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INTERVENTION IN NATURAL RESOURCE USE IN BIRIWIRI, ZIMBABWE

PARADZAYI P. BONGO AND M.F.C. BOURDILLON
Department of Sociology, University of Zimbabwe

They arrived already knowing everything. They come and look around, but they see only what is not here (Philipino peasant quoted in Argawal, 1986).

Everyone thinks of changing the world, but no one thinks of changing himself (Tolstoy).

INTRODUCTION

This article discusses issues concerning intervention to protect the natural environment. The discussion arises from a case study in Biriwiri, a mountainous district in Eastern Zimbabwe, where many women earn extra income from the craft of bark cloth, using fibres from the bark of slow-growing trees indigenous to the area. Our research in this area was an exploratory investigation of the politics of natural resource utilisation with special emphasis on the use of selected key *miombo* species, *muunze*, *musasa* and *mupfuti*, or *brachystegia glaucescens*, *brachystegia spiciformis* and *brachystegia boehmii* respectively. There is some concern that this use is damaging to the environment, and there have been attempts to find alternative forms of income for the women, either through alternative sources of livelihood or through alternative sources of fibre.

Intervention includes a variety of human and organisational activities associated with the spread of technologies. In its simplest form, intervention may depend only upon mass media contact – perhaps a radio broadcast warning on the ecological impact of cutting trees. Often it involves establishing an intermediary presence within rural communities, either through salaried staff (extension agents, village level workers, headmen, etc.) or through co-operatives, committees, and farmers' associations (Abell, 1981, 12). Approaches to intervention can be categorised into two broad types: those based on "push", where the system itself targets innovations which it tries to promote among resource harvesters, and those based on "pull", where the service organisation responds to the demands of those seeking help. Demand-led intervention of the second type is rarely seen in Africa when it comes to natural resource utilisation. Instead, we have a "bureaucracy-led" intervention that promotes technical innovations which scientists believe will meet rural people's needs.

Environmental intervention has recently become fashionable. Both The World Bank and the International Monetary Fund have in recent times spoken about an ecological crisis. Big business and multinational corporations have also jumped onto the bandwagon of environmentalism. The assumption behind this sudden discovery of an environmental crisis is a false democratic utopianism, which says that the challenge to survival posed by the environmental crisis is so colossal that we cannot afford to let social and economic differences stand in the way of sharing common environmental problems. Whether you are an irrelevant and outmoded church or an illiterate, poverty-stricken villager in some remote part of the world or the IMF itself, the environmental crisis equalises all. Before it, all must acknowledge the possibility of a common catastrophe or the late recovery of some opportunities for a common future.

In contrast to this view, Ellis Frank (1993, 248) asserts that for the peasant household, the environment is not about dolphins or whales, toxic waste or the ozone layer, recycled tin cans or newspapers. Instead, it is about resources that contribute directly to family livelihood: water, trees, meadows, wild plants and animals. Environmental aspects of peasant livelihood must be approached, as must other aspects, by discovering the forces acting on individual and social decisions. In relation to this, Einarsson (1996, 75) argues that Icelandic fishermen see campaigns against the hunting of whales as threatening both a way of life and, in the longer run, their right to basic subsistence. In Icelandic fishing villages there are almost no alternatives to fishing. In support of this view, Milton (1996) asserts that conflicts concerning conservation often involve external influence on local resource use, where conservationists and indigenous resource users disagree on how, or even if, a resource should be used. This conversation of conservation (see Kaus, 1990) is often hampered by basically different cultural assumptions on how natural resources are to be viewed. Such conflicts are culture conflicts and not just a question of scientifically rational standards of resource utilisation.

Leach and Fairhead (1998, xiv) illustrate how conceptions of uninhabited forest as "nature" undisturbed by people, have provided tenurial grounds for national and international guardians to intervene in habitat protection. Further, views of forests as an ecosystem at equilibrium with climatic conditions in the absence of human disturbance have provided moral and scientific grounds for external management to override the "disruptive" effect of local populations. Added to these are moral arguments based on the notions of forest areas as global commons or national patrimony, to be protected in an undisturbed state for a larger, future good. The reality is that human actions are part of the web of influences on ecological change, and are not external impacts disturbing the equilibrium. Sargent and Bass (1992) maintain that human impacts on

the forest are not a function of numbers alone. They are also a function of the political, economic and social signals that cause individuals to move into and within forests. Outside the forest, it is clear that many prevailing economic and policy signals marginalise people, forcing them into the forest. These signals must be understood for more effective intervention. Particularly important is a review of land use and land ownership policies and practices in the agricultural hinterland. Echoing what Redclift (1987) has highlighted, a particular cultural group will not necessarily respect the constraints on resource use stemming from the theoretical carrying capacity of land. Rather, the knowledge gained from sustainable resource use forms part of the environmental practices of most indigenous populations. It is also essential in intervention to know what environmental problems appear unsustainable, to people as well as in technical terms, and the answers lie in cultural interpretations of crisis.

