material deprivation. When support systems break down and society becomes organisationally vulnerable, it will be less able to cope with material vulnerability. Anderson's concept of organisational vulnerability can be linked to Swift's ideas about claims. Local community structures form the basis for the exercise of claims whether at the level of reciprocal exchanges between kin or at the level of community redistributive taxes. Anderson's third category is socio-psychological vulnerability. This is difficult to define but it is associated with loss of purpose and a general feeling in the community at large of incompetence and inability to cope with life's problems. She goes on to argue that policies designed to reduce long-term vulnerability should focus on education and training as these are the areas with the greatest potential for increasing the capacity of people to cope with possible crises.

Unfortunately the EEP does next to nothing to address any of these aspects of vulnerability. This is not entirely the fault of the programme. The educational system in Ethiopia, as in much of the rest of the world, is expected to tackle whatever new problem appears on the political agenda however ill-defined that problem may be. In this case the constraints faced by the environmental educators are threefold. First, there are those which arise from the partial analysis of famine causation. Because the programme

is based on an aggregate supply-side interpretation of the causes it completely ignores both the social and the ecological diversity of the highlands. Second, this neglect of variations in vulnerability is accentuated by the extremely centralised planning system which characterises the Ethiopian state. The third set of constraints arises from the educational system itself.

Social diversity

Although some attempt has been made to identify and target famine vulnerable groups (Belshaw, 1990) and although we know that households attempt to cope with crisis by selling assets (eg Fitzgerald, 1980; Cutler, 1985), comparatively little is known by outsiders about social variation at the household level. Even less is known about the processes which have brought some households to destitution and which have contributed to the relative enrichment of others. One source of information is a report by a team from what is now Addis Ababa University on a visit made to Lasta *awraja* in north-east Welo in 1974. The team, whose report is quoted at length by Penrose (1987), distinguished three groups of farmers. *Habtam*, rich farmers had at least one ox, a few sheep, goats and donkeys and at least enough grain to feed the family. *Deha*, poor farmers had no livestock left, no

seeds and little grain. *Mulatch deha*, the completely poor had no assets left other than their labour power.

It would appear from McCann's (1987) work that little has changed. Although land has been redistributed on a more equitable basis than existed before the revolution, there is still considerable economic differentiation at the household level in terms of access to critical resources. Apart from land the most important asset is oxen. Oxen are an essential factor of production since they are used for ploughing and they also act as rural capital, allowing the accumulation of labour and food and access to land. About one-third of households in the programme area are thought to lack their own oxen (SIDA, 1987). This means that they have to enter into rental, sharing or labour-exchange agreements with the better-off and thus run the risk of loosing their crops through late ploughing and subsequent frost and/or drought damage. The most vulnerable households, according to McCann are young, newly established ones with a high ratio of consumers to workers and older ones whose labour power and livestock supplies are depleted by the marriage of their children.

It is likely that holdings of small livestock are also still maldistributed. Sheep and goats are very important asset stores since, unlike oxen, they are not essential for crop production and can be easily liquidated to raise money to

buy food and other necessities. They also play a significant part in capital formation (Hultin, 1986). By building up a flock of sheep, whose reproduction rate is higher than that of cattle, a household may eventually acquire first one and then a pair of oxen. This traditional strategy for increasing assets and for ensuring security against impoverishment is the only independent course of action open to most households in Welo.

The EEP totally fails to address the issues of capital distribution and the regeneration of household productive capacity. Both large and small livestock are ignored by the programme. The former are neglected not only by the EEP but by the CDS as a whole. This is because they are seen only in negative terms, as a major cause of land degradation. Even oxen are seen as problematic in so far as their need for pasture conflicts with reafforestation programmes. Farmers and livestock are frequently excluded from reafforested hillsides. Whilst enclosure does permit the rapid regeneration of vegetation, it also means that farmers loose access to vital grazing land and to firewood. In the growing season there is literally nowhere else for stock to go. Instead of encouraging dialogue and the formulation of problems in a systematic, solution-seeking manner, discussion is suppressed. This divorcing of education from the practical realities of everyday life, from real needs, will seriously limit the effectiveness of the programme.

