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RURAL SUSTAINABLE DEVELOPMENT: A SOCIO-POLITICAL PERSPECTIVE ON THE ROLE OF AGRICULTURE

JONATHAN MURDOCH,

Dept. of Geography, University College London, U.K.

NEIL WARD and PHILIP LOWE

University of Newcastle upon Tyne,

Dept. of Agricultural Economics & Food Marketing, U.K.

Abstract:

In this paper both the need for a sustainable agriculture and the present unsustainability of most agricultural systems in Europe are discussed. Then The route towards sustainability is explored. Locality is presented in a crucial concept.

Keywords:

RURAL COMMUNITIES, HUMAN RESOURCES, SUSTAINABILITY, RURAL DEVELOPMENT, AGRICULTURE, ECOLOGY.

Introduction

It is generally recognised that 'sustainability' is a vague and ambiguous term, but with the potential to bridge the divide between developers and environmentalists. By acknowledging that development and economic growth can be sustained, the term allows developers and production interests to feel that environmental concerns can be assimilated to business practices. At the same time, it signals to environmentalists that they have a role to play in determining what counts as sustainable practice.

However, sustainability has a broader meaning encompassing the viability of localities and communities on which the maintenance of both the environment and economic activity ultimately depend. For those concerned with the economic and social development of rural communities, this is obviously crucial, but it has been neglected in contemporary debates about sustainability.

In addressing issues of *rural* sustainability, one vague and ambiguous term meets another. Finding a precise definition of rurality has been a long and largely fruitless enterprise (Newby, 1986). We may have to be satisfied with a use of the term which is purely descriptive. However, we may address the general processes that have given rise to contemporary changes in rural areas. Rural social change has been experiencing bifurcatory processes. On the one hand, industrial agriculture is being increasingly *vertically* integrated into the modern agro-food system. On the other hand,

there has been a *horizontal* disintegration and recombination of the spatial structure of society induced by the changing geography of capital accumulation. It has been argued that "under the centrifugal pull of these two diverging tendencies conventional rural categories are being deconstructed" (Marsden, *et al.* 1990 :11).

Rural areas in the advanced capitalist societies are currently experiencing diverse fortunes. Nevertheless, there are common experiences, as Marsden *et al.* note:

"Firstly, rural areas have in common a historical dominance by the social relations of agricultural production and this inevitably conditions the comparative advantages and disadvantages they offer to other fractions of capital as well as their responses to restructuring processes.... Secondly, farming remains an important social and ideological category still able to mould rural economic development through its politically entrenched position, as well as its monopoly over rural land. Third, as the role of agricultural production diminishes, so the social function of rural space is being redefined to encompass other primary production (such as bio-mass) as well as distinctive consumption roles (such as residence, recreation, leisure and environmental conservation). This in turn creates new and locally specific accumulation opportunities, new identities and processes of social reproduction" (Marsden *et al.*, 1990 :12).

The current fortunes of rural areas can, therefore, be attributed to two major forces: the reorganization of the international food system and the social and economic restructuring of rural regions under the pressure of capitalist accumulation. It is within this overall framework that we must address the issue of rural sustainability. In the latter part of this paper, we will focus specifically on sustainable agriculture, agriculture being the most important land use as well as being the most important economic activity creating and recreating the rural environment. We attempt to situate sustainable agriculture within a sustainable rural economy and indicate how this might be achieved.

Sustainable Development: the concept

The concept of 'sustainability' derives from the view that human beings are 'using up' the environment at a rate which will result in a seriously depleted level of resources. This, in turn, may have environmental consequences which are at present unforeseeable or, as in the case of the greenhouse effect or ozone depletion, which are threatening to human life or welfare.

Sustainable development was first publicised in the World Conservation Strategy in 1981. It was subsequently adopted in the Bruntland Report (1987) and was given further impetus in the recently published 'Caring for the Earth' document produced jointly by the International Union for Conservation, the World-wide Fund for Nature and the United Nations' Environment Programme (succeeding the earlier World Conservation Strategy). This latter publication states that:

"Living sustainably depends on accepting a duty to seek harmony with other people and with nature. The guiding rules are that people must share with each other and care for the Earth. Humanity must take no more from nature than nature can replenish. This, in turn, means adopting life-styles and development paths that respect and work within nature's limits" (IUCN, WWF and UNEP, 1992 :18).

The idea is beginning to achieve widespread acceptance. It has been incorporated into official policies at both the international level -with, for example, the establishment of a Sustainable Development Commission at the Rio Conference- and in national government strategies. For example, the British Department of Environment's Planning Policy Guidance Note 12, published in February 1992, states that the Government "will continue to develop policies consistent with the concept of sustainable development" (Department of Environment, 1991).