This article looks at the use of forest resources by women of Biriwiri. We examine the inter-play between the perspectives of outside conservationists and members of the community. We also look briefly at the economic situation of the women, in which immediate and urgent needs make environmental considerations secondary. We suggest that successful intervention needs to pay more attention to the immediate needs and the perspectives of the community.

STUDY AREA AND THE BARK FIBRE CRAFT

This article is based on a study carried out in Biriwiri Ward in Chimanimani District of Zimbabwe. Biriwiri is a sub-catchment named after the Biriwiri River that flows through it. It forms part of the Nyanyadzi catchment in Chimanimani District and is very mountainous, reaching from 870 metres where the Biriwiri flows into the Nyanyadzi River to 1 957 metres at the highest point in the catchment, with very steep slopes. The variation in altitude results in differences in the rainfall received and temperatures experienced in different parts of the area under study. The downstream parts are dry and hot, whereas the upstream parts are colder and wetter. The soils are mainly red with a lot of stony gravel. Since the area is so hilly, people have managed to cultivate crops on terraced patches of land as a soil conservation measure. Crops grown include millet, wheat (under irrigation), beans, maize, sunflowers and sorghum. The remaining area is for firewood, for grazing and construction. Also included in this study are the neighbouring villages of Nyamusundu and Saurombe, plus the western Mhakwe and Chikwakwa areas.

In Biriwiri, the importance of forest products is usually more in the way they fill gaps and complement other sources of subsistence inputs and income than in their absolute magnitude or share of overall household inputs. The incomes that the women earn from craft are not substantial,

largely due to the flooding of the market, which has depressed prices. Further, the earnings are erratic and unpredictable as they are determined by the number and frequency of tourists and merchants who buy the craft products. Nevertheless, the craft is an important buffer against the periodic droughts and poor soils in the area. Those women who made the best products stood to have more of their artefacts purchased compared to the poor performers.

Even though earnings from craft are on average not substantial, there are strong political, economic and social signals that cause individuals to exploit trees for craft. Particularly crucial in Biriwiri are the problems encountered in agriculture. There were prohibitively high costs of agricultural inputs, particularly fertiliser, maize, and cotton seeds as well as chemicals like pesticides. During the 1998-99 agricultural season, fertiliser was expensive and scarce. Some shop-owners and middlemen took advantage of this shortage by measuring out small packs of about 2 kgs or more from 50-kg bags and selling these small packets. In some instances, one 50-kg bag could fetch $700-$750 for a trader from such sales. This was too high for the rural farmers, considering the fact that the normal price for 50 kgs of Ammonium Nitrate was then $289.

The women in Biriwiri cut tender shoots of the young *miombo* trees. They also cut softer branches of big, grown trees of the same species. They extract the fibre mainly by hitting the tree or branch to break the outer hardness whilst the webbing is left inside. They then boil the fibre together with ash for colouring. They often dry the fibre and pound it with mortar and pestle (*kutwa*). The fibre is then pressed to soften it. After this, the fibre is spun (*kukosa*) into strands or strings (*ngoi*) of the desired length and thickness. The standard length of each *ngoi* is 2 metres. The strings are then sold in bundles (*puku*) of 20 strings. Once the *ngoi* has been prepared the women use it to weave blankets, hats, mats, small animals, bags, and even clothes.

