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There is an obvious connection between poor people's food security and the preservation of the environment in which they live. Yet there is little consensus about the nature of this relationship. Unless their interactions are better understood, there is a danger that policies for environmental protection — in an increasingly environmentally-concerned aid climate — will unknowingly compromise food security. An obvious illustration is the promotion of goats in marginal areas as an insurance against harvest failure; a policy which enhances food security but may have disastrous environmental consequences.

This issue of the *Bulletin* arises from a new research initiative at IDS, linking the work of the Environment Programme and the Food Security Unit. A number of workshops held at IDS considered whether two such diverse and extensive fields of inquiry could usefully be linked and, if so, what kinds of approaches would be most appropriate. The *Bulletin* articles are the result of these workshops. Taken together with a *Discussion Paper* setting out the issues [Davies, Leach and David 1991] and *Development Bibliography* reviewing relevant literature [David 1991], they form a starting point for more focused research on particular conflicts and complementarities between the pursuit of food security and environmental goals.

The workshops and *Bulletin* have taken a problem focused approach, concerned eventually with policy trade-offs between the pursuit of food security and the conservation of natural resources. Trade-offs can usefully be approached through the idea of conflicts and complementarities, which occur at both conceptual and practical levels [Davies, Leach and David 1991]. Conceptually, complementarities between food security and the environment arise from shared analytical concerns and methodological tools. Conflicts arise from the different analytical starting points, time frames and disciplinary perspectives conventionally employed. There is as yet little genuine interdisciplinarity, particularly with respect to straddling the natural and social sciences. Unfortunately, the IDS workshops, heavily dominated by social scientists, did little to correct this situation.

At the practical level, complementarities are based on the interdependence between food availability and a healthy natural resource base, which is seen to promote mutually reinforcing practices. Conflicts

arise if the pursuit of food security or policies to ensure it entail inevitable costs to the environment or vice versa.

Policy-makers have tended to ignore these conflicts and complementarities. A recent history of planning for food security and environmental issues appears, broadly, as a 'see-saw', whereby at any one time one concern has dominated development agendas at the expense or ignorance of the other. Environmental issues ranked high amongst colonial concerns in most developing countries, dominated by the pursuit of 'preservationist' policies (e.g. the creation of game parks). In contrast, food security has dominated much of the post-colonial development agenda. First production-led and later by more entitlement-focused policies for national and household food security have paid little direct attention to environmental issues. The environment returned strongly to the development agenda in the 1980s, under the new umbrella of 'sustainable development'. The World Conservation Strategy [IUCN 1987] and World Commission on Environment and Development [WCED 1987] both emphasised that environmental protection, if it was to succeed, had to take account of those people who depended directly on the environment for their livelihoods. Yet despite some partial re-evaluations within policy-influencing agencies, 'preservationist' rather than people-oriented agendas still dominate much environmental policy-making [Adams 1990].

Within the sustainable development debate, literature on 'sustainable livelihood securities' [Chambers 1988] represents the most explicit attempt to link food security and environmental concerns at the conceptual level. Focusing on people's access to adequate stocks and flows of food and cash to meet basic needs, the concept emphasises local people's ability to act in an environmentally sustainable way, and ways of removing the constraints which prevent them from taking the long term view in conserving their resource base in which, it is argued, they have a vested interest.

The concept of sustainable livelihood securities focuses on local level interactions between food security (and other basic needs) and the environment. The interest of most of the workshop participants also centred on the local level. This is reflected in the *Bulletin* articles, five of which deal primarily with local issues. This concern is justified, given that environ-

mental problems as experienced by poor people in developing countries tend to be highly localised. It is also a reflection of the dearth of current research into trade-offs between food security and environmental objectives at the national and international levels. This is a serious omission, at least partly because many policies which affect local livelihoods are made at these higher levels. The article by Davies and Leach in this *Bulletin* addresses national and international level issues.