The key value of the sustainability concept has been seen as its ability to overcome the old dichotomy which insisted that people had to be in favour of either economic progress or environmental protection. That dichotomy, it has been argued, "hurt the environmental movement by keeping out of it exactly those people needed to solve the 'environmental problems': economists, the business community, trade unions, the majority of government officials and many hundreds of millions of poor people." (Holmberg *et al.*, 1991 :6). To accommodate such diverse interests is unlikely to be easy. Tough choices will still have to be made.

So far, however, the ready acceptance of the term sustainable development rests on its imprecision, which allows for difficulties and differences to be glossed over. As O'Riordan (1988) argues, it is its ambiguity which makes it so attractive to both sides, for developers "now realise that under the guise of sustainability almost any environmentally sensitive programmes can be justified", while "environmentalists abuse sustainability by demanding safeguards and compensating investments that are not always economically efficient or socially just" (p.29). So while sustainability is a concept with the potential to build a bridge between environmentalism and development, it may also serve as a 'cover' for traditional practices. The need is to define sustainability more closely in order to make clear what might count as sustainable practice. Redclift (1991) sees sustainable development as referring to "meeting human needs, or maintaining economic growth or conserving natural capital, or about all three" (p.37). But how compatible are these aims and what is required to meet them? For instance, does 'conserving natural capital' imply an end to economic growth ?

The question has been considered in much of the environmental literature. One of the most careful analyses is provided by Jacobs (1991) who examines the claim, made by many environmentalists, that economic growth is to blame for environmental degradation and what is required is 'zero growth'. He argues that it is not growth per se, but "environmentally unconstrained growth" (p.26) that is the problem. It is possible for economic growth to continue while using fewer resources and generating less

pollution, providing the 'content' of growth shifts away from environmentally damaging activities.

According to Jacobs, it is the impact upon environmental resource levels or natural assets which should be the yardstick for economic activities. Natural resources can be divided into three categories: first, non-renewables, such as fossil fuels and minerals, which cannot be regenerated within human time spans; secondly, renewable resources, including plants and animals, air and fresh water, which can remain indefinitely, providing their supply is not disrupted by external threats; and thirdly, continuing resources such as wind, tidal and solar energy. Wherever possible, the pattern of growth needs to be shifted away from the use of scarce non-renewables towards renewable and continuing resources.

Further limits are imposed on the use of resources than simply their availability and utilisation. All resource use results in waste and this waste has to be assimilated into the natural environment. Clearly there are limits to the environment's capacity to assimilate waste products and, beyond this capacity, pollution occurs, which may, in turn, damage natural resources, threaten life support functions (such as the atmosphere and the climate), and compromise human appreciation of nature (through loss of habitats, biodiversity etc.).

Such considerations define the outer limits of sustainable development. Within these boundaries, there is scope for growth and further resource use. As Jacobs points out,

"There can be no doubt that the consumption of some resources will have to be limited. But these resources are specific and nameable. It does not mean that somehow there is a figure for 'total resource consumption' which must be kept static" (1991 :58).

The Social and Political Dimensions of Sustainable Development

Although environmental catastrophe is now recognised as a tangible possibility - via the greenhouse effect or ozone depletion - there are complex choices to be made within sustainability's outer limits. How, in practice, will the concept of sustainability allow us to make these choices ? What kinds of calculations does sustainability entail *within* the development process ?

Two components are involved. First, sustainability implies the need to integrate environmental considerations and economic policy making, in recognition of the fact that environmental quality is a key component of human welfare. But this in turn raises the question of the social priorities of economic development. In other words, sustainability for whom ?

The second component, therefore, is to do with the distributional consequences of development. At present economic growth for some may be achieved at the expense of the environmental well-being of others. This may arise through external appropriation of

non-renewable resources or through the externalisation of wastes and pollutants. Equally, the depletion of natural capital may shift the burden onto future generations. Conflicts over the control of natural resources are a major source of social tensions which, if allowed to escalate, can themselves be massively destructive of natural resources, as the Gulf War illustrated. On the other hand, threats of environmental catastrophe emphasize that 'we are all in it together', and they call for human solidarity based on the recognition of humanity's common need for environmental security. Sustainability thus implies a commitment to a fair distribution of wealth and resources within the present generation (*intra-generational equity*) and the conservation of resources for the use of future generations (*inter-generational equity*).

The requirements of the first component - the integration of environmental considerations into economic policy making - have stimulated enquiry into new institutional structures, regulatory procedures, and economic measures. The main axis of debate is between advocates of market-type solutions and advocates of institutional and procedural reform. The former involve the financial valuation of environmental costs and benefits, and their incorporation into development appraisals, the measurement of economic performance and the formulation of economic incentives. The latter involve the development of 'enabling' institutions which are concerned with decentralisation and local control as opposed to hierarchical bureaucratic structures.