For many women, the handicraft connection is the only opportunity they have in their lives to earn an independent cash income. Their great grandparents used tree fibre to weave blankets (*magudza*) in order to keep the family warm at night. Since then the craftwork has come to be known generally as *magudza*. According to the early members of the women's craft co-operative at Muusha Rural Craft Centre (also in Biriwiri), a Mrs Chitombo from Mutoko exposed them to vigilant marketing of their craft items. With encouragement and support from Mrs Chitombo, these women then formed groups with different specialities. Some specialised in making hats and others in making blankets. Mrs Chitombo took their artefacts for marketing in Harare. Some whites who saw the items were impressed and placed orders. This heralded the commercialisation of Biriwiri women's craft which was originally utilised for consumption

only. The women do the craft work throughout the year, even during the summer season when people are busy in the fields. However, when the trees shed their leaves in the off-season, the fibre yield is low. At the time of the research there were four established craft co-operatives, namely Muusha, Shingiriral, Muzinda and Totonga. A very insignificant number of men were directly involved in craft work.

In this research, one could talk of actors like the Department of Natural Resources (DNR), the District Council, or non-governmental organisations (NGOs) involved in women's craftwork for the purposes of affecting, modifying or preventing a result, e.g., unregulated tree cutting. The major player in intervention in bark fibre craft in Biriwiri to date has been the DNR.

Although craftwork was most visible in the form of co-operatives, there were some women who did it individually and these often sourced their own clients. They could not join the established co-operatives because these had already been oversubscribed. Almost every household in Biriwiri is involved in craft.

It appears as if the DNR is not keen on supporting the women craft workers, particularly those who are not members of established and registered co-operatives. The District Head of the DNR expressed the official position of his organisation as being not sure whether the craftwork should be promoted or encouraged, because of its potentially damaging effect on trees. They have chosen to adopt the "precautionary principle" in natural resource utilisation. According to Agent and O'Riordan (1995, 391), the precautionary principle involves taking preventive action ahead of scientific certainty on the grounds of its being better to be safe than sorry. It enables us to narrow the range of uncertainty about the environmental impact of human activities. Intervention in natural resource use could therefore be justified on the grounds that knowledge about environmental conditions is particularly inadequate, due partly to conceptual problems (for example how to define soil depletion or loss of natural habitat) and partly to the fact that mechanisms often are not in place to measure raw facts. The DNR head even conceded that his organisation had never done research on the rate of tree loss, but are depending on social mapping, best portrayed by people relating how the distance to collect firewood has been growing steadily over the years. The DNR has intervened in natural resource utilisation in Biriwiri and the Chimanimani District at large in a number of ways, with animators, plantations and the Mhakwe Dam project being chief.

The women regard their craft activities as not damaging to the environment. One woman emphasised this point by saying:

> We saw the trees we were debarking regenerate year after year and so we realised there was no damage being done . . . and we have been

> doing this craft-work since long ago but trees are still there . . . Therefore craft-work is not killing trees.

The women attribute the loss of trees to firewood merchants, brick moulding and to clearing land for agricultural purposes. One Mrs M. of the Shingirirai Craft Co-operative emphatically pointed to a small baobab tree in her yard, about which she said:

> You see that tree? We've been using its fibre since I was a girl and up to now it is still surviving, therefore our craft does not destroy trees . . . We look after our trees very well knowing that that is where we get our livelihood from.

The women have even challenged the authorities such as DNR, Ministry of Mines, Environment and Tourism, Chimanimani District Council, to prove that they are damaging trees through their craft. In fact, there has been no study on the ecological impact of the craft and no hard data to support the allegations of the officials. This has led to indecision on the part of the authorities. For instance, the SAFIRE head was quoted as saying:

> We are not really sure of the impact of this craft. It could be ecologically beneficial, since the tree loss (if any) could be thinning, which is biologically beneficial to the forests.

There has in fact been some form of moral self-restraint on utilisation of natural resources in Biriwiri, espoused in the people's displeasure at wanton cutting down of trees. This sense of collective social responsibility was demonstrated in a tree cutting incident that happened near Mhakwe Dam. People in the area know that they can be punished for cutting down trees. Mr Muranda, the local animator in Mhakwe, showed me a tree that had been cut by someone in late October 1998, who then became afraid to come and collect the wood. The tree was still there in January 1999. The person was afraid of being detected because he knew that he had flouted social norms governing tree preservation in the area. This illustrates collective social policing over natural resource use. In Mhakwe, this collective social responsibility is not confined to trees only, but also to other natural resources. For instance, anyone caught by other villagers washing clothes in Mhakwe Dam will be reported to the authorities, who will then fine such a person. Many projects are being undertaken to ensure tree conservation, including planting *mutondo* trees, use of *chingwa* stoves (stoves especially designed to use firewood economically) and attempting to divert women's attention from tree fibre craft to commercial fishing and irrigation.

