstream communities and, particularly in the latter case, are strongly differentiated by gender.

4.1 Hunter gatherer communities

The natural resources on which *Penan* communities depend are becoming increasingly scarce and/or degraded, increasing dependency on government programmes to 'bring them out of the jungle'. Large-scale deforestation, together with the noise of logging machinery, has driven game deeper into the forest, whilst competition with timbermen for wild animals is intensifying scarcities. Other important food resources such as sago, building materials and medicine are being destroyed through tree felling, while river water quality has been degraded through increased sedimentation affecting drinking water supplies, water for washing clothes and supplies of fish. Both men and women must now travel longer distances to fulfil their household provisioning responsibilities. Inability to maintain the old livelihood system has led to various manifestations of poor health, including malnutrition within *Penan* society, with consequent intensification of the caring responsibilities of women.

Because of the dependence of both *Penan* men and women on the natural resource base, threats to their livelihood, particularly through changes to their land rights, may be interpreted as affecting both groups equally. To this end, it is clear that both men and women have been active in protest movements against the logging companies. However, it is not so clear that the **response** of these communities to change has taken place without shifts in the balance of power within gender relations.

Environmental challenges to livelihood systems within the upstream areas of Limbang District have forced adaptation of *Penan* livelihoods. Increasingly,

the *Penans* are being pulled into the cash economy as their reliance on the forest weakens. Although men have resisted taking wage employment with logging companies on the grounds that they fear logging machinery, are aware of the poor safety record of logging companies and are not prepared to leave their families, they are being recruited to collect forest rattan, which is marketed to Chinese merchants. Likewise, some *Penan* women have found a source of income in basket weaving. This new interaction with the cash economy carries with it implications for the egalitarian gender relations formerly enjoyed by this group. Women weave baskets in their homes and, men, who have increasingly become the point of contact with the outside world, tend to take responsibility for women's products at the point at which they gain value in the market place. In short, environmental change has forced women out of their major role within the subsistence economy and into a situation where their status is being eroded by increasing economic dependency on men, as the new major wage earners, and on handouts from logging companies⁸.

The issue of reproduction in the context of changing systems of livelihood is complex. With an increasing sense of loss over control of their livelihood systems *Penans* perceive that it is in their interests to have more children, especially when the surplus economic and social value of having more children appears to outweigh the cost of raising big families⁹. Children are regarded as a form of social insurance, as an economic resource in the context of new market opportunities, as additional support in view of labour shortages, as well as a source of personal satisfaction and pleasure. Besides pressures of livelihood, demand for children also comes from an urgency to maintain their indigenous lifestyle against powerful pressures to assimilate into other ways of life. The massive change which is taking place within *Penan* communities is the entry of the young into the school system as boarders. This loss of children into another lifestyle has translated into a conviction that women should have more children so that at least a few may remain and adopt the indigenous lifestyle. Thus in *Penan* communities a pro-natalist stance has

⁸ Logging companies have been pressured by the State Government to give these communities handouts in the form of food.

⁹ Education is free in Sarawak. Moreover, with the practice of endogamy (i.e. marriage within the local group or community) and rules of post-marital residence involving living with the wife's kin continuously in the early years of marriage, groups of related women in co-residence provide a ready-made female support system for childcare and home maintenance.

become more evident in the face of environmental degradation¹⁰.

The Flying Doctor Service is the main way in which remote upstream areas are served with maternal and child health services, family planning and other general health services. Upstream women report that this service has been cut by the government as a form of punishment for the area's growing resistance and protest against logging. It is probable that this has contributed to the low level of birth control used by women of childbearing in the upstream communities surveyed¹¹. Decreasing access to family planning, combined with pressures to have more children, means that women in high risk older categories in these communities continue to bear children, with implications for both maternal and infant mortality.

4.2 Shifting cultivator communities

The combination of logging and the change in State policies on shifting cultivation have forced major changes onto *Kelabit* livelihood systems. Logging has affected these communities to a lesser extent than the *Penans*, although forest products are more difficult to obtain and there has been a significant decline in fish in their diet. Since land is the basis of their livelihood changes in land rights are having the most significant impact on the *Kelabits*. They are being forced further and further away from their farms in order to gain access to fertile land. The time implications of this are likely to be gender-specific since women have inherited responsibility for tasks requiring a more frequent and continuous presence on agricultural land. Moreover, land near or adjacent to *kampongs* has been left fallow for shorter periods with a consequent fall in fertility.

Very few men have entered into wage employment with the government or timber companies. In the *Kelabit kampung* in Long Napir, only five men out of 30 households with a total of 300 people were employed by timber companies. Faced with these changes, the *Kelabits* have joined forces with the *Penans* in protest actions against the logging companies.

In comparison to the protests of upstream communities, the *Iban* and *Lun Bawang*, midstream shifting cultivator communities, are less vulnerable to, and

thus have reacted differently, to environmental change. These communities have better access to roads, are nearer to Limbang town and are located close to the Sarawak/Brunei border, which greatly increases their access to wage work in urban areas. In two longhouse communities surveyed, one *Lun Bawang* and the other *Iban*, every household had at least one able-bodied male working in Brunei, mainly as construction workers. These men tend to return home twice a month, primarily to build and renovate their houses.