The second component - equity - has always been at the heart of environmental conflicts. But the debate on sustainability has given it a new complexion. In the 1960s and 1970s, for example, a common charge was that environmentalism was the preserve of the well-off who did not want to see their standard of living diluted or threatened by others seeking the 'good life'. Such considerations of *intra-generational equity* have to some extent been displaced by more recent concerns about *inter-generational equity*. The Bruntland Report, for example, sets out the principle that future generations are entitled to experience a level of environmental resources at least equivalent to those in existence today.

This would seem to be a laudable principle. Indeed, in many respects, it is a modern variant of an ancient concern, particularly of rural people, to pass on to one's children the essential means for their livelihood. Such issues as global warming and the depletion of fossil fuels, however, do raise the prospect that the present intensity of resource consumption may so impair life support systems and natural capital as to diminish the welfare of future generations.

To squander the birthright of the unborn is something that responsible people and societies would wish to avoid. But its emotive overtones should not be allowed to distract attention from the grossly unequal access to resources in the present. There is the risk that arguments concerning the welfare of future generations may be used to ration access to resources in such a way that existing inequalities are compounded.

The key point to recognise is that a legitimate concern for the welfare of future societies does not foreclose debate on the existing distribution of resource use. On the contrary,

it should pose rather starkly the trade-offs between intra- and inter-generational equity. In other words, if resource constraints have to be introduced for this purpose now, how should the sacrifice involved be fairly distributed amongst the present generation ?

Another and more practical way of approaching these same issues is through addressing the long term effectiveness of existing social structures and institutions on which the maintenance of environmental and economic well-being depend. In the context of rural development this raises the question of the sustainability of rural communities and the resources upon which they depend. As the British Government's White Paper on the environment makes clear:

"Maintaining a healthy rural economy is one of the best ways of protecting and improving the countryside because so much depends on the availability of people and resources to invest in, and carry out, the work"
(Department of Environment, 1990 :96).

Traditionally, rural areas have been net exporters of natural resources (food, timber, fibre and minerals) to urban areas. This historic pattern of resource dependency has altered somewhat during the twentieth century as urban areas have intensified their demands on rural resources. At the same time they have exported their ever expanding volumes of wastes and pollutants, mainly to rural areas. Increasingly, also, urban people have sought in the countryside a retreat from the congestion, and the social and environmental problems of the cities. This has placed increased pressure on rural resources *in situ*. At the same time, modern rural living and primary industries have become heavily dependent on inputs of non-renewable resources. The ready availability of cheap fossil fuels, in particular, has encouraged dispersed settlement, the expansion of local labour markets and a high-input, intensive agriculture.

A move towards a more resource conserving future might begin to redress the rural-urban imbalance in farming methods on the one hand and in commuting patterns on the other. At the same time, the role of rural areas as sites for the supply, use and replenishment of continuing and renewable resources will be given much greater emphasis. This may involve new types of primary production such as biomass, energy crops and wind farms.

More generally, it will emphasise the vital functions that rural areas perform as environmental reservoirs, maintaining and renewing the quality of natural resources; and as a living space, providing human refreshment and recreation through the cultural, aesthetic, and amenity qualities. So what are the implications of these understandings for current economic and social practices in rural areas. We explore this question in the context of sustainable agriculture in the next section.

Unsustainable Agriculture

The current crisis in agriculture, with its economic, political, social and ecological dimensions, has arisen because of the pursuit of a productivist technology/policy model. This broad policy of agricultural 'modernisation' and development through the application of agricultural science and technology has shaped the direction of technological change in agriculture and the evolution of a complex agro-industrial food system (Goodman and Redclift, 1991). The increasing linkages between the agricultural sector and industrial sectors in the modern food system are such that agriculture now obtains inputs from ever more distant sources, both spatially and sectorally, derives a large proportion of its energy supplies from non-renewable sources, depends upon a narrow genetic base, and has a detrimental impact on the environment. Although these processes all contribute to an erosion of the 'sustainability' of agriculture, the crisis of over-production ought to provide the opportunity for a reappraisal of the direction of agricultural development and the introduction of more sustainable practices. First, however, we need to address the issue of just what a 'sustainable agriculture' might be.

Sustainable agriculture is coming to mean all things to all people (Clunies-Ross and Hildyard, 1992). There does seem, however, to be a prevalence of ecological considerations in the current definitions. Conway (1987) for example, defines sustainability as the ability of an agro-ecosystem to maintain productivity when subject to a major disturbing force. This represents the *resilience* of the system. Altieri (1989), on the other hand, defines sustainable agriculture as a system which should aim to maintain production in the long-run without degrading the resources base, by using low-input technologies that improve soil fertility, by maximising recycling, enhancing biological pest control, diversifying production, and so on. There is a tendency to assume that as long as the proposed systems benefit the environment and are profitable, sustainability will be achieved and the whole of society will benefit. However, what is produced, how, and for whom, are important questions that must also be considered if a socially sustainable agriculture is to emerge.

