AFTER FMD:

AIMING FOR A VALUES-DRIVEN AGRICULTURE

The fourth report published by

FOOD ETHICS COUNCIL

THE INDEPENDENT COUNCIL FOR ETHICAL STANDARDS IN FOOD AND AGRICULTURE

THE FOOD ETHICS COUNCIL: GENERAL AIMS

Our aims are to:

- Review developments in food and agriculture within a sound framework of practical ethics which addresses the principles of wellbeing, autonomy and justice with respect to consumers, producers, farm animals and the living environment.
- Promote the incorporation of ethical thinking in decision-making in agriculture, food manufacturing and retailing.
- Produce authoritative, well-researched reports, which highlight ethical concerns and make recommendations for action.

MEMBERS OF THE FOOD ETHICS COUNCIL

Acronyms used in the report

ADAS Agricultural Development and Advisory Service
AEBC Agriculture and Environment Biotechnology Commission
BSE Bovine Spongiform Encephalopathy
BST Bovine Somatotrophin
CAP Common Agricultural Policy
CIWF Compassion in World Farming
CJD Creutzfeld-Jakob Disease
CVD Cardiovascular Disease
CWS Co-operative Wholesale Society
DALY Disability adjusted life year
DEFRA Department for Environment, Food and Rural Affairs
DETR Department of Environment, Transport and the Regions
DFID Department for International Development
DTI Department of Trade and Industry
EU European Union
FAO Food and Agriculture Organisation of the United Nations
FAWC Farm Animal Welfare Council
FDF Food and Drink Federation
FMD Foot and Mouth Disease
FSA Food Standards Agency
FSE Farm scale evaluation
GM Genetically modified
GMO Genetically modified organism
GNP Gross National Product
HEIA High external input agriculture
ICM Integrated Crop Management
IFM Integrated Farm Management
IFOAM International Federation of Organic Agricultural Movements
IGD Institute of Grocery Distribution
LEAF Linking Agriculture and the Environment
LEDC Less economically developed country
LEISA Low external input sustainable agriculture
MAFF Ministry of Agriculture, Fisheries and Food
MOET Multiple ovulation-embryo transfer
NFU National Farmers' Union
NHS National Health Service
OIE Office International des Epizooties
RSPCA Royal Society for the Prevention of Cruelty to Animals
SPECS Species of European conservation concern
SSSI Site of Special Scientific Interest
SVS State Veterinary Service
UN United Nations
UNDP United Nations Development Programme
vCJD variant Creutzfeld-Jakob Disease
WTO World Trade Organisation

Why this report was written

The recent outbreak of Foot and Mouth Disease is widely recognised as marking a turning point in British agriculture. Still reeling from the after effects of BSE (although we have yet to experience the full impact of that episode on human lives), the country has been subjected to another damaging and humiliating misfortune. Something, it seems, must be very wrong with the way we organise our affairs if we are visited by such problems on such a scale, and at such a frequency.

This report has been written as a contribution to new ways of thinking about how UK agriculture should be reformed in the light of these events. It was researched and written by Ben Mepham, who gratefully acknowledges the support and advice of colleagues on the Council.

The author also wishes to express his sincere thanks to the following for reading the draft and making helpful suggestions: Rev Dr Gordon Gatward of the Arthur Rank Centre, Stoneleigh; Ms Jeannette Longfield of Sustain; Prof Peter Midmore of the University of Aberystwyth; Prof Jules Pretty, of the University of Essex; and Mr Colin Tudge, writer and journalist.

Because a number of Government reports addressing the same issues are due to be published in the near future, this report has been prepared at short notice. Whatever deficiencies might be attributed to that circumstance, the essential purpose of the report is to indicate how appeal to a set of explicit ethical principles can lead to sounder policy decisions than have often been made in the past.

THE MESSAGE IN BRIEF

- **The need for a radical reappraisal of Government policy on agricultural practice and trade is emphasised by the recent Foot and Mouth disease (FMD) outbreak, together with the uncertainties over global climate change and, more recently, the crisis in international politics.**
- **UK farming and food systems need to be reconstructed on the basis of new guiding principles. The current reliance on high-external-input technology and global competitiveness is misguided. Instead of relying on a simplistic cost/benefit approach, policies should take account of widely accepted ethical principles, which, crucially, also place value on rights and fairness. Among many other advantages, adoption of the latter approach in the past would have prevented disease outbreaks such as BSE and FMD, and not only saved many lives but also many million of pounds.**
- **Our recommended approach entails use of a framework, called the Ethical Matrix, to examine the impacts of change on a range of 'interest groups', namely, people in the agricultural and food industries, citizens, farm animals and the ecosystem. Based on these assessments, the report suggests that adoption of holistic, sustainable, localised systems is the most ethically acceptable way forward.**
- **This *values-driven* agenda emphasises quality of life, diversity and concern for the future. It places more reliance on knowledge (including, but not exclusively, scientific knowledge) as a basis for a sustainable global future, and less on physical resources. Although the promised benefits of some hi-tech systems may seem alluring, they usually perpetuate old-style industrial strategies, which tend to undermine cultural values and are wasteful of critical resources.**
- **The promotion of sustainable, localised agriculture, supported by appropriate technical skills, will require greater Government support through subsidies and research funding. However, we believe this will be amply justified by the resulting social, environmental and economic benefits, as revealed by 'full cost accounting'.**
- **Government commitment to universal food security and sustainable systems should be reflected in a new stance in international negotiations to ensure that ameliorating the ethically unjustifiable persistence of hunger and malnutrition in many less economically developed countries is given much higher priority.**

1. INTRODUCTION

British agriculture is in crisis. Although the Foot and Mouth Disease (FMD) outbreak was not the root of the current problems it has exacerbated them: and as a result countless reports have appeared making proposals on how UK agriculture must be reformed. Our justification for adding to this plethora of advice is that few, if any, of these reports discuss the problems and their proposed solutions in the terms which we believe are crucially important, namely, in ethical terms.

Unfortunately, the domination of contemporary thought by the languages of *hi-tech* and *global market economics* has led to ethical perspectives becoming highly marginalised. This is because even in educated, perhaps *primarily* in educated, sections of society, people assume that 'ethics' is only concerned with the emotional and the irrational. For example, in discussions of the impacts of certain technological innovations it is not unusual to see these listed as 'economic, safety, environmental and *ethical*.'

But what can such a listing imply? Could it mean that it is acceptable for us to countenance *unethical* economics, *unethical* safety and *unethical* environmental protection measures? And if 'ethics' is to be isolated in such a way, what could it refer to? All too often, it seems, to mere sentiment, irrationality or religious scruples. Such narrow interpretations of ethics are, decidedly, not what we have in mind here.

1.1 Ethics

The aim of this report is to address the state of UK food and farming within a coherent and comprehensive ethical framework, which will give us guidance in making individual judgements and confidence in justifying them. While it is impossible to separate national concerns from the wider, global picture, the emphasis will necessarily be on the situation in the UK, from where any changes we can hope to implement will originate. Our focus is on agriculture, recognising that this too is inextricably related to wider economic, social and environmental concerns.

The report's analysis and recommendations aim to provide leadership in resolving these complex issues – not in the sense of laying down rules dogmatically, but rather in demonstrating how a bedrock of commonly agreed principles can lead us to ethically acceptable conclusions, however difficult the practicalities of achieving them might seem.

As we use the word here, *ethics* is by its nature rational (although it encompasses consideration for human irrationality), objective (but not insensitive) and even-handed. Based on respect for fundamental, and commonly accepted principles, it shows no deference to the powerful, and accedes to no 'special pleading' by privileged groups. And for those reasons, integrity demands that we follow where it leads. So if we are to begin to address the problems in appropriate ways we need to be clear about the real meaning of ethics and how recognizing its full remit will affect our thinking, and our actions.

But first we need to briefly review the current state of agriculture, in order to provide some perspective for our subsequent approach.