The issues and actors involved at these various levels are very different. No single conceptual framework is likely to prove adequate for analysing, say, government/donor relations in the context of environmental aid on one hand, and the effects of soil degradation on household food security on the other. However there are a number of conceptual tools presently used in analysing either food security or environmental issues, or both, which could help in understanding linkages between the two areas.

The first is the idea of trends and shocks. The distinction between influences of short duration and high intensity (shocks) and long duration and low intensity (trends) as causes of insecurity is used in both the food security literature [see Maxwell et al. 1990] and in analyses of agro-ecosystems [Conway and Barbier 1990]. The related concepts of resilience and sensitivity [Blaikie and Brookfield 1987] refer respectively to the ability of a livelihood system to bounce back after subjection to external interference or a shock, and to the degree to which interference causes a system to change due to its own internal dynamics. Shocks and trends occur at different levels, can change either food security or the environment or both, and do so directly or indirectly.

A related concept is that of vulnerability; the recognition that certain groups of people are most at risk of food or environmental insecurity when particular shocks or trends occur. Vulnerable groups analysis, while well-established in the food security literature, is newer to work on the environment. Yet crucially, food insecure vulnerable groups are often the same people as those who are vulnerable to the effects of environmental degradation, implying potential complementarities for the targeting of policy.

A third tool is entitlements analysis. While the idea of food entitlements is well-established [Sen 1981], environmental entitlements — or access to natural resources — is also a relevant concept, but much less widely accepted. People's varying entitlements to natural resources affect their capacity to manage them sustainably, and usually have direct consequences for natural-resource based food entitlements.

Finally, the idea of responsibility — by which we mean the power and resources to plan for and decide policy — is relevant to both food security and the

environment at all levels. A gap frequently separates vulnerability to food insecurity or environmental degradation, and the responsibility for, or control over, the resources and decision-making power needed to address the problem.

The articles in this *Bulletin* address many of these issues, make more or less explicit use of some of these tools, and provide some much-needed clarifying case studies.

The first two offer local-level case studies in non-project contexts. Bayliss-Smith's paper, based on the ecologically diverse New Guinea Highlands, finds a resilience and sensitivity framework useful for analysing environmental and food production systems. But he finds that this must be overlain by the different levels of vulnerability of different social groups, according to the resilience and sensitivity of their coping strategies within these systems. While spatial comparison proves useful for analysing present variation, explanatory links between food security and the environment must be sought within a historical framework. Bayliss-Smith shows how the 'sweet potato revolution' and emerging over-dependence on this staple crop increased the vulnerability of landscapes and production systems. More recent market integration has created a new political economy of vulnerability, in which food security for some has improved but environmental sustainability is threatened by new gaps between food security concerns and direct responsibility for managing natural resources.

Lockwood takes up the question of population growth, which is a dominant issue in both the food security and environment debates and, indeed, often implicitly seen to be the single most important variable linking food insecurity and environmental degradation. His analysis of the close-settled zone of Hausaland, Northern Nigeria addresses the controversy between Malthusians, who link environmental degradation and declining food production to increasing population pressure, and researchers who adopt a Boserupian line, emphasising the technological and livelihood changes which compensate for population pressure, and the socio-economic influences which override its effects. Lockwood finds neither model satisfactory, and focuses instead on the causes of demographic change which lie in factors relatively unresponsive to environmental and economic change. Issues surrounding Hausa kinship, household formation and farm labour organisation provide the key to understanding food security and environment linkages, and the relative vulnerability of different social groups.

Both Lockwood's and Bayliss-Smith's articles convey a sense of holism, complexity and history. Linkages between food security and the environment are non-linear, circular and often indirect, and are situated within changing social and economic relations. By

contrast the next three papers focus more directly on policy and project issues.