ATTEMPTS AT INTERVENTION

Animators

Animators are people of either sex given training on environmental issues, who then go about the villages lobbying for sustainable use of natural resources. The DNR in Chimanimani has, in collaboration with the Save Rehabilitation Action Committee, embarked on a campaign to prevent siltation of the Save River. Africa 2000, an NGO, is also involved in the training. Activities during training of animators include: field visits to established projects in which the ecology is managed by the community; presentations from government and NGO officials on conservation of natural resources; group discussions of these presentations, including the work strategies they raise.

There are two animators in Biriwiri. These people are supposed to liaise with the DNR on issues pertaining to conservation such as policing stream bank cultivation, cutting down trees, and constructing terraces and contour ridges. However, these animators lack real power to impose sanctions and penalties on offenders and people may choose to ignore them or to ostracise them should they be too diligent in carrying out their duties. One government official had this to say in relation to this issue:

> *Hapana ane simba chairo...vanhu vanotyanana, zvinhu zvizhinji chaizvo zvinorongwa kuitwa pabepa asi hapana chinozoitwa kuona kuti zvarongwa izvozvo zvateedzerwa here. Hurumende yedu inogona chaizvo kuronga misangano asi hapana chipenyu chinozobuda pamisangano iyoyo.* (No-one has real power . . . People fear each other. A lot of things are said on paper concerning environmental conservation but nothing materialises . . . Our government is good at organising and running seminars which produce no real follow-up and effectual implementation of policy recommendations from these seminars).

This is not to downplay the important role that the animators could possibly play, but it does point to the fact that they need to be more empowered if they are to be effective change agents. Animators had some success in policing of stream bank cultivation, an activity in which Agritex was also active; a number of people had their maize crop on stream banks slashed by Agritex in collaboration with animators. But there were no other signs of successful intervention. However, such drastic action created tension between law enforcement agents and the rural community.

Animators are members of the communities in which they work. They are aware of the problems that people face, and in particular the lack of possibilities of income outside farming in Biriwiri. Their social relations with the people created a moral problem for them when enforcing some of the laws that impinge on the livelihood of individuals.

Plantations

SAFIRE and ZIMTRUST have a joint effort with the DNR to identify tree species other than *miombo* that are considered to be plentiful and therefore not endangered to replace the *miombo* species in bark fibre craft. Once such trees have been identified, plantations will be established. Such plantations will no longer be for subsistence but for commercial purposes, as is happening in Nyanyadzi, under the auspices of the same organisations. In Nyanyadzi, the DNR is establishing plantations of selected indigenous and exotic plants which serve as reserves of firewood, building material and also bark fibre, since the women in Nyanyadzi debark baobab trees for craft.

In Biriwiri no such plantation had been established at the time of research, but some individual households had been given eucalyptus seedlings by the Forestry Commission to plant at their homesteads. However, the gravel in the soil results in poor water retention and most of the donated seedlings have been drying. For purposes of the craftwork, eucalyptus is unsuitable since it has poor quality and weak fibre compared to the indigenous *miombo* woods.

With regard to the establishment of plantations in Biriwiri, they do not normally replace virgin forest; rather they replace crops, grasslands or secondary forests. Due to commercial necessities, they are rarely established on degraded soil, as their objective is short cycles of rapid growth requiring a certain level of fertility and water supply (Bazett, 1993). Hence they typically occupy areas already being used in various ways by local people. Biriwiri lacks land for planting trees. People need more land for crop cultivation and have none to spare for tree planting.

Nevertheless action needs to be taken to replace trees being lost in many ways, most of which relate to activities necessary for human survival in Biriwiri. Sargent and Bass (1992, 200) argue that one of the most important roles of forests in many parts of the world is to regulate water supplies. Without trees, extremes of water flow, droughts and floods, would be common. Plantations can help in climatic and hydrological regulation, but natural forests are uniquely able to conserve high levels of biological diversity. Tree conservation and planting are important also because with the slow pace of rural electrification, fuel-wood demand will constitute the principal economic pressure on forests around villages, towns and cities in developing countries. Fuel-wood and charcoal already account for 80% of total world consumption in developing countries, for over 2 billion people use biomass as their primary source of energy. Consumption is expected to rise at 1.7% per year world wide, and there will be increasing commoditisation of non-timber forest products (Montalembert, 1991).