1.2 The current state of UK agriculture and future challenges

British farming contributes £7 billion p.a. to the UK economy, while directly employing 600,000 (if seasonal and part-timers are included). It supplies the bulk of the food in the UK food chain, which is worth £57 billion p.a. and employs 3.3 million people.[1] Farming has provided the basis of rural society since time immemorial (though in certain areas this link is now under severe tension) and it has shaped the physical structure of the landscape, that is such a treasured national resource.

The origins of the current crisis in UK agriculture preceded the FMD outbreak. After the mid-1990s farm incomes in all sectors were in serious decline – a consequence, among other things, of the combined effects of an unfavourable exchange rate, the ban on meat and livestock exports following the BSE crisis, and costs of adjusting to new animal welfare legislation introduced in the UK but not other countries. The FMD outbreak has added insult to injury by causing unprecedented hardship in certain areas and revealing the fragile infrastructure of much UK farming.

But the concerns are not solely about the current situation, dire as that is. They also relate to anticipated and uncertain future changes. For example, there is much debate between EU governments about the way the Common Agricultural Policy (CAP) might be reformed. Britain and some other states are in favour of removing production subsidies, which will expose many farmers to the rigours of the world market. The potential role of genetically modified (GM) crops and animals in European agriculture is another major concern. In the UK, the trials of GM herbicide tolerant crops will be completed in 2003, allowing assessment of the effects of their management on certain biodiversity indices. Although the results will not necessarily determine whether GM crops will be grown in UK, and more widely in the EU, they seem certain to have far-reaching implications. Indeed, developments in several fields could have a profound effect on the future shape of our food supply (see Box 1). Increasingly, political decisions on farming and food, whether they are made in London, Edinburgh, Brussels, Rome or Washington, will almost inevitably have global reverberations.

[1] DETR (1999) Our countryside www.detr.gov.uk

Box 1:
Food futures

If we look ten or twenty years into the future, one or other of some sharply distinguished means of food production might be dominant. For example:

- If current trends continue, GM crops could account for the vast majority of foods available, while functional foods, designed for specific health or other dietary purposes, could constitute a major market sector. Similarly, use of GM, cloning and embryo transfer in farm animals could provide cheap food, of uniform quality, for mass markets. It is predicted that a 'livestock revolution' will occur in the developing world as more and more people adopt meat-eating.[1]
- An even more profound change would follow the introduction of tissue culture techniques allowing, for example, large-scale production of 'chicken meat' in industrial vats.[2] According to this scenario, food would be produced exclusively in factories, so that the countryside would no longer be required for agricultural food purposes, although it might be a source of biomass and fuels, and provide a carbon sink.
- Or, holistic, sustainable, localised forms of agriculture might provide a significant proportion of our food.[3] For example, demand for organic food is growing rapidly, and in the last parliament 239 MPs signed an Early Day Motion calling for 30% of agricultural land in the UK to be devoted to organic farming by 2010. In this case, a crucial issue is the extent to which any cross-pollination from use of GM crops in adjacent fields would prove to be compatible with organic standards.

[1] Delgado C et al (1999) Livestock to 2020: the next food revolution. Washington: IFPRI
[2] DTI Foresight Food Chain and Crops Panel meeting 23.6.01, London.
[3] Food Ethics Council (2000) Farming animals for food: towards a moral menu. Southwell: FEC

The establishment of DEFRA (Department for the Environment, Food and Rural Affairs) following the last General Election, in which elements of the former Department of Environment, Transport and the Regions have been fused with the former Ministry of Agriculture, Fisheries and Food (MAFF), heralds a change in the Government's approach to farming and the environment.[2] Undoubtedly, the messages from DEFRA's Minister, Margaret Beckett, suggest that the Government wishes to promote a 'greener' attitude to agriculture than hitherto, and to ensure that environmental concerns receive higher priority. The launch of a consultation document[3] in August, 2001 is a welcome initiative in engaging a wide constituency and forging new links with stakeholders.

Yet the direction of the path ahead is still ill-defined. Recently, the Government has announced several initiatives aimed at establishing the cause of the FMD outbreak and providing advice on a recovery programme for British agriculture.[4] One of these, headed by Lord Haskins, aimed to "spearhead a recovery programme for areas hit by FMD" and to "drive through a radical reshaping of British farming".[5] His report was published in October.[6] Another, the Policy Commission on Farming and Food (chaired by Sir Don Curry) is to "advise the Government on how we can create a sustainable, competitive and diverse farming and food sector which contributes to a thriving and sustainable rural economy, advances environmental, economic, health and animal welfare goals, and is consistent with the Government's aims for Common Agricultural Policy reform, enlargement of the EU and increased trade liberalisation."[7] Its report is due at the end of 2001.

Without prejudging the outcomes, it is our contention that the means adopted are just as important as the ends sought, and that, in fact, only by adopting ethically acceptable means will it be possible to realise ethically desirable ends.

2. AN ETHICAL APPROACH

A sound starting point for thinking about ethics is to outline principles of the common morality. Despite the increasing diversity of modern multicultural, pluralistic societies, the pursuit of democracy makes certain assumptions that conform to the idea of the 'common morality'.

2.1 Ethical principles

These assumptions are encapsulated by three *prima facie* principles, namely, respect for:

- Wellbeing
- Autonomy
- Justice

Appeal to these principles does not determine the outcome of ethical reasoning, but examining issues in their light does ensure that attention is paid to a range of ethically relevant issues, that there is a consistency of approach, and that any decisions made are explicit and can be verified (or challenged). The principles are based on established ethical theories (although this may not be explicit) which commonly feature in perceptions of 'rightful actions' (see Annex 1).

It is important to challenge the view that ethics is simply 'a matter of opinion' and therefore carries little weight by comparison with the objective reality of scientific knowledge. The more one examines this alleged distinction the less valid it appears. Surely, we would all agree that we suffer wrongs if violently attacked (a violation of our wellbeing), wantonly deprived of our liberty (an infringement of our autonomy) or convicted as guilty of a crime of which we were innocent (a miscarriage of justice). These wrongs are not mere 'matters of opinion' – they are based on bedrock principles, which matter profoundly to us as individuals. And if they matter to us, individually, they also matter to others. On the other hand, scientific knowledge, for all its undoubted significance and value, changes constantly: few scientific theories have not undergone important revision in, say, the last fifty years. Moreover, science is by no means 'value free'. So, the right course of human action must be based on a sensitive understanding of both ethics and science.

[2] DEFRA (2001) www.defra.gov.uk
[3] See note 2
[4] No.10 Downing Street(2001) www.number-10.gov.uk (9.8.01)
[5] Wintour P (2001) Blair forces farming shake-up. The Guardian (6.8.01), p.1
[6] Haskins C (2001) Rural recovery after Foot-and-Mouth Disease. www.defra.gov.uk
[7] See note 4

2.2 The Ethical Matrix

In this report, we explore the issues raised by applying the ethical principles listed above to the interests of four groups, namely:

- People who work in the agricultural and food industries (e.g. farmers, agricultural suppliers, food manufacturers, retailers, traders and caterers)
- Citizens (all of us, both as consumers and as participants in democratic society)
- Farm animals
- The Ecosystem: encompassing all organisms (including the human population, domesticated and wild species) considered collectively, as interrelated species, breeds and populations

Because the three principles and four interest groups interact, the resulting twelve ethical impacts can be represented in the form of a table (called the Ethical Matrix) which aims to facilitate discussion of the issues by arranging them in a rational structure (see Table 1). The translations (or 'specifications') of the abstract principles are expressed in terms which are intended to be familiar but at the same time authentic from an ethical perspective. For example, respect for farm animals' wellbeing is translated as *animal welfare*, while that for citizens' autonomy is interpreted in terms of *democratic, informed choice e.g. of food*.

These, admittedly sometimes rather imaginative, interpretations are, of course, open to challenge and debate.[8] However, the value of the approach has been confirmed in several exercises in public participation,[9] at which people have written comments on the Matrix such as: "it identifies issues and focuses debate", "very good vehicle for education/discussion, teasing out issues and peoples' feelings", "enables a wide range of issues to be discussed" and "aids the decision making process".