According to Riley (1992) the level of analysis chosen can be a significant influence on sustainability. At the field level, particular soil management, grazing and cropping practices will be the most important determinants of sustainability. At the farm level, sustainable resource use practices need to support a sustainable farm business and family household. At the national level, there may be broader pressures on the use of agricultural land from non-farming sectors, and at the global level, climatic stability, international terms of trade and distribution of resources also become important determinants.

The sustainability of contemporary agriculture is challenged in four main respects which will be discussed briefly. These relate to: a) the destruction of wildlife habitats and valued rural landscapes; b) the pollution of water and air; c) the social and economic costs borne by the farming population; and d) the rate of energy use.

a) Habitat and Landscape Damage: Agricultural support policies which have sought to stimulate production have accelerated the damage to wildlife habitats and valued landscapes in rural areas. Reduction in the diversity of wildlife habitats results from a range of farming practices adopted in the 1950s, 60s and 70s. The most damaging practices have been the removal of hedgerows and the ploughing up of un-cultivated field margins, together with the reclamation of scrub and woodlands; the reduction in rotations and fallows; the replacement of permanent pasture by leys and arable cropping; land drainage and the elimination of standing water and farm ponds; and the treatment of grassland and arable land with selective herbicides and insecticides. In the UK, for example, the Countryside Commission (1977) estimated that the rate of hedgerow removal rose to a peak in the 1960s of about 10,000 miles of hedgerow removed each year. Although the rate of loss has decreased since then, the landscape of large tracts of eastern and lowland Britain have been significantly altered. Field boundaries alone provide important wildlife habitats for at least 20 species of mammals, 37 species of birds and 17 species of butterflies (Nature Conservancy Council 1977). The combined impact of the removal of hedgerows with other aspects of the intensification of agricultural production has been the loss of many habitats and the increasing threat to some species.

b) Water and Air Pollution: The impact of agricultural production on the water environment has only begun to become apparent during the 1970s and 80s. The main pollutants are agrochemicals, nitrates from fertilizers and farm livestock wastes. If we again take the case of the UK experience, the number of reported farm pollution incidents more than doubled during the 1980s, with the most important pollutants being cow slurry (55 percent) and silage effluent (20 percent) (National Rivers Authority 1992 :11). Such pollution incidents occur when organic wastes are allowed to enter water courses, usually because of inadequate storage facilities or poor management, and have arisen primarily because the cost-price squeeze has forced a diminishing number of farms to carry ever larger cattle herds, making safe disposal of wastes more difficult. The problem has been exacerbated by the switch from straw-based to slurry-based livestock housing systems. Also, the increasing use of manufactured nitrogen fertilizers in farming is thought to have been at least partly responsible for the increasing levels of nitrates detected in ground and surface waters. Levels have increased to the extent that the EC's limit of 50mg/l NO_3 is often exceeded in numerous water catchments (Croll and Hayes 1988; NRA 1992). Similarly, evidence has been produced to show that 298 water sources or supplies in Britain exceed the EC Drinking Water Directive Maximum Admissible Concentration (MAC) for single pesticides (0.1g/l) and 76 breached the MAC for total pesticides (0.5g/l). The most commonly detected agricultural pesticides were general and pre-emergent cereal herbicides (British Medical Association 1990; NRA 1992).

Pesticides can also be one of the most important sources of air pollution from agriculture, particularly in the form of spray drift. Agriculture's contribution to air pollution is now being seen as increasingly global in scale. It contributes between 40 percent and 60 percent of methane and 10 percent to 25 percent of nitrous oxide, both

'greenhouse' gases, and 80 percent to 90 percent of ammonia which contributes to acid rain (Pretty and Conway, 1989).

c) Social and Economic Costs for the Farming Population: The third set of issues which render contemporary agriculture unsustainable involve the social and economic costs which have been borne by the farming community itself. Most notably, there has been a marked decline in agricultural employment. While the shedding of labour from farms has been going on for over a hundred years in Britain, between 1950 and 1990, the numbers employed in agriculture fell from almost 1 million to under 300,000 (Body 1991 :114). At the same time, agriculture's contribution to rural employment and regional economies more generally has steadily diminished. Alongside these trends, farming receives a decreasing share of value added in the food chain, with the increasing relative costs of farm inputs, and the trend towards the greater processing of foodstuffs by downstream food companies. Harvey (1987) estimates the proportion of total value added that goes to farmers to be less than 15 percent.

Another important indicator of farming's declining social and economic fortunes has been the level of indebtedness. In Britain, for example, total liabilities have risen from £3.8 billion in 1979 to £10.7 billion in 1991, and total liabilities as a proportion of total assets has risen from 8.5 percent to 18.5 percent over the same period (Johnson, 1986; MAFF, 1992). As more investment is coming from borrowed finance capital rather than re-invested profits, the volatility of investment in agriculture has also increased.