The Mhakwe Dam project

The Mhakwe Dam is a CAMPFIRE (Communal Areas Management Programme for Indigenous Resources) project under the auspices of the Ministry of Water and DNR, completed in 1994. Initially this project was intended for fishing by those on the upper side and for irrigation by those on the lower side of the dam. The Mhakwe area animator sits on the committee elected to run the affairs of the dam. Mhakwe Ward is the main supplier of bark fibre to Biriwiri women, and the animator is confident that it will be possible for them to divert women's attention from craftwork to commercial fishing. The majority of the committee members are women, including the chairperson. One of the *sadunhus* (ward head) is a woman,[1] a situation viewed as a plus by the animator in the curbing of tree cutting and bark stripping by women for craft. By 14 July 1999, there were workshops in Mhakwe to draft by-laws to be used on the dam. The community wants to assert their authority on the dam. They do not like to have the Ministry of Water employees who built the dam come and fish as they like without the locals' consent.

According to the local animator, who also sits on the dam committee, the dam is not exclusively for Mhakwe villagers but for everyone to use for a fee. Plans are underway to set up charges for each type of use of the dam, particularly fishing. The DNR hopes that as an income-generating project, fishing may occupy people and leave them without time for craftwork. They have plans to build booking rooms to accommodate those who will be coming from afar to fish and also to put up a vigorous advertising campaign through billboards, signposts, etc. However, considering the small size of the dam, these hopes are not realistic.

The DNR and animators are establishing consolidated gardens near the dam where villagers can earn a living through utilising water from the dam. The women, as in Biriwiri, are also being encouraged to plant sisal (*chikwenga*) to conserve the soil and as a possible substitute for indigenous bark fibre. Vertiver grass (*vetiveria zizanoides*) has also been planted around the dam and in the village.

THE PROBLEMATIC OF INTERVENTION

Whilst it is good to take action with a view to curbing environmental degradation, Chambers (1997) would want us to proceed with caution in intervention, especially as he asks "Whose reality counts?" He advises agents of intervention against regarding their views as superior to those of rural people being studied. He also challenges the dominance of views

[1] This is exceedingly rare in Shona society.

by outsiders and professionals, such as that displayed by the DNR head when he said,

> The methods the women employ in their craft are too primitive and we want to eradicate them, but this doesn't happen in a day . . . The people need to be educated on proper use of their resources.

Chambers would say this is an "upper" dominance view. The upper re-labels the lower and redefines his reality for him. The upper wants it to be his reality that counts. The point is that the DNR should not just suppose that people in Biriwiri are going to embrace the dam project according to the perceptions of the authorities. Much depends on the degree of consultation to ensure the project corresponds to what people want and not what they are expected to want by professionals and outsiders. In a different context, David Brown (1998) asserted that "silver-bullet technologies", which attempt to replace at a stroke livelihood systems that have evolved over centuries with miracle cures of external origin, have proven of doubtful benefit to forest-dependent communities. This could profitably have been noted by the DNR and the NGOs involved in the Mhakwe Dam project.

One of the means by which policy-makers "box themselves in" is through labelling referring particularly to "the way in which people, conceived as objects of policy, are defined in convenient images" (Wood, 1985, 1). Labels are put on "target groups" as passive objects of policy (e.g., "the landless", "sharecroppers", "women"), rather than recognising them as active subjects with projects and agendas of their own. The disarming shorthand of labelling constructs a problem in such a way as to prescribe a predetermined solution, and legitimises the actions of development agencies and other public bodies in intervening to bring about the intended results (cf. Long and Van der Ploeg, 1989). Such classifications are "represented as having universal legitimacy, as though they were in fact natural" (Wood, 1985, 9). Wood argues further,

> Labels misrepresent or more deliberately falsify the situation and role of the labelled. In that sense, labels... in effect reveal [the] relationship of power between the giver and the bearer of a label (Wood, 1985, 11).

More effective intervention in Biriwiri should start from an informed basis. Purwandono and Karki (1999) put forward a market analysis and development approach as part of a more effective intervention in natural resource utilisation, particularly with reference to non-timber forest products. This approach aims to expand the skills of facilitating agencies (such as development project personnel in SAFIRE, CAMPFIRE, DNR and the Chimanimani District Council) to identify and develop products (existing or new) that can be ecologically harvested, processed and

marketed in order to provide an acceptable income for entrepreneurs. Market analysis and development consist of a number of phases.