But it would be a mistake to imagine that one can resolve complex ethical issues simply by consigning their elements to the separate 'cells' of the Matrix. At its simplest, the Matrix is merely a check-list of concerns, which happen to be based on ethical theory. But it can also serve as a means of promoting public awareness and stimulating ethical deliberation. Above all, it aims to encourage, in the phrase trumpeted by contemporary politicians, 'joined up thinking'. The necessity to consider how narrow sectarian interests interact with the whole enterprise can only have beneficial effects.

Readers of our previous reports will note that this formulation of the Matrix differs substantially from earlier versions, which have tended to focus on rather specific technological developments. But, in a sense, the framework is a 'virtual matrix', capable of reformulation in different terms, depending on the nature of the issues addressed.

It is, of course, impossible to discuss the full significance of the approach in a short report, but it has been described in several other publications.[10] and has also been employed by ethicists in other countries.[11] Since the Matrix *per se* has no substantive output, its value can only be measured in terms of its usefulness.

	WELLBEING	AUTONOMY	JUSTICE
PEOPLE IN THE AGRICULTURAL AND FOOD INDUSTRIES	Satisfactory income and working conditions (3.1)	Appropriate freedom of action (3.2)	Fair trade laws and practices (3.3)
CITIZENS	Food safety and acceptability Quality of life (3.4)	Democratic, informed choice e.g. of food (3.5)	Availability of affordable food (3.6)
FARM ANIMALS	Animal welfare (3.7)	Behavioural freedom (3.8)	Intrinsic value (3.9)
THE ECOSYSTEM	Conservation (3.10)	Biodiversity (3.11)	Sustainability (3.12)

Table 1: The Ethical Matrix

The Ethical Matrix showing, in twelve individual cells, the interpretation of respect for the principles of wellbeing, autonomy and justice in terms appropriate to the interests of people working in the agricultural and food industries, citizens, farm animals and the ecosystem, respectively.

For the first two interest groups both impacts and responsibilities are involved, whereas for farm animals and the ecosystem (shaded) only impacts of human actions are relevant. Numbers in the cells (3.1-3.12) refer to the assessments in the next section of the report and will facilitate cross-referencing in the text.

[8] Fraser V (2001) J Agric Env Ethics 14, 147-159
[9] E.g. Mepham B and Millar K (2001) Proc 3rd EURSAFE congress, Florence, 317-9
[10] E.g. Mepham B (2000) Proc Nutr Soc 59, 609-618; Mepham B (2001) in 'Encyclopedia of the Ethics of New Technologies'. ed Chadwick R F. San Diego: Academic Press, pp.299-313
[11] E.g Kaiser M and Forsberg E-M (2001) J Agric Env Ethics 14, 191-200

2.3 Using the Matrix as a guide to ethical assessment

Many ethical issues can be encapsulated in the replies demanded of a single question; "How much should my interests take precedence over your interests?" But there are, of course, many parallel questions, such as "How much should one nation's interests take precedence over those of other nations?" and "How much should human interests take precedence over those of farm animals?"

So, "ethics in its full scope aims at care of the other",[12] and while only certain occupations are conventionally classed as 'caring professions' it is implicit in the remit of ethics that, for everyone, care should be exercised in relation to others (necessarily, but not exclusively, humans). If someone was not prepared to admit to caring about anyone or anything other than him or herself, it would be impossible for them to use the Ethical Matrix. But even if they were to express concerns for only one cell of the Matrix, say, *respect for retailers' profits or respect for animal welfare*, that revelation would starkly expose the value system determining their actions. In fact, experience shows that most people do ascribe some value to all cells of the Matrix, although the degree of value ascribed varies both with the individual and with the issues being discussed.

To be effective, 'caring' involves empathy. Philosopher John Rawls[13] devised a theoretical device which encourages this attitude when he hypothesised *a veil of ignorance* behind which rational beings should make political decisions. This has the object of discovering reasonable and justifiable principles that are embodied in the common morality. Behind the veil, none of us is aware of our identity, status, intelligence, race, physical capabilities etc, which are only revealed after we have come to our collective judgements. This device develops Rawls' earlier[14] definition of the 'competent moral judge', one of whose characteristics is 'an imaginative conception of others' predicaments'.

Bizarre as it may seem to 'imagine what it is like to be a broiler chicken' (although there is now much scientific evidence to add substance to our imaginative conceptions), genuine ethical insight is only likely to emerge from attempts to empathise in this way. In any event, such an aspiration in relation to disadvantaged people, for example in less economically developed countries, should not prove too taxing if we were to put our minds to it. 'Hard-nosed economic realism' only thrives where it is prioritised over other concerns, but alternative ethical perspectives demand that we recognise other interests and justify any partisanship we promote.

Moreover, while scientific facts, laws and theories are clearly germane to ethical analysis, they are not in themselves sufficient, or even pre-eminent. Success in the world of science (and more generally) is often achieved by the 'clever'. For moral judgements, cleverness ranks below wisdom, which, though it may be informed by academic ethical theory, has much more to do with personal integrity.

In summary, a two-stage process is involved. First, application of the ethical principles to the different interest groups aims to encourage an attitude of care, in which we 'place ourselves in others' shoes' to assess their situation. While not too difficult for other human groups, this demands a degree of imaginative insight for farm animals, and may seem to become highly abstract in the case of the ecosystem. Even so, in the latter case, not only are sentient beings often involved but we are also considering matters that impact directly on present-day and future human life. The essential point is that, since the interests of members of all these groups are claimed, by some people at least, to be 'ethically relevant', the Matrix provides a structure for giving those interests due attention.

The second stage entails examining the different assessments and 'weighing' them to decide how they should affect our overall judgements. For example, most people consider it right to put human interests above those of animals but they rarely put *all* human interests, however minor, above *all* animal interests. Nor does, say, profitability necessarily take precedence over fair trade or ecological biodiversity. The Matrix seeks to encourage rational decision-making by making explicit the ethical concerns for each interest group, and showing how they have been weighed.

Comments on the Matrix

The value of the approach has been confirmed in several exercises in public participation,[9] at which people have written comments on the Matrix such as:

- it identifies issues and focuses debate
- very good vehicle for education/discussion
- teases out issues and people's feelings
- enables a wide range of issues to be discussed
- aids the decision-making process

[12] Kemp P (2000) in 'Bioethics and biolaw' vol II. Copenhagen: Rhodos, p.22
[13] Rawls J (1972) A Theory of Justice. Oxford: OUP
[14] Rawls J (1951) Philosophical Review 60, 177-197

3. ASSESSING THE ETHICAL IMPACTS

In this section of the report, we assess the ethical impacts of current practices and policies on each of the four identified interest groups according to the following general plan. For each of the twelve cells of the Matrix in Table 1:

- The principle is specified in terms appropriate to each interest group
- The relevant issues are discussed briefly
- Consideration is given to 'how well the principle is currently respected'
- Consideration is given to how 'more respect for the principle might be achieved'

Clearly, in the space available it is only possible to cite illustrative examples. There is often overlap between the different principles identified, and particularly close associations are cross-referenced using the cell numbering in Table 1.

The assessment is anglocentric but not, intentionally, discriminatory or biased. This focus is simply an inevitable consequence of starting from where we are, in both space and time. For similar reasons, the emphasis is on the UK agricultural industry, and particularly, in view of BSE and FMD, on food products from animals. It is, of course, acknowledged that these concerns are highly disparate and that they overlap with others (such as those of the rurally-based tourist industry) in significant ways. However, it is always necessary to draw lines around one's subject matter: sometimes they will be porous barriers, as related issues receive due, if only token, recognition.

Despite the emphasis on the UK, we felt it important to indicate the scale of global concerns, particularly with reference to less economically developed countries (LEDCs). Discussion of most of these issues is confined to the assessments in 3.6, 3.11 and 3.12.

It is important to acknowledge the limitations of this approach when applied to such a large subject as the future of UK farming. Were the recommendations at the end of the report (section 6) its most important aspect, we would have significant reservations about the value of attempting so much in so short a report.