Toulmin's paper discusses practical policy directions in the context of the Sahel. Drawing on entitlement theory, the paper poses the question of what forms of natural resource management might best secure access to food. Local level natural resource management systems — based on community institutions, or 'decentralised' state structures — are sometimes portrayed as a panacea to achieve both food security and environmental sustainability, based on local people's supposed vested interests in their complementarity. As Toulmin's examples show, this view rests on a number of important assumptions. When these are unfulfilled the two concerns may remain in conflict, or the interests of vulnerable groups be jeopardised. The paper clearly illustrates the practical difficulties of achieving secure natural resource entitlements given that interest groups at different levels have overlapping and competing claims.

Key state influences on resource tenure highlight the need to view local-level issues in their wider political economy. Toulmin concludes that local level resource management is important for improving food security, but shows effectively why it is both insufficient and often difficult to achieve.

Roche reports on NGO project case studies from Mali, Sudan and Benin. He poses the question the other way round from Toulmin, asking what conditions are necessary to create the 'space' for people to engage in sustainable environmental management. The meeting of immediate food security needs is an important precondition, and should be an NGO priority. But the article suggests that NGOs will also need to pay attention to other issues, including those raised by Toulmin. Roche argues that secure access over productive resources, particularly those held communally, is a vital ingredient affecting local people's food security and their ability to protect the environment. The vulnerable groups theme re-emerges with respect to women's and refugees' positions in making trade-offs between food security and environmental objectives, and their particular interests in projects which promote one or both of these.

Greeley discusses a different sort of project; a larger donor-aided one in a rainfed area of India where local food security strategies were evidently in conflict with environmental sustainability. The 'greening of aid' was an important dynamic in the overall design of this project. Although it had the potential to make the pursuit of livelihood and environmental sustainability more complementary to each other, in practice it rode roughshod over local food security concerns and had limited success in its own (environmental) terms. Reasons are found in conceptual problems during the design phase, and in planners' poor understanding of

the complex trade-offs faced by rural people themselves in their livelihood strategies, especially as regards time preferences. Greeley concludes, like Roche, that food security entitlements and local participation need to be the starting point for environmental projects. The article highlights the potential costs to poverty alleviation and food security of the top-down pursuit of environmental targets.

The increasing preoccupation of international aid agencies with environmental issues, as discussed by Greeley in a project context, is one of the issues considered in Davies and Leach's article. At the international level, environmentally-conscious aid flows may mean reduced aid to poverty and food security; at a national level, 'green conditionality' may force governments to prioritise environmental concerns above those of food security, or discriminate against countries without resources which are perceived to be of key global significance. The paper shows through the example of global warming how developing countries are often forced to respond to northern environmental agendas, with both direct and indirect consequences for their food security. Lack of co-ordination between food security and environmental planners within international agencies means the mutual implications of their policies are rarely made explicit. This situation is echoed at national level, where the separation of ministries inhibits co-ordinated planning. National governments also face resource and political constraints which force short-term crisis management and the use of environmental objectives as a political tool, both at the expense of longer-term and local food security concerns.

Unlike the other articles in this *Bulletin*, Davies and Leach's does not draw heavily on case material. The available literature at national, and to a lesser extent international, levels is sparse and case studies to clarify the issues involved are much needed.

Retaining the workshop participants' concern for the local level, a more urgent research priority may be to draw out some of the important interactions between levels which affect food security and the environment. A serious failing of the 'sustainable livelihood securities' concept is that it does not take account of the wider political economy, at international and national levels, which influences local livelihood securities: influences which some of the locally-focused papers in this *Bulletin*, notably Toulmin's, have indicated. Further examples would include conflicts between national cash crop development policies aimed, at least in part, at improving national food security, and local environmental sustainability and access to food, which are threatened if food crops are pushed on to ecologically marginal land. National environmental objectives, such as game park creation, may also entail costs to local food security.

The case studies in this *Bulletin* illustrate the complex

local-level dynamics with which national and international level issues intersect. Analysing interactions between levels will be a challenging task, but a necessary one if informed planning decisions are to be made about how to pursue environmental conservation without compromising food security or vice versa.

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