The first phase involves the assessment of the existing situation in terms of production and marketing of bark fibre products. This should involve a macro-situation analysis, that is, an analysis of the national socio-political context, legislation (e.g., the Forest Act, Natural Resources Act) and policies controlling extraction and marketing of non-timber forest products in Zimbabwe. Unfortunately conservation in Africa has frequently meant the simple exclusion of rural people from national parks and forest reserves, in the interests of the protection of large animal species and preservation of habitats (Anderson and Grove, 1987). Particularly important would be an inventory of existing resources and products. By observing and directly questioning local people, a broad picture of the range of existing natural resources and products is obtained. The best informants are the users of forest products in Biriwiri. After such an exercise, one can come up with a comprehensive list of resources (including trees) or products available at the site by the community members for consumption or cash income. No such analysis has been carried out in Biriwiri. The DNR has not assessed scientifically the effects of the craft, and are consequently uncertain about the appropriate mode of intervention.

The second stage involves identification of products, markets and means of marketing so as to specify the interventions and expenses associated with making improvements in skills and technology. Of particular importance is the social institutional setting. Research has shown that once a resource becomes a commodity in high demand, conflicts can arise between neighbouring families and communities who have to share the same resource. In Nepal, communities gathering the Himalayan nettle aloe (*Girardina diversifolia*) for production of yarn to be woven into cloth have had to receive assistance in conflict resolution because of the increased demands on the resource in their locality. In Biriwiri, trees have become a source of conflict between firewood traders, women bark fibre workers, DNR and the Forestry Commission.

There is an urgent need to assess the adequacy of current stock of non-timber forest products and to estimate the potential of long-term extraction of a projected volume. The outcome of such an environmental study is a resource management plan for determining which areas to harvest, how and where to establish access routes and collection centres, and for evaluating costs and benefits of different harvest strategies. Anderson (1999) argues that stocks and flows can be used to determine the sustainable harvest of a species by calculating appropriate flow levels. The stock of a resource is the quantity of (*brachystegia*) trees available for exploitation. The flow of a resource is the quantity entering

or leaving a system and depends both on the time needed for extraction (travel and harvesting time) and the demand for the product. Given the requisite technical expertise from ecologists and biologists, adopting and maintaining a given stock of natural capital (trees) requires that the flow out of the system (harvesting or deaths) is no greater than the flow into the system (births or seedling recruitment). Flows and the ability of a species like *miombo* to replace itself will be strongly influenced by harvesting pressure. This pressure can be understood by analysing decisions and behaviour of local tree harvesters. Information is needed about who harvests, at what rate and under what conditions. Land use maps and interviews with people involved in market sales can help answer these questions. The sustainability of raw materials is assessed through the use of forest inventories or yield studies and only products whose stock of raw materials is sustainable will be promoted. A detailed knowledge of the social and cultural situation will avoid violation of local tradition, religion or unwritten laws, or the use of property whose ownership is in dispute.

People aspire to a range of outcomes. Intervention agents in Biriwiri should use the livelihood approach, which builds on the findings of participatory assessments of poverty (Booth *et al.*, 1998). These have taught us that we should listen to those with whom we are working and learn from them about their objectives, their understanding of what it means to be poor and to escape from poverty, as well as their beliefs about the root causes of that poverty. The short-term survival rather than the sustainable management of natural capital is often the priority of people living in poverty. Intervention agencies in Biriwiri must work closely with rural people to help them understand the contribution (positive or negative) that their bark fibre craft is making to the environment and to promote sustainability as a long-term objective.

CONCLUSION

There has been a tendency to single out problems (e.g., deforestation) and ascribe them to people on a global scale or to broad categories of people, like "peasants" or "rural poor". This article advocates for a recognition of the need to determine empirically which of many possible intervention routes/models have relevance for particular people at particular times. Adams (1990) says that crisis has become a commonplace motif of development writing. The perception of dramatic and insoluble environmental problems in the countries of the "South" is common to politicians, aid agencies, academic analysts, extension workers and the media. This view tends to favour "fire-fighting" approaches to rural development as against discussions of deeper ills, and the treatment of

symptoms not causes. In Biriwiri individual motivation for conservation is eroded by insecurity, uncertainty, instability and stress, factors that make the struggle for current survival more important than securing the future. Such facts of life make people extremely bitter towards those who are seen as taking away their chances of existence.

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