But the recommendations *per se* are not the main message of this report. Rather, the aim is to suggest that asking the right questions of our food system is critically important; and in our opinion these questions should be based on an understanding of the ethical dimensions of all aspects of the system. Whether or not our readers reach the same conclusions, we recommend an approach that starts from a consideration of the ethical principles grounded in the common morality, and applies them to the relevant interest groups. The following assessments are an attempt to explore the implications of that approach for policy formulation, which are proposed as a contribution to addressing these complex issues. That is the essential justification for producing this report and, we believe, its principal merit.

3.1 Agricultural and food industries†: wellbeing

Respect for this principle entails satisfactory* incomes, quality of life and working conditions of those employed in:

- The agricultural industry, including farmers, their families and staff; the agricultural supply industries (e.g. feedstuff merchants, livestock hauliers); associated manufacturing industries (e.g. of fertilisers and pesticides); and professional support (such as veterinarians, auctioneers, abattoir and market staff) and educational services (universities, colleges and research institute staff)
- The food industries, including food manufacturers, processors, wholesalers, retailers and caterers

† Although there are large differences between people who work in the different sectors of these industries, there is a logic in including them all in this all-embracing category. The marked differences between the different sectors are thereby made even more evident.

* The word 'satisfactory' is, of course, open to subjective interpretation, but it seems preferable to 'adequate' which might imply a mere threshold for survival.

Since employment in the agricultural industry is voluntary (though, in practice, in some situations there are few realistic options), it is sometimes argued that farmers are entitled to no more job security than others in a market economy. According to this view, while low incomes and job losses consequent on adverse exchange rates and unanticipated crises, like BSE and FMD, are unfortunate they are simply inevitable 'pains of structural adjustment'.[15]

An alternative view, termed 'agrarianism', considers agricultural activity as inherently valuable because it contributes to national food security, maintains the natural environment and preserves traditional cultural norms. Consequently, farmers in the EU and elsewhere have long been protected from the vagaries of both fluctuating market prices and the 'persistent low income problem' by subsidies and import tariffs.[16] This has significant consequences for the economies, and hence people, of less economically developed countries. However, increasing globalisation of markets is leading to calls for reduced EU production subsidies.

But the principle of wellbeing relates to more than remuneration and working conditions: it is also concerned with community values, local services and opportunities for personal development. Serious concern for this principle thus also entails addressing the fabric of rural society, in terms of schools, medical services, affordable house prices for new families, public transport etc.

How well is this principle currently respected?

It is conventional to refer to the 'farm gate' as the barrier delineating the agricultural and food industries. On virtually any basis of comparison the food industry is in better shape than agriculture. The UK food market is worth £57 billion p.a., of which farmers receive just £7 billion. There has been much debate about whether the major supermarkets are rewarded excessively, while farmers are shortchanged. But there seems little doubt that farmers are experiencing severely reduced incomes. According to a recent survey "the national average profit recorded for a 500 acre family farm shows that their profit has plummeted from £80,000 at peak in 1995/6 down to £8,000 last year and £2,500 now."[17] Moreover, 51,000 farmers and farm workers have lost their jobs during the past 2 years.[18]

Of course, farmers, like other groups mentioned, are not a homogeneous group. Not only do they differ in their degree of direct involvement and market orientation,[19] but there are large, small, family and corporate farms, specialising in different products, all of whom are likely to have been affected in very different ways by recent events.

That said, some generalisations seem warranted. The emotional hardships associated with low incomes, BSE, FMD, swine fever, and social isolation (exacerbated by FMD restrictions on movements and closure of markets) have taken their toll on many farmers and their families, with the result that distress calls to the Farm Crisis Network, which had already increased markedly in recent years, rose 10 to 20 fold after the start of the FMD outbreak.[20] Suicide rates among farmers are among the highest of any occupation. In 1999, suicides of 77 farmers in the UK were recorded but real, and more recent, figures could be much higher. [21]

On average, the incomes of rural households, and levels of educational attainment, are higher than those of their urban counterparts but these averages conceal very wide gaps between rich and poor: and some remote rural areas have markedly lower levels of education, skills and training than more accessible areas.[22] Difficulties are exacerbated by poor rural services. In 1997, 75% of English rural parishes had no daily bus service; 94% no rail service; and 79% no community transport service. Consequently, car ownership is twice as high for those in the lowest 10% of income living in rural areas than it is in conurbations, but for certain groups (e.g. older people, women, disabled and young) choices of jobs, training and educational opportunities are severely restricted.[23] Increasing traffic in the country jeopardises road safety.[24]

Village stores and post offices are shutting down at an alarming rate and 40% of villages have no pub.[25] An estimated 377,000 rural households are in housing need, with 16,000 households (12% of the national total) accepted as homeless.[26] Yet 40% of farms sold recently were to non-farmers seeking a country home in an attractive environment.[27]

[15] Marsh J S (1996) in 'Food Ethics' ed Mepham B. London: Routledge, pp.18-34
[16] Newby H (1985) Green and Pleasant Land: social change in rural England. London: Hutchinson, p.109
[17] Deloitte and Touche (October 2001) www.deloitte.co.uk
[18] Driver A (2001) Plea for help as 50,000 quit farming. www.fwi.co.uk
[19] See note 16, p.103
[20] Countryside Agency (2001) Foot and Mouth disease: the State of the English Countryside. www.countryside.gov.uk
[21] Driver A (2000) (10.11.00). www.fwi.co.uk
[22] See note 20
[23] Country Landowners Association (2001) Rural Transport. www.cla.org
[24] Commission for Integrated Transport (2001) www.cfit.gov.uk
[25] Prince of Wales (2001). www.princeofwales.gov.uk.
[26] See note 23
[27] Countryside Agency (2001) A strategy for sustainable development. www.countryside.gov.uk

While not strictly within the remit of this enquiry, rural tourism has suffered financially from FMD as much as agriculture: e.g. by May, 2001 incomes of rural businesses were on average reduced by 50%.[28] Many other rurally-based businesses have also experienced severe difficulties, so that by August, 2001 the total economic cost of lost income from UK tourism, clean-up operations and compensation was estimated at £5 billion.[29]

By comparison with farmers, and closely associated industries such as livestock hauliers and feedstuff merchants, the food manufacturing and retailing sectors are financially strong. However, incomes of workers and family businesses in certain areas, e.g. catering, remain notoriously low.

The England Rural Development Plan was introduced in 1999. It is designed to deliver a new strategy for development of an agricultural industry that will be "competitive, diverse and flexible, that must be more environmentally responsible, and that must pay an integral part in the wider rural economy.[30] The significance of its impact remains to be seen.

More respect for the principle might be achieved by:

- Increased and continuing support for farmers and others who, without being culpable, have been seriously adversely affected by FMD and similar crises
- Increased investment in rural development, entailing improved housing, transport, educational, social and community services
- Promotion of land management to deliver a wide range of benefits (e.g. animal welfare and environmental) as well as food and fibre

[29] Country Land and Business Association (2001), cited by Mepham B, J Ag Env Ethics 14, 339-43
[29] Bowcott O (2001) Payouts create foot and mouth millionaires (6.08.01) The Guardian
[30] See note 2

3.2 Agricultural and food industries: autonomy

Respect for this principle entails:

- Allowing farmers and others in the agricultural and food industries to employ their skills and physical resources according to their best judgements and in accordance with their ethical principles

The principle clearly applies to all professionals whose training and experience make them, legitimately, 'masters of their own craft'. However, it might merit particular attention in the case of many farmers, who, because their circumstances (e.g. small numbers, relative geographical isolation, dependency on external inputs and the demanding quality standards of retailers), are vulnerable to excessive external control. Farmers are now relatively small players in the food system, which seriously limits their power to determine what they do. Consequently, the decisions they make are usually in response to "a mix of economic circumstances, commercial pressures from their suppliers and purchasers and national policies".[31] The phenomenon of the 'technological treadmill', whereby as each new productivity-enhancing technology is introduced farmers feel obliged to adopt it, whether or not they wish to, in order to stay in business, is well known in agriculture.[32] Notwithstanding that, any resulting fall in prices rarely benefits many farmers.