It is quite possible that the economic squeeze on agriculture will impact upon the intentions of farm children to succeed to their parents' farm businesses. Evidence is beginning to emerge in the UK which seems to be reflecting a decline in the proportion of farms currently being managed with a succession to the next generation planned for. Whilst this proportion was around 75 percent in the late 1960s (Harrison 1975), a national survey of 26,000 farm businesses in 1991 found that only 52 percent had a nominated successor for their farm (National Westminster Bank, 1992).

Alongside the social and economic costs of these problems for farmers is that of the distribution of agricultural incomes and farm support payments. In the EC under the Common Agricultural Policy, for example, 80 percent of support goes to 20 percent of farmers, usually on the largest and most productive farms (House of Lords, 1991 :19).

d) The Rate of Energy Use: Agriculture in the advanced industrial economies has also been criticised as unsustainable in terms of its energy use. Post-war agriculture has depended on cheap supplies of non-renewable energy sources, with a major factor being the substitution of machines for manual labour. Total energy consumption per agricultural land unit increased by 39 percent between 1970 and 1988 in the OECD countries, with the trend being most pronounced in Japan (167 percent) and European OECD countries (54 percent) (Rae, 1991). However, it is worth considering energy consumption in the wider context of the modern agro-food system as a whole. In producing a 1kg loaf of bread in a country like the UK, growing the wheat takes 19.4

percent of the energy used, whilst milling, baking and distribution account for the other 80 percent. In the UK, farm based production uses about 2 percent of the *primary* energy from oil, gas and electricity. However, the FAO estimated in 1972 that if every country in the world had a food system like that of the UK, then the quantity of primary energy used in producing food would amount to 40 percent of global consumption (quoted in Barber, 1991 :12-13). This level of energy consumption is, therefore, no longer viable in the long run, chiefly because of the pollution caused, and the likely increased scarcity (and costs) of energy.

Each of these four sets of problems is currently being challenged, and these challenges arise as a result of social, economic and political processes of change that go far beyond the agricultural or rural spheres. Four broad shifts can be identified which intensify the questioning of agriculture's sustainability. These are: a) as people come to value the countryside as a consumption space; b) the greater concern for global pollution and the role of rural areas as reservoirs of natural resources; c) as the collapse of post-war economic growth models no longer provides an increasing number of urban jobs to mop up rural decline; and d) the end of the cheap energy era.

Towards a Sustainable Agriculture

From the above critique, it can be seen that rural sustainability is undermined by agriculture, particularly as agriculture is the dominant user of rural land. However, in discussing sustainable agriculture, the ecological dimension has tended to be privileged while the social dimension has been neglected. This is despite the fact that one of the central objectives of agricultural policy in the EC and much of the advanced industrial world has been to maintain farm incomes and keep farmers on the land (i.e. a socially sustainable agriculture). The current economic and ecological crisis for agriculture has, therefore, opened up the space for a discussion of what sustainable agriculture might be, and how it might be operationalised.

Current responses to the crisis in agriculture have three broad strands. First, steps are taken to encourage the removal of some resources such as land and people from agricultural production, but on some land only. Secondly, some areas of particular environmental priority are delimited and payments are made to farmers as environmental managers. This one is a very site-specific response. Thirdly, on the rest of the land, a productivist agriculture is allowed to carry on as normal.

In this context, the recently agreed reforms to the Common Agricultural Policy can be seen to be a continuation of the agro-centricity of agricultural and rural policy. Social sustainability in much of rural Europe is still to be sought through a productivist agriculture. Thus, there continues to be a trade-off between ecological priority areas and the productivist pressures of the agricultural treadmill. In the UK, for example, rural areas are designated as Less Favoured Areas, Environmentally Sensitive Areas, Nitrate Sensitive Areas, National Parks or Sites of Special Scientific Interest, reflecting a geographical differentiation in agro-environmental relations as well as a differentiation

in regulatory mechanisms. In this emerging mosaic of ecological priority areas, agriculture's relations with the local natural environment become critical.

This increasing differentiation of land uses within the agricultural sphere is leading to a renewed concern with local contexts. Indeed, one response to the growing globalisation of the food system has been to stress the need for a local focus to any discussion of sustainability. As van der Ploeg puts it:

"the re-linking of agriculture to natural (instead of artificial) growth factors requires a 're-localisation' Hence, sustainability in agriculture will require again 'art de la localité'; the 'art of farming' will, as it were, be re-invented and re-assessed" (van der Ploeg, 1992 :37).

According to van der Ploeg (1992) heterogeneity and 'localness' are continuing features of contemporary agriculture but must be assessed in relation to the dominant tendencies towards 'standardisation'. Agriculture, he argues, is becoming disconnected from local features such as nature, labour skills (through appropriation from external agencies), the labour process (now increasingly governed by external technologies) and end products (now often merely the raw material for processed foods). This 'disconnection' is leading to new forms of local knowledge.