The EEP's emphasis on practical activities such as tree planting and terracing is likely to be counter-productive for another reason as well, at least in the Peasant Associations (PAs) which still greatly outnumber Producer Cooperative (PCs). This is because farmers lack secure access to specific plots of land. Their insecurity arises from the social structure and from legislation. New households are created on marriage and at the age of 18 each resident of a PA becomes entitled to a share of land. Since the area of each PA has been legally determined at a maximum of 800 ha, in regions where all arable land is already cultivated new households can only be accommodated by redistributing land (Rahmato, 1984). This constant redistribution, involving loss of land for some farmers, hardly encourages such labour-intensive activities as terracing. Neither does it motivate farmers to plant trees because of the uncertainty that they will hold on to them long enough to benefit. The EEP provides no scope, neither in the schools nor in the adult education centres for discussion of who benefits and who looses from the practical activities which it promotes.

Arguably a cooperative system of production would overcome both the maldistribution of critical resources and encourage land improvement works. There is some evidence from fieldwork carried out during the evaluation of the EEP that

farmers in PCs were keen to increase their forested areas because fuelwood was proving to be a lucrative source of cash income. However, fears of further land reallocation associated with villagisation, must raise serious doubts in farmers' minds about the value of investing their labour in assets which they may loose. Furthermore, villagisation may well undermine risk minimisation strategies involving the cultivation of land in different ecological zones.

Ecological diversity

Something of the ecological diversity of the programme area is illustrated in Figure 1. The most densely populated and seemingly most vulnerable regions are first the strip of land between about 1700 and 2300 metres which runs the length of the rift valley escarpment and second the series of isolated plateaus, separated by deep gorges formed by the headwaters of the Blue Nile, which lie above 2800 metres. The escarpment region experiences higher temperatures than the plateaus and suffers from a very high degree of rainfall variability. The plateau regions are cultivated above the frostline and though rainfall is somewhat more reliable than in the escarpment foothills average levels are low, often less than 700 mm per annum.

Just as the EEP ignores the social diversity of the highlands, so also it takes no account of environmental variation. Instead of encouraging diversity by maximising the exploitation of available production niches, the programme provides a blueprint to be implemented throughout the region irrespective of local conditions. For example, all participating institutions are urged to plant trees and to establish vegetable gardens regardless of water availability. In one case, observed during the evaluation of the pilot project, children were seen carrying water to school in an attempt to sustain the trees they had planted. Horticulture at the demonstration facility in the compound of the Teacher Training Institute in Dese is only possible because SIDA made extra funds available to sink a well. No such finance is available for other educational establishments, let alone farmers.

This failure to adapt environmental education to specific socio-ecological milieux derives from the tendency of 'normal bureaucracy' (Chambers, 1988) to centralise and standardise. This habit is not unique to Ethiopia. It is inherent in the conventional procedures of development agencies, with their need to demonstrate efficiency, accountability and short-term cost-effectiveness. But it is exacerbated in Ethiopia by the extreme centralisation of decision-making powers. In spite of rhetoric encouraging peasant participation in development planning and the

formation of 'bottom-level' committees (in the schools for example) for the implementation of the EEP, local administration is dominated by party officials, who are rarely farmers and who are dependent on the state for their employment. For them decision-making is 'a matter for experts who know what to do; the ignorant peasant, by contrast, is there to be ... governed' (Clapham, 1990b: 44).

Both local administrators and foreign advisers tend then to stick tenaciously to the 'central plan'. Their faith in 'rational' western science and 'modern' technology is deeply entrenched. The trouble is that central plans ignore the rationality of peasant agriculture and undermine indigenous ecological knowledge. The result is that environmental education, rather than enhancing local organisational capacity and reducing socio-psychological vulnerability may actually be contributing to the destruction of both. Arguably, the EEP is creating dependency by relying on 'outsiders' both to define the problems of the region and to come up with solutions. Resourcefulness, competence and confidence are not exactly encouraged by criticism of experimentation. Yet this is precisely what happened during the evaluation of the pilot project. Western 'experts' were disparaging about one school's initiatives in agro-forestry on the grounds that the system was not 'properly' planned and because an indigenous species of banana had been chosen in preference to a higher yielding Kenyan variety

(Fitzgerald *et al*, 1987). The difficulty, of course, of returning control to the people is that planning would have to become an incremental affair, less amenable to the accounting procedures of governments and donor agencies.