A more thoroughgoing agrarianism (see 3.1) might suggest that farmers are entitled to respect for their autonomy over and above that due to most other people because of the particular role they play in the national economy. In essence, this is because it is their responsibility to produce the vital resource, food, from the territorially-defining resource, the land, while also acting as custodians of the latter's future viability. And it is in society's interests to grant this additional measure of respect, providing that farmers exercise their autonomy wisely.

The same principle might apply to other rurally-based workers whose activities preserve, maintain or enhance the physical and social fabric of the rural environment.

In contrast to the severe constraints placed on many farmers, the major supermarkets, who market over 70% of food sold in the UK, currently enjoy a relatively high level of freedom in their operations.

How well is this principle currently respected?

There is much evidence that farmers are often forced to adopt technologies, against their better judgements, in order to remain economically viable. The argument that this is due to innate conservatism is only true up to a point. Some technologies appear to be embraced with enthusiasm by large sections of society – mobile 'phones and personal computers are prime examples. But it is true of any technology that its adoption or rejection is always considered against the background of a particular set of political, economic and personal circumstances.

Farmers' managerial freedoms are also often severely constrained by the major supermarkets, whose current power is such that are able to specify their requirements in exacting detail. "The supermarkets do not operate a monopoly or a cartel, but they are an oligopoly... and the dominance of the five major supermarket groups has been made considerably worse for suppliers by the pressure over the last few years to find supply chain savings."[33]

More generally, farmers' autonomy has been adversely affected by the growing divide between practical farming, agricultural education, research and advisory services. Since the withdrawal of Government support for free on-farm advisory services (as provided by ADAS), many farmers have turned to the free advice of agrochemical suppliers, whose objectivity is clearly compromised by commercial objectives.

However, a growing number of farmers are now turning to organic farming systems. Organic farming, which currently occupies only 2.5% of UK arable land (but as much as 7-8% in Austria and Italy), provides many opportunities for the exercise of managerial skills in accordance with a holistic agrarian philosophy.[34]

More respect for the principle might be achieved by:

- Reinstatement of free government advisory services for farmers
- Increased support for farmers wishing to convert to organic and other more-sustainable farming systems, such as IFM (integrated farm management), before and following conversion

[31] Tansey G and Worsley T (1995) The Food System: a guide. London: Earthscan, p.86
[32] Krimsky S and Wrubel R (1996) Agricultural Biotechnology and the Environment. Urbana: University of Illinois Press, p.19
[33] Saphir N (2001) Farmed out: the future of British Farming and the Countryside: Chart Sutton, Kent
[34] Cornford P (1988) The Organic Tradition. Bideford: Green Books

3.3 Agricultural and food industries: justice

Respect for this principle entails consideration of impacts on:

- Subsidies farmers receive to protect markets
- Prices farmers receive from wholesalers and retailers
- Opportunities for direct marketing (such as in farmers' markets)
- Unfair legal restrictions on international trade
- Liability law covering damage due to modern biotechnology (e.g. GM crops)

As noted (3.1), the 'farm gate' represents a significant boundary between the fortunes of the different sectors of the agri-food industry. While UK supermarkets are flourishing, the farming community is experiencing a dire crisis. In 2000, food sales through supermarkets and superstores reached £76.78 billion, a growth of 4.5% over 1999.[35] Nearly 75% of all food bought comes from the 'big five' – Sainsbury, Tesco, Walmart-Asda, Waitrose and Safeway.

The food and drink manufacturing industry is the UK's largest manufacturing sector. It employs almost half a million people, buys two thirds of UK's agricultural produce and has an annual turnover of about £66 billion (of which the value of exports is about £9 billion p.a.).[36] Including companies such as Unilever, Northern Foods and British Sugar, their interests are represented by the Institute of Grocery Distribution, the Food and Drink Federation (FDF) and the British Retail Consortium.

At the same time, as noted (see 3.1), farming profits have been declining rapidly so that by October, 2001 average profits were reported as £2,500 p.a.,[37] while 51,000 farmers and farm workers lost their jobs during the preceding 2 years.[38] Moreover, farmers in the UK face higher land costs and social and environmental standards than many of their competitors in other countries.

While there is extensive regulation governing the release of genetically modified organisms (GMOs, such as GM crops) into the environment, there are no laws which specifically make provision for compensation for any damage that might be caused to the environment or for reinstatement of the damaged environment. According to a legal expert, "Any person, or the directors of any company or other organisation, responsible for carrying out the release of a GMO without the necessary licence and registration, should be subject to strict liability for any damage arising (but) the Government did not follow the recommendation when drafting Part IV of the Environmental Protection Act 1990."[39]

How well is this principle currently respected?

Farmers. UK farming as a whole receives £3 billion p.a. in EU subsidies, but they are far from equitably distributed. Thus, 80% of these subsidies are received by just 20% of farmers, those with the largest farms. And farmers are receiving an ever decreasing amount of the money we spend on food. For every pound spent today in shops on food and drink, only 9p is received by farmers and their rural communities, whereas 50 years ago this figure was the equivalent of 50-60p.[40]

The supermarkets. In 1999, the Competition Commission was asked to investigate supermarkets under the monopoly provisions of the Fair Trading Act 1973. Although its report concluded "We are satisfied that the industry is currently broadly competitive and that, overall, excessive prices are not being charged, nor excessive profits earned", concerns were expressed about certain practices. For example, most of the "main parties engaged in the practice of persistently selling some frequently purchased products below cost." This damaged smaller stores and would impact adversely on, in particular, "the elderly and less mobile who tend to rely more on such stores."

Many of the main parties admitted that they carried out practices which the Commission considered "adversely affected the competitiveness of some of their suppliers with the result that the suppliers were likely to invest less and spend less on new product development and innovation, leading to lower quality and less consumer choice." These practices included: requiring various non-cost related discounts, sometimes retrospectively; imposing charges and making changes to contractual arrangements without adequate notice; and unreasonably transferring risks from the main party to the supplier. Thirty such practices were identified.[41]

Shorn of the niceties of official jargon, this means that supermarkets have caused serious problems for small, neighbourhood shops, small growers, local rural economies and the environment. Through their buying power, and by externalising the negative environmental and social costs arising from the ways food is produced, they increasingly dictate the way agriculture here and abroad is practised. Indeed, Prime Minister Tony Blair conceded recently that supermarkets had "pretty much got an armlock" on farmers.[42]

[35] Business Knowledge Providers (2001) www.just-style.com/store/products
[36] Food and Drink Federation (2001). www.fdf.org uk
[37] See note 17
[38] See note 18
[39] Thornton J (2000) GMOs: The Laws. www.aebc.gov.uk
[40] Pretty J (2001) New farming for Britain. London: Fabian Society
[41] Competition Commission (2000). www.competition-commission
[42] Anon (2001) Leader article (11.04.01) The Guardian

Following its investigation, the Competition Commission suggested that "the most effective way of addressing these adverse effects would be a Code of Practice. We do not believe that a voluntary code would be adequate."[43] However, a recent code aimed at stopping supermarkets exploiting their suppliers, which was approved by the Trade and Industry Secretary, Patricia Hewitt, has been described by critics as 'weak and ambiguous'.[44]

There are claims that supermarkets have also used their powerful economic and political influence to undermine Government transport policy. While the Government wishes to discourage car dependence by taxing parking spaces and charging drivers for travelling into town centres, the major supermarkets have lobbied successfully to exempt car parks at their stores from taxes and charges. This has the effect of increasing travelling times and 'food miles', and exacerbating noise and pollution. In the longer-term it will contribute significantly to greenhouse gas emissions, of which transport is already the fastest growing source.[45]

Development of a GMO liability regime. There is a growing demand for a liability regime for GMOs. Although a Private Members Bill on Liability for GM crops has not received a second reading in the UK Parliament, the European Commission has recognised public concern that GMOs might adversely affect health and/or the environment and has recently adopted a paper containing proposals for an EU-wide Environmental Liability Regime, which may cover damage due to GM crops.[46]

More respect for the principle might be achieved by:

- A more equitable distribution of the financial returns to the agri-food industry in favour of farmers and others whose share is unjust, possibly by devising an effective formal code of engagement between farmers and retailers which is backed by regulatory enforcement
- Avoidance of an undue concentration of power in any single sector of the agricultural and food industries
- Establishment of a liability regime for GMOs and other products and processes involved in agricultural and food technologies

[43] See note 41
[44] Lawrence F (2001) Farmers decry code aimed at reining in big four supermarkets (1.11.01) The Guardian
[45] Friends of the Earth (1999) Environmental impact of supermarket competition. Memorandum to DETR Select Committee. www.parliament.the-stationery-office.co.uk
[46] See note 39

3.4 Citizens: wellbeing

Respect for this principle entails concern for:

- Food safety and acceptability (e.g. in relation to its means of production)
- The impact of food on consumers' health
- Citizen's quality of life, which will be reflected in the general level of public services in the country and in the creation/maintenance of a congenial (social and physical) environment

Food safety issues concern microbial diseases, toxic material in plant or animal products (such as residues of veterinary drugs), environmental contaminants, such as pesticides, and food additives. Hazards become quantifiable risks when consumers' health is threatened, e.g. by inadequate monitoring, ineffective treatment, inappropriate procedures or malpractices. For example, cross contamination of diseases of poultry in slaughterhouses, coupled with inadequate storage and cooking can lead to outbreaks of Salmonella and Campylobacter in humans; while ignorance of the nature of the prion causing BSE led to fatal cases of vCJD in humans consuming infected beef.

However, "Food consumption habits are not simply tied to biological needs but serve to mark boundaries between... geographic regions, nations, cultures, genders, life-cycle stages, religions and occupations, to distinguish rituals, traditions, festivals, seasons and times of day."[47] Such cultural factors affect people's wellbeing in the broadest sense, which can be infringed profoundly, for example, if vegetarians were to discover that they had unwittingly consumed meat, or if typical western meat eaters were to discover that they had eaten dog.

Designation of this interest group as 'citizens' denotes that the concerns here are not limited to the consequences of food consumption. The economic returns of the UK agri-food industry have a significant impact on the nation's GNP, so that the 'wealth of the nation', and all that means in terms of social provision, are relevant issues.

Moreover, the nation's quality of life, in the broadest sense, is affected to a significant degree by the physical and social environment of the countryside, where people live, work, engage in countryside pursuits, take holidays, or just 'escape' at weekends from the townscapes where most live. It was also deeply affected by the FMD mass cull, which offended most people's sensibilities.

How well is this principle currently respected?

Food safety The traumas of BSE and FMD have provided salutary warnings of the dangers of a cavalier attitude to food safety and animal welfare. Both outbreaks can be seen as consequences of cost-cutting or profit-making exercises. In the case of BSE, eagerness to exploit a cheap source of protein for animal feed overlooked precaution, and some would say decency, in forcing cattle to become carnivores. FMD appears to have resulted from lax import controls and/or inappropriate feeding regimes (involving pig swill), exacerbated by multiple 'sheep movements' to exploit marginal price advantages in different markets across the country. In both cases, official responses were slow, ineffective, and, in the case of BSE at least, involved incompetence.[48] We still do not know how many more people will contract vCJD, in addition to the more than 100 cases so far reported.[49]

The recent Food Standards Agency report[50] revealed that *Campylobacter* was present in 50% of samples of poultry meat tested throughout the country, while a BBC1 investigation found 69% of samples from the major supermarkets were infected, with 91% of the bacteria from the most harmful strain – *C. jejuni*.[51] Apart from unquantifiable human suffering, food poisoning costs the Government about £1 billion p.a., while BSE has to date cost over £4 billion.[52]

But food impacts on health in other ways, because unbalanced diets can also lead to ill health and death. A measure of the burden of disease in terms of both mortality and illness is the DALY (disability adjusted life year): so the number of DALYs lost equals the sum of the years lost in early death and disability. Diet related diseases, such as cardiovascular disease (CVD), obesity, certain cancers and various digestive disorders are responsible for about 35% of lost DALYs. CVD and cancer appear to be largely a consequence of diets too high in fat, especially saturated fat, and salt, and too low in fibre, complex carbohydrates, certain minerals, vitamins and essential fatty acids. Such illnesses also carry a considerable financial burden, and it is estimated that coronary heart disease alone (accounting for about half of CVD) costs the UK £10 billion p.a. (in terms of NHS costs together with indirect costs to industry and society through lost productivity). Costs to the NHS in treatment of obesity are about £0.5 billion p.a., while wider costs to the economy through lost productivity could amount to another £2 billion.[53]

[47] Lupton D (1996) Food, the Body and the Self. London: Sage, p.1
[48] BSE Inquiry Report (2000) www.bseinquiry.gov.uk
[49] CJD Surveillance Unit. (2001) www.cjd.ed.ac.uk
[50] FSA (2001). www.foodstandards.gov.uk
[51] FWI (2001) (16.8.01) www.fwi.co.uk
[52] Lang T (2001) New Statesman 24.9.01; Supplement, viii-x
[53] Rayner M (2001) A submission to the Policy Commission on the Future of Farming and Food. www.sustainweb.org

Consumers expect considerably higher standards, and in the UK much responsibility now rests with the Food Standards Agency (FSA) to make significant improvements. The FSA has recently published its Strategic Plan 2001-2006, which lists six key priorities for the next five years: i) reduce food-borne illness by 20%; ii) help people to improve dietary health; iii) promote honest and informative labelling; iv) promote best practice in the food industry; v) improve enforcement of food law; and vi) earn people's trust.[54] However, these targets are largely qualitative.

Dietary influences on children's health. A recent Government survey indicates the poor state of children's diets. On average, British children eat less than half the recommended amounts of fruit and vegetables, and an overwhelming majority (75-93%) have intakes of saturated fat, sugar and salt exceeding the maximum recommendations for adults. In consequence, over 11% are overweight (with childhood obesity being described as an 'epidemic') and over half have dental decay.[55]

Consumer responsibilities. Part of the problem of food quality lies with consumers. A survey conducted by Gallup for CWS suggested that consumers have major concerns about animal welfare (71%), the environment (70%) and packaging and labelling (62%)[56]. Yet, frequently, food choice is determined primarily by low price. People who happily spend thousands of pounds more for the latest model of car, take pride in buying food cheaply, ignorant of the hidden costs. While it is important to respect personal choices, educational programmes might focus on the real costs of food in terms of its implications for health, the environment, animals and cultural traditions.

More respect for the principle might be achieved by:

- More effective regulation of farms, abattoirs, catering establishments, and retail outlets to reduce the incidence of food poisoning
- Exploring ways of improving the nutritional standards of the UK poor and, in particular, school children
- Recognising that food is an important element of national and regional culture, which needs protection in the face of the trend towards undue global standardisation

[54] FSA (2001) Strategic Plan 2001-2006. London: Foods Standards Agency
[55] FSA (2000) National Diet and Nutrition Survey of young people aged 4 - 18. www.foodstandards gov.uk
[56] Cooperative Wholesale Society (1995) Responsible retailing. Manchester: CWS

3.5 Citizens: autonomy

Respect for this principle entails:

- Choice of food, implying a satisfactory range of options (e.g. of organically and conventionally produced food), and adequate dietary and traceability information (e.g. by labelling)
- Democratic decision making on agricultural systems affecting the environment (e.g. growing of GM crops)
- Provision of appropriate education (e.g. in secondary schools) to permit wise choices (e.g. with respect to diet, animal welfare and environmental concerns)

Despite the fact that today, in the economically developed world, we have access to an unprecedented variety of foods which consume a relatively low percentage of the average income, trust in the food supply system is at a low ebb. Whereas, for example, fifty years ago many consumers purchased meat from well-known local butchers who dealt with personally-known farmers, the anonymity of the current production–line food supplies (where customers know little or nothing of the source and treatment of their food) leaves them wary of hidden dangers. And the dominance of the retail market by very few companies means that a localised problem (e.g. food tampering in a single store) can have countrywide repercussions.