"These not only concern, in different situations, the application of general rules, procedures and artifacts, they also entail specific responses on how to resolve the particular problems that emerge from such an application" (van der Ploeg, 1992 :26).

Van der Ploeg focuses on the labour process as the arena in which the different 'domains' of farming, such as economic and technological linkages, family reproduction and soon, are co-ordinated. In this formulation, farming is seen as a 'social construction' with culture centrally placed between "internal and external relations, between experience and perspective, between past, present and future" (1992 :35). It is culture which ultimately reproduces the heterogeneous pattern of farming and the meaning and shape of locality.

We can see how the outline of local autonomy in the face of powerful forces seeking to obliterate difference provides a resource which might be mobilised in the pursuit of sustainable agricultural reforms. This is clearly the view of Kloppenburg (1991; 1992) who argues that "scientific knowledge has attained virtually undisputed intellectual hegemony, while local knowledge," which he sees as "finely tuned to the concrete exigencies, needs and requirements of local conditions" has been pushed to the periphery, "its utility so poorly recognised that we have difficulty in even labelling it" (1991 :528-29). Like van der Ploeg, Kloppenburg sees local knowledge as "derived from the direct experiences of the labour process which is itself shaped and delimited by the distinctive characterisations of a particular place with a unique social and physical environment" (1991 :528). This local knowledge is, he argues, finely tuned to

the requirements of local conditions. It should, therefore, be upheld and utilised, not submerged within centrally produced technological packages.

Such sentiments are echoed by Flora (1992) who believes an alternative agriculture will need to include "much more emphasis on the particular and exceedingly complex realities of time and place that require specific rather than general technology, technology that is constantly in process as the farming system itself evolves and changes" (1992 :96). The process here is akin to van der Ploeg's view of the labour process, where the farm family, the farm and the external relationships are all co-ordinated.

This focus upon a locally situated labour process is clearly useful in beginning to think about how sustainability might be contextualised. However, a note of caution has been sounded here. Molnar *et al.* (1992), in a response to Kloppenburg from the agricultural science community, argue against any romantic rectification of local knowledge. They believe Kloppenburg distorts the importance of local knowledge and neglects the limits of the local. They believe it is naive to blindly promote farmers as a category to a superior status as knowledge producers without first giving consideration to the differences between farmers and scientists:

"Farmers and scientists operate in different worlds. Scientists have instruments to extend their senses through microscopic landscapes and across diverse locations. Farmers have continuity of experience and personal involvement in one environment; thus they can generate craft knowledge and insight into the workings of the natural world at a particular place and time. The perspectives of farmers and scientists are complementary and supplemented to one another and not in conflict" (Molnar *et al.*, 1992 :86).

In the view of these commentators, local knowledge may be useful but only in adapting general solutions. "Basic science must be the starting point and market signals cannot be ignored" (1992 :87). Here again the emphasis is on the promotion of spatially indifferent solutions. But this ignores, or at best plays down, how basic science has tended to derive the specific from the general, squeezing local differences into more standardised forms. This has diminished the differences between agro-ecosystems. The mismatch between farming practices and local environments has emerged precisely because of the diffusion of basic science. This makes the achievement of sustainability problematic at the local level as local agro-ecosystems have become integrated into unsustainable systems at the international level.

This emphasis on local and regional frameworks for the implementation of sustainable agricultural practices within this global system of scientific productivism inevitably raises questions associated with the most appropriate institutions and instruments of regulation. At present, regulatory institutions are often severely compromised by the power of policy institutions promoting productivity and restructuring. This has led to considerable interest in the benefits of an integrated approach. According to the

Organisation for Economic Co-operation and Development (OECD 1989), such an approach would ensure that environmental considerations are taken fully into account at an early stage in the development of agricultural policy, while environmental policy would take account of its potential impact on agricultural production, incomes and prices. Moreover,

"successful integration requires policy-makers to give full consideration to, and accept responsibility for, the effects of their policies on the objectives of all other sectors. This is true for the effects of environmental policies on agricultural policies as it is for the effects of agricultural policies on the environment" (OECD 1989 :8).

This notion of 'responsibility' is central to the development of an integrated policy but it is clear that this kind of accountability can only be conveyed in certain types of institutions. Large, centralised bureaucracies, distant from their areas of governance, are difficult to bring to account. Localised institutions, on the other hand, can be closely tied to the policy outcomes and their effects. Indeed, the OECD recognises that the "opportunities for integration are often greater at the regional level" (1989 :8).

This becomes clearer when we examine the opportunities identified by the OECD for a better integration of agricultural and environmental policies. These include: (i) the development of research and advisory programmes promoting environmental objectives; (ii) encouragement of farm management plans to include environmental considerations; (iii) management agreements for the improvement of landscape amenity and nature conservation value; (iv) promotion of environmentally favourable practices such as integrated pest management schemes; (v) charges on inputs such as fertilizers and pesticides; (vi) making income, capital and land taxation policies neutral with regard to agricultural and environmental objectives.