Male out-migration or *bejalai* from these communities is customary, taken as a journey for material profit and social prestige. In the past, *bejalai* would, as far as possible, be undertaken to fit in with peak labour demands within the agricultural cycle. This is no longer the case and women have been left to fill up the labour vacuum created by men's absence. Men's agricultural tasks, bar the felling of virgin forest, have been offloaded onto women. The elasticity of labour exchange groups, which might have once made up for male absences, is now extremely low because of the way in which male wage employment has become institutionalized across the community. *Bilik* families lacking mature men are increasingly being forced into new, less environmentally-benevolent, types of land usage, for instance farming land for several successive years and thus avoiding the problem of having to fell well-established secondary forest. Reductions in fallow have important implications for both soil fertility and output. In this way short-term gender interests (i.e fulfilment of food provisioning requirements) appear to be at odds with longer-term environmental interests.

Increasingly, women in these communities are forced to accommodate labour shortages by using child labour and it seems probable that the usual qualifying age of 12 for regular farm work will fall in the future. Female children, who are already singled out to substitute childcare for their mothers, may be drawn into agricultural work at an increasing rate in the expectation that such training will pay dividends in the future. Given that schooling is compulsory, this may lead the community into further conflict with the government. The future earning potential of boys is now expected to lie outside

¹⁰ However, decision making around reproduction is clearly complex and this article makes no claims to be able to explain these complexities.

¹¹ Fertility rates are declining in Sarawak as a whole and mortality rates have stabilized.

these communities, and, as such, their education may be privileged to a greater extent than girls'. Moreover, labour shortages may increasingly encourage women to build a case for having larger families, while the parallel growth of the money economy may give both men and women a financial justification for more children.

The increasing vulnerability of these communities to land scarcities has a gender dimension. For *Iban* women, whose status is intricately bound up with growing sacred rice, the potential loss of paddy land is the most dramatic threat to the basis of their authority within the community. State pressures to move into settled agriculture and to cultivate new crops further severs women's authority since they have no special status in relation to the new crops.

Fundamentally, there is also a new gender asymmetry in that the new economic opportunities open to men are not similarly open to women. Women's lack of direct access to cash may compromise their ability to invest in productive resources such as farm implements and other inputs necessary to maintain the viability of the farming system. Moreover, the State government is promoting the formalization of land title under new systems of settled agriculture and land held as 'household property' is increasingly being registered in the name of male household heads. Thus, legal rights to the use and disposal of land now rest with men, with women unable to invoke their property rights should they chose to do so. In short, the systems of rights and power underpinning *Iban* and *Lun Bawang* gender divisions of labour are becoming heavily weighted in favour of men. These changes have implications for women's independent access to other resources such as credit, agricultural extension and subsidies. Gender differentiation in resource entitlements leaves women with limited flexibility with which to respond to environmental changes in ways which will maintain or regenerate environmental resources.

Women's increasing work burdens and their limited control over resources means limited resources to deal with degradation. A major concern of midstream communities is the deterioration of water quality, partly due to logging, but intensified by the growing use of rivers for waste disposal. The piped water facilities installed within longhouse communities, using new-found cash resources, cease to

function during the dry season increasing dependence on river water and leaving people vulnerable to water-borne illnesses such as diarrhoea, typhoid and cholera. Women's burdens in taking care of the sick grow substantially during this period.

The new livelihood system adopted by these communities, based on relatively stable male wage employment at relatively high income levels, combined with subsistence agriculture has, in some respects, improved the standard of living of midstream communities. Road systems have been improved by logging companies increasing their access to markets and other services such as clinics and the accumulation of wealth from wage work in Brunei has led to improved access to higher quality food and increased investment in longhouses and consumer durables. However, women have shouldered much of the burden of environmental change through their resource-based livelihoods although men's new market-based opportunities have cushioned midstream communities from, or in some instances are perceived to have compensated them for, the impact of change.

5 CONCLUSION

The impact of deforestation and associated changes in State government policy towards farming systems and land rights in Limbang District has been far from uniform among the distinct livelihood systems in this area. Natural resource-dependent systems like those of the *Penans* and *Kelabits* appear to be far more vulnerable to environmental change than those that are currently buttressed by lucrative market activity i.e. the swidden systems managed by *Iban* and *Lun Bawang* women. Indeed, the responses of Limbang communities to a declining resource base cannot be simply attributed to their shifting cultivator or hunter gather identities. For the four ethnic groups studied, gender relations have been exposed as an important variable in understanding community responses to declining resource availabilities. Differentiated property rights and divisions of labour are, at present, more marked within midstream communities and will increasingly require complex negotiations of conflicts of interests between men and women over resource management, allocation, utilization and entitlement. Otherwise, divisions of labour which are not matched by parallel divisions of rights and power may severely prejudice local sustainable resource use.

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