An important aspect of this principle concerns labelling, which has received increased attention in recent years. For example, the realisation in 1996 that GM material (from soya and maize) was present in much processed food in the UK without being labelled led to considerable public disquiet; and, subsequently, the EU introduced a new Regulation on the labelling of GM foods.[57]

The principle also refers to democratic decision making over matters such as the growing of GM crops in the UK, and the employment of new technologies in general in the agricultural and food industries; as well as the ability of citizens to influence decisions on the priority assigned to protecting both the rural environment and animal welfare. In a concise but perceptive analysis, Spedding notes "...it is both the right and responsibility of a citizen to help shape the way in which society behaves, and this includes the treatment of animals."[58]

How well is this principle currently respected?

Without the 'social capital' of reliable and trustworthy relationships between farmer, retailer and customer, faith is vested instead in laws and officials. But patently these proved unworthy in the case of the BSE outbreak for, as the Phillips Report revealed,[59] government officials, their scientific advisers and key personnel in the food chain all operated within a culture of complacency and secrecy. When the truth emerged their credibility plummeted.

Failure to consult the public adequately on technological developments is illustrated by considerable level of public antagonism to the Government's 'farm scale evaluations' (FSEs) of the environmental impacts of growing herbicide-resistant GM crops. According to a recent AEBC (Agriculture and Environment Biotechnology Commission) report "the lack of genuine consultation before specific trial sites were announced has generated tension and a sense of grievance."[60] Among the report's recommendations was one to "Commit to an open and inclusive process of decision-making around whether the GM crops being grown in the FSEs should be commercialised, within a framework which extends to broader questions."

There are signs that the EU is seriously attempting to address the issues of labelling GM foods. A proposal introduced in July, 2001 will require traceability of GMOs throughout the food chain (from farm to table) and "provide information on all food or feed consisting of, containing or produced from a GMO."[61]

But in the event of future commercialisation of GM crops, ensuring that a choice of non-GM food continues to be available for those who require it will entail developing better mechanisms for preventing any general upward drift of GM content. In fact, the use of GMOs in organic production in the EU is prohibited by law.[62] As noted in the recent AEBC report: "Separation distances will not in themselves guarantee that GM-free agriculture can co-exist in the UK with GM agriculture, but adequate separation distances can ensure that any impact of GM crops on organic crops through cross-pollination is kept below a predetermined threshold. As a basis for coexistence, we understand that a threshold limit as low as 0.1% would not be impossible to achieve for most, if not all, crops."[63]

[57] Mepham B (2001) See note 10
[58] Spedding C (2000) Animal Welfare. London: Earthscan p.5
[59] See note 48
[60] AEBC (2001) Crops on Trial. London: DTI, p.15
[61] EU (2001) Proposal for a Regulation concerning traceability and labelling of GMOs and feed products produced from GMOs. IP/01/1095
[62] EC Regulation (1991) Official Journal L222, 24.8.91, p.1
[63] See note 60, p.23

Ultimately autonomy is about self-determination, and this depends on people's awareness, and understanding, of the issues. Real choice is informed choice. However, 'information' in the form of advertising often undermines this principle. For example, a recent report shows that "up to 99% of the adverts for food during children's commercial TV programming are for products which are high in fat and/or sugar and/or salt. Confectionery and cakes comprise the largest categories (nearly 50%) (and) fatty and sugary foods... are advertised during children's programmes in proportions up to 11 times higher than the proportion recommended in dietary guidelines."[64]

It follows that respect for this principle depends on balanced educational provision in schools and colleges, greater investment in public education, and increased opportunities for open discussion and debate. Such programmes are currently insufficiently developed.

More respect for the principle might be achieved by:

- Increased public education/information to encourage healthy food choices
- Ensuring informative and comprehensive labelling and traceability of food
- Regulation of food advertising to children, e.g. on TV
- Introduction into the school curriculum of programmes on the nutritional, social and cultural dimensions of food
- Involving the general public more effectively in decision-making over the use of technologies such as GM and cloning in food production

[64] Sustain (2000) TV dinners. www.sustainweb.org

3.6 Citizens: justice

Respect for this principle entails:

- Availability of an affordable, nutritionally satisfactory and culturally acceptable diet – applying as a global requirement

The global dimension. Recognition of the human right to food has been constantly asserted in international agreements. But Philip Alston, one of the foremost legal experts on food rights, has written: "Few rights have been endorsed with such frequency as the right to food, yet probably no other right has been so comprehensively and systematically violated on such a wide scale in recent decades."[65]

It is estimated that 800 million people are threatened by food insecurity, the vast majority in less economically developed countries (LEDC). While both food aid and trade have important roles when a country's food supply is threatened by acute problems (such as harvest failure or in consequence of war),[66] longer-term food security is only guaranteed when indigenous food production is able to meet essential needs.

The UK. As an ideal, the quest for low food prices might seem incontestable. But food provision entails many costs e.g. for labour involved in food production, marketing and preparation; for the environment, as cultivation processes degrade the soil, pollute water courses, evolve greenhouse gases and consume non-renewable resources; for animals closely confined to maximise output and reduce land use; and for consumers whose health is adversely affected by microorganisms, toxins, or unbalanced diets. So the persistent quest for ever-cheaper food is either based on a misunderstanding of the real costs or on exploitation of loopholes in regulations which might have been expected to ensure adequate controls. Genuine food affordability needs to take account of 'full cost accounting'. In this context, the higher costs of most organic foods in the shops might be deceptive, because their substantial environmental and social benefits also yield significant economic savings.

An alternative approach to ensuring 'affordability' would be to increase consumers' access to healthy food in those cases where income is inadequate to secure a balanced diet. However, there are well-known drawbacks to schemes such as food vouchers and more research is needed to devise acceptable procedures.

How well is this principle currently respected?

The global dimension. The persistence of global hunger and malnutrition on such a large scale, principally in less economically developed countries but by no means confined to them, represents the grossest violation of any of the principles considered in this assessment. From the perspective of most people in the UK, the most practical way in which the situation can be ameliorated (apart from support for charitable organisations) is to urge greater investment in the programme of the Government's Department for International Development (DFID).

In many ways, hunger is inseparable from poverty and underdevelopment, and DFID's own measure of progress is assessed by its ability to meet a range of targets, such as 'reducing the proportion of people in extreme poverty', 'universal enrolment of children in primary school' etc.[67] The Government is committed to providing more money for development aid, rising to 0.33% of GNP by 2003/4 and continuing progress thereafter to the 0.7% UN target.[68] But given the scale of the problems even this target seems quite inadequate.

The UN Food and Agriculture Organisation (FAO) has recently instituted a programme on 'ethics in food and agriculture', which promises to address many of the issues of concern here. Their first report notes that "a global market without a global society could be self destructive" and that "the global economy will acquire its long term justification only if it is a means to further fundamental human values". Among its first steps it lists: "ensuring that programmes, policies, standards and decisions always take ethical considerations into account so as to lead to enhanced well-being, environmental protection and improved health."[69]

Food affordability in the UK. In this country, food constitutes the largest single item of household expenditure. At an average of £3000 p.a., it accounts for 16% of after-tax income. However, for the poorest 20% of households it accounts for 30% of income, and for the richest 20% for 11% of income.[70]

[65] Cited by Chen R S and Kates R W (1994) Food Policy 19, 192-205
[66] Marsh J S (1996) in 'Food Ethics' ed Mepham B. London: Routledge, pp. 18-34
[67] DFID (2001) Departmental Report London: Stationery Office
[68] DFID (2000) Eliminating world poverty (White paper). London: Stationery Office
[69] FAO (2001) Ethical issues in food and agriculture. www.fao.org
[70] Office of National Surveys (2001) Family spending 1999-2000. London: ONS

But such raw data obscure the fact that healthy food is often much more expensive than food which merely satisfies hunger by providing cheap calories. For example, a pound of carrots provides fewer calories than a small chocolate bar, while the cheapest foods, such as biscuits, white bread, margarine, are often high in fat, sugar and salt. A recent survey has shown that the cost of a shopping basket of healthier food (containing low fat margarine, wholemeal bread, low fat pork sausages etc), at £19.19, was 51% greater than that of an equivalent basket of 'regular' foods.[71]

Moreover, food pricing policies do not help low income groups, as demonstrated by the greater increases in the prices of healthier foods by comparison with less healthy options. For example, between 1982 and 1997, the price of wholemeal bread increased by 37%, compared with 20% for white bread; that of lamb by 90% compared with 54% for beef sausages; that of plain potatoes by 185% compared with 49% for frozen chips; and that of fresh fruits by 77% compared with 56% for tinned fruit.[72]

Poverty has numerous other, less obvious, impacts on diet. Women in homeless families often go without food rather than deprive their children; families in bed and breakfast accommodation, without adequate cooking facilities, are forced to buy prepared 'convenience' foods; while lack of access to out of town superstores compels them to buy from expensive local shops.[73]

Although there is provision of free school meals for needy families, the associated social stigma deters many children. About 4.6 million children in the UK live in officially-designated 'poverty', 2.8 million of whom are between 5 and 16 years. Although about 1.8 million of these are eligible for a free school meal, around a million currently go without.[74] Moreover, about 4.5 million 'paying' children do not take school meals but usually resort to a packed lunch or buying from local shops, many claiming that school meals are too expensive.