The majority of these approaches would benefit from local implementation and administration. Local conditions, both environmental and economic, can more readily be incorporated into research and advisory programmes and management agreements are, by definition, localised. These policies need to be sensitive to local circumstances and rely on local farming knowledge for their detailed implementation. This marks a move away from centralised, homogeneous agricultural policies which seek to obliterate diversity. Policy institutions themselves must also reflect this diversity.

This type of approach also allows us to link social sustainability (rural livelihoods) to ecological sustainability. The policy instruments - research and advice, sanctions on pollution, incentives and taxes - need to be geared to the social reproduction of farming systems. Integrated policies may make this easier to achieve.

One way of approaching this issue is through the concept of 'sustainable livelihoods', developed most notably by Robert Chambers (1983;1992). Concerned mainly with the rural poor in Third World countries, Chambers has developed an approach to sustainable development which puts at its heart the question of how "people can be

enabled to gain adequate, secure, decent and sustainable livelihoods in rural areas" (1992 :215). The first priority is not the environment or production but rural livelihoods, stressing both the satisfaction of basic needs and long-term security. The essence of this approach is to reverse 'top down' thinking by empowering people and giving them the resources to manage their own livelihoods. These resources include: equitable and secure rights and access to resources; access to basic services; and safety nets of support (1992 :227). This approach of 'putting people first' means that development agencies must strengthen their training methods, spend time in the field learning with rural people, direct expertise to neglected gaps in local knowledge bases, and sponsor new initiatives (1992 :228).

The strengths of the sustainable livelihoods concept are three-fold; first, it ensures that sustainability contains a *social* as well as an environmental dimension; secondly, the concept has a strong bottom-up democratic thrust; thirdly, the concept acknowledges that people be treated as a *resource*, not just as consumers, or as producers concerned solely with profit, and that human capital, including skills and knowledge and resource-conserving practices, needs also to be conserved.

In our view, the labour process as an 'arena of co-ordination' is a useful starting point in thinking about how the social and ecological components of sustainability might be seen to be interrelated at the local level. The labour process, as van der Ploeg intimates, is where the desire to fulfil 'needs' comes into contact with the external (ecological and social) environment. In order to make the labour process sustainable, in both social and ecological terms, we need to ensure that resources are used in an environmentally sensitive fashion. As we discussed above, policy instruments can be used to foster this shift. However, there is also a need to ensure that economic activities themselves are sustainable and this brings us to the area of market participation. If agricultural production systems are to perform to local strengths, then the issue of developing sustainable markets becomes crucial.

Green Markets

The objective of sustainable economic output within a market framework might, at first, seem to be a 'mirage'. Markets are, by their very nature, fluid and ever-changing. Patterns of demand are often unstable and new forms of production and new products often disrupt established sources of supply. However, it is useful to begin to think about how sustainable economies might be more strongly linked with sustainable environments.

It is our contention here that regional or local control of their production processes by primary producers does allow them to both 'police' the ecological aspects of production and capture a market advantage through the 'greening' of their practices. Farms and other rural businesses need to be aware of their environmental responsibilities, for a number of reasons. Greater efficiency in the use of resources and the development of recycling may help reduce raw material, pollution control and waste disposal costs.

Rural businesses that do not clean up their production practices may fall foul of anti-pollution, public health or safety legislation. They may face opposition or hostilities from local residents or planners or environmental campaigners. Conversely a green image may be a positive boost to business.

Environmental auditing has been developed by leading businesses as an important corporate management tool, to assess internal performance and to identify means of improving arrangements for environmental management. Guidelines have been issued by a number of business organisations (International Chamber of Commerce, 1990; Confederation of British Industry, 1990) and the European Commission has proposed a directive which would lay down standardised procedures for the conduct of environmental audits, their external verification and public reporting requirements. The accountancy profession has also begun to consider how accounting practices and companies' information systems could be developed to help sensitize managers to the environment and monitor the performance of business (Chartered Association of Certified Accountants, 1990).

Most of this advice and information has been directed to large, corporate companies. Little has been targeted at farms and small firms and their distinct needs. With green credentials becoming a source of competitive differentiation, they could be placed at a disadvantage. In principle, though, environmentally responsible farms and small firms in rural areas have potential advantages which may simply need the right advice and promotion to be realised.

Many producers have begun to realise that a green image may be good for business. Green Consumerism has emerged as a powerful force amongst well-off and concerned consumers, and is now being paralleled by the contemporary debate in Europe over eco-labelling. An initial focus of green consumerism was retailing and, particularly the food sector. However, the concerns of major retailers coupled with the activities of environmental campaigners have pushed the pressures down the production chain, encouraging manufacturers, processors and producers to adopt a 'cradle to the grave' perspective in evaluating the environmental implications of their products and processes. Increasingly, it is incumbent on firms in high value consumer industries and the food sector to demonstrate that their products have been responsibly produced.