The educational system

A number of features of the educational system impose constraints on the ability of the EEP to reduce people's vulnerability to famine, especially in the school sector. First, the curriculum is centralised and assessed by national examinations. This discourages teachers from adapting either their teaching methods or the content of their lessons to the local milieu. Success in the examinations depends on factual recall of the examples provided in the school textbooks, rather than on the demonstration of comprehension or application skills acquired by doing local fieldwork. This encourages the rote learning of factual information and makes it difficult for teachers posted to remote rural areas to make their subjects relevant to local needs.

Attempts to make school more relevant are also constrained by the education that teachers receive in pedagogics. Their training is academically rather than practically oriented, stressing the academic content of subjects rather than

teaching methodologies. This means that most teachers, who rarely choose a rural posting, tend to be ill-equipped to teach practical and application skills (Last, 1986). And, because they have no experience of learning by doing or learning through discussion, project work and so on, they lack the confidence to develop teaching styles which encourage problem-formulation and problem-solving skills in their students.

Third, and most important, attempts to localise and vocationalise the curriculum are likely to be resisted by the community itself (Vulliamy, 1987). This is because jobs in the modern sector depend upon academic qualifications (Dore, 1976) which in turn depend on success in national examinations. Thus parents and students, who perceive education to be a route to a better way of life, demand the dissemination of academic knowledge. In this context, the EEP's emphasis on practical activities is probably counter-productive in that it detracts from time which could be more valuably spent on theoretical work. Furthermore, since education *does* bring about upward mobility, students who are successful are most unlikely to remain in the agricultural sector and make use of their environmental knowledge. Sjostrom (1986), in his examination of one rural primary school, found that not one student in his survey sample wished to stay in farming.

Therefore, there is a sense in which the EEP is a complete irrelevance. Whilst it is probably true that few households with one educated member starve this is not because of their environmental knowledge. It is more likely to be because of the status conferred by their qualifications and thus their ability to press their claims effectively (Swift, 1989). The most vulnerable households are those least likely to send their children to school. Education is not a productive investment if it incurs loss of labour power at critical times of the year. In the district examined by Kiros (1983) only about 20 percent of rural children attended school. The school studied by Sjostrom served 16 PAs with a population of approximately 14,000 yet it registered fewer than 400 students and absenteeism was very high particularly at ploughing, weeding and harvesting times.

CONCLUSION

The conclusions to be drawn about the potential of environmental education to reduce people's vulnerability to famine and to bring about sustainable development have to be more pessimistic than optimistic. I have argued that Ethiopia's EEP is seriously flawed in both its conception and its implementation. Conceptually it is flawed because it is based on a partial analysis of famine causation and on a technocratic and production-orientated interpretation of sustainable development.

It is implemented by petty functionaries who are dependent on a highly centralised state for their employment. Thus, in spite of all the rhetoric, popular participation is welcomed only in so far as it can be harnessed to central power. Consequently, the programme provides a blueprint which ignores the social and ecological diversity of the highlands. Food security requires that Welo's environmental diversity should be exploited as a resource. And, because famine does not affect a whole population indiscriminately, calls for labour-intensive conservation works which evade any serious analysis of the social relations of production are unlikely to produce the values required for the achievement of sustainable development. Values, attitudes and productive behaviour are determined not by education but by the whole ecological, economic, political and social milieu in which people live. Exhortations about the long-term benefits of trees and terraces have little meaning in the face of acute short-term needs for food, fuel and fodder.

To end however on a slightly more encouraging note, it is worth stressing that within its own terms, as a pragmatic response to competing political perspectives on the meaning of development and on the purpose of education, the EEP is enjoying a measure of success. It does appear to have influenced productive behaviour, if not values, at least in

PCs where its activities are concentrated. It is supported with considerable enthusiasm and dedication by many teachers and most of the implementing officers. A few centres are beginning to use the locality in the learning process and to promote the value of local knowledge and experience. There is also an awareness of the need to give environmental education a higher status than it currently enjoys and of the necessity of incorporating it into the national curriculum. However, we should not expect education to solve problems that are at heart social, economic and political.

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