A growing feature of most EC member states is pressure from consumers for greater information about food products, their contents and their provenance, and greater discrimination concerning healthy eating and life-styles. These concerns increasingly focus on issues to do with food purity. A parallel development is that of responsible consumption, where people seek to pursue ethical principles in the consumer choices they make. These principles may embrace, for example, animal welfare concerns, the environment and social justice in the labour process. At the same time, there is growing demand for localised and craft products of high quality and identifiable origin. There seems growing scope, particularly through effective marketing and product development for these two trends to converge in demands for high class niche products carrying a 'passport' indicating their provenance and responsible production.

Effective 'place marketing' would be the key to link the promotion of such niche products with rural sustainability. In this way, production could be tied to the assertion of positive environmental images of place thus assisting local produce to carve out niche markets. This could be further facilitated by the promotion of co-operation among local producers so that a single image of community and place is promoted, thereby tying together the protection of rural livelihoods with the protection of the rural environment.

The 'greening' of production processes and the capture of 'sustainable markets' by farmers and other rural businesses is a potential that cannot simply be left to those businesses themselves. Strengthening regional co-operatives and their control over local production could be valuable in terms of control over both inputs and output. On the input side, strong co-operatives can efficiently perform police farming and environmental practices in the locality, whilst on the output side, there is the enhanced opportunity to capture the value-added generated by producing environmentally responsible products (Osti 1992). As the OECD indicated, there should be integrated policies at the regional level, providing support, advice and guidance to businesses as they try to move towards this system of sustainable production. The local and regional institutions with this responsibility could be modelled on the existing rural development agencies. These agencies should have a clear industrial strategy based on sound ecological principles. They should aim at for local economic development strategies based upon the need to get a self-re-enforcing network of local companies that benefit from one another's success. Such agencies should probably not be sector-specific. As agriculture goes through a transition towards sustainability, many farmers may need to diversify into other economic activities. Agriculture's (horizontal) links with the local economy should be incorporated into economic strategies. Similarly, its international (vertical) links with the food system and the consequences of this need to be recognised. These local development agencies must, therefore, carry a responsibility for local environmental and human resources. They should concern themselves with both sustainable ecosystems and livelihoods.

In conclusion, however, it is worth noting the limits to this strategy. While we have emphasised the localised nature of sustainable rural development, this is only part of the picture. As Norgaard, a notable exponent of the strategy outlined here, reminds us:

"while institutions have to be locally tailored to support ecosystem-specific technologies, local institutions, none the less, will still have to mesh with regional and global institutions designed to capture the gains of ecosystem management on a larger scale and to prevent untoward broader consequences of local decisions" (Norgaard 1992 :85).

We have stressed the necessary requirements for sustainable development to be initiated locally. But on its own this is clearly insufficient. It must be part of a broader strategic framework concerned with sustainability at all levels of governance.

Conclusions

We have argued here that sustainability is about more than just the maintenance of ecological resource levels and biodiversity. We have emphasised that the concept has a social dimension that must be placed at the centre of any discussion of how sustainability is to be made practicable, and have proposed that the link between the social and the ecological components of sustainability can be most readily combined within local settings. Implicit in our argument is the belief that a rupture has taken place, through the use of particular technologies driven by basic science and the market, which has broken the link between social systems and their *immediate* environments. This has not, however, freed these systems from *ultimate* environmental constraints. We believe that a return to a concern with immediate, local environments provides at least a starting point for sustainability in agriculture. We further proposed the labour process as an object of analysis, for it is here that the social meets the ecological. From an examination of sustainable labour processes we can begin to challenge the sustainability of agriculture's dependence on external forms of credit and technology.

Our analysis here follows closely that presented by Norgaard (1992). In pressing for a 'co-evolutionary' approach to sustainable development, he says:

"sustainability does not imply that everything stays the same. It implies that the overall level of diversity and overall productivity of components and relations in systems are maintained or enhanced The shift towards sustainable development entails adopting policies and strategies that sequentially reduce the likelihood that especially valuable traits will disappear prematurely. It also entails the fostering of diversity per se" (Norgaard 1992 :81-82).

This diversity applies not just to ecological systems, but to social, cultural and organisational systems. The sustainability of social and ecological systems at the local and regional levels needs institutional support and regulation, and this entails the development of political institutions for this end. It also implies increased accountability and democratic sanction within these new regulatory institutions.

In this way we believe rural localities might be able to 'play to their strengths'. The production of 'green' commodities may enhance the status of those localities which are able to most successfully link product and place, so leading to a regeneration of areas which are, at present, viewed as peripheral within global systems of production. In this way, rural livelihoods could be strengthened locally rather than weakened globally.

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