Conditions are not necessarily better out of school. One recent study showed that 15% of 11-16 year olds had no breakfast, 36% bought sweets on their way to school and 27% did not have a hot evening meal; while another reported that poor children were eight times less likely to eat fresh fruit.[75] Children's diets are too high in sugar and fat, and too low in fibre, some vitamins and minerals; while children in low income families have especially low intakes of folate and vitamins A and C.

More respect for the principle might be achieved by:

- Investing more in appropriate international development programmes to promote food security in developing countries
- Pressing for changes at the WTO level which promote and protect food security in developing countries
- Exploring new ways of improving the nutritional standards in the UK for vulnerable groups and, in particular, combating food poverty

[71] Davey L (2001) Food Magazine No. 55, p.17
[72] Sustain (1999) Tackling inequalities in health and diet-related disease. London: Sustain
[73] Leather S (1992) in 'Your food: whose choice?' London: National Consumer Council, pp. 72-94
[74] McMahon W and Marsh T (1999) Filling the Gap. London: Child Poverty Action Group, p.18
[75] See note 74, pp. 23-4

3.7 Farm animals: welfare

Respect for this principle entails:

- Preventing existing animal suffering
- Avoiding risks of further animal suffering
- Enhancing animal welfare

Respect for farm animal welfare can be seen as satisfying certain basic needs (for food, water, space, clean air etc) and avoiding certain harms (such as disease, injury, stress, excessive climatic exposure etc).[76] Such provisions are measured in terms of respect for the so-called Five Freedoms,[77] although in the Matrix the 4th Freedom, referring to normal behavioural expression, is assigned to the next cell (3.8).

How well is this principle currently respected?

It is clear that welfare standards in the UK are higher than in many, if not most, other countries. Successive Governments have introduced legislation and guidelines to improve animal welfare, and these have had beneficial effects. Nevertheless, there is much evidence that further significant improvements could be made. A few examples only can be cited here to illustrate the issues involved.

Excessive growth rates of broiler chickens place such a strain on their legs that they are often crippled and/or suffer bone fractures; while intensive housing means that contact with ammonia-impregnated litter (from the birds' excrement) often induces 'burns' on the body surface.[78] In the UK alone, 25% of the 32 million laying poultry (that is 8 million p.a.) suffer from bone fractures.[79]

Pig breeders aim to wean the maximum number of piglets per sow p.a., while rearers and finishers aim to achieve their end points in the minimum number of days.[80] In the UK weaning is normally at 2-4 weeks, but early weaning makes them vulnerable to infectious agents, and to counteract this medication of starter rations is an almost universal practice. Thus, the diet of growing/finishing pigs may contain antibiotics, probiotics, gut acidifying agents and/or enzyme preparations.[81]

Dairy cows are put under abnormally great metabolic demands, which have been equated to 'a man jogging for 6-8 hours per day, every day.'[82] Mastitis, lameness and digestive and metabolic disorders in dairy cattle are often a consequence of selective breeding and feeding of concentrates to maximise milk yields.[83]

Beef suckler herds, in which calves are not separated from their mothers but suckle and graze with the cows for at least one summer, respect this principle to marked degree. Like dairy cattle, they are usually housed over winter and generally slaughtered at one to two years. Their mothers might live for twenty years. However, most calves raised for beef are products of dairy herds. Such animals, separated from their mothers after about 24 hours, are reared initially on milk-replacers (generally based on skim milk powders) and then weaned onto cereal-based starter rations. They are usually confined in buildings and yards throughout their lives of just over a year.

Sheep and lambs may suffer from cold weather, starvation and infestation with maggots through exposure and neglect – victims of a system that accords them little economic value as individuals.[84] It is estimated that in the UK, 10-25% of all lambs born die within three days.[85]

Many animals are subjected to painful mutilations (such as tail docking and castration of piglets) without anaesthesia.[86] Some of the mutilations are not only welfare concerns in themselves but adversely affect subsequent animal behaviours, e.g. the beak-trimming of poultry which restricts the behaviourally important preening of feathers.[87]

Transport of animals, handling at markets and treatment at abattoirs all entail undue stress for many animals.[88] Although there are EU regulations relating to feeding and watering, methods of loading, journey times and lorry design, they are difficult to police effectively.[89]

More recently, the outbreak of Foot and Mouth Disease precipitated a mass slaughter programme, in which it is widely acknowledged that sheep, cattle and pigs experienced physical and mental suffering on an unprecedented scale.[90]

In contrast to intensive animals production systems, animal health is central to organic livestock husbandry. Disease prevention is based on four principles: i) selection of appropriate breeds or strains; ii) application of appropriate husbandry practices, encouraging strong resistance to disease and prevention of infections; iii) use of high quality feed, which together with regular exercise and access to pasturage, encourages natural immunological defence mechanisms; iv) avoiding overstocking. The use of chemically-synthesised allopathic veterinary medicinal products or antibiotics for preventive treatments is prohibited. Our recent report examined these issues more fully.[91]

More respect for the principle might be achieved by:

- Introducing a farm assurance scheme which improves standards of animal welfare and/or promoting existing systems with higher welfare standards, such as organic farming
- Pressing for higher international animal welfare standards
- Reviewing the transport of live animals, e.g. to markets and abattoirs with a view to minimising transport and stresses involved when it is necessary
- Serious appraisal of the benefits of vaccination against FMD

[76] See note 58, p.10
[77] Farm Animal Welfare Council (2000) Annual Review 1999/2000. London: FAWC
[78] Vaughan A (1999) Fowl Deeds. London: Sustain
[79] See note 58, p.45
[80] Cronin G M (1996) in Pig Production eds. Taverner M and Dunkin A C. Amsterdam: Elsevier
[81] Food Ethics Council (2001) Farming animals for food: towards a moral menu. Southwell: FEC
[82] Webster J (1995) Animal welfare: a cool eye towards Eden. Oxford: Blackwell, p.170
[83] Hillerton J E et al (1995) J Dairy Res 62, 39-50; Blowey R (1993) Cattle lameness and hoof care. Ipswich: Farming Press
[84] See note 82, p.192
[85] See note 58, p.46
[86] See note 58, p.56
[87] See note 58, p.56
[88] RSPCA (1998) Live animal transport in the uk: the case for change Horsham: RSPCA
[89] See note 58, p.49
[90] Mepham B (2001) J Agric Env Ethics 14, 339-47
[91] See note 81

3.8 Farm animals: behavioural freedom

Respect for this principle entails:

- Removal of excessive constraints on animals' movements
- Allowing animals to express their normal species-specific behavioural practices

Keeping any animal in confinement clearly contravenes its freedom at some level. Yet, the co-evolution of man and domesticated species over millennia has resulted in a mutual-interdependence which moderates the impact of this infringement: many modern farm animals would be unable to survive 'in the wild'. That said, certain practices contravene respect for this principle in comprehensive ways.

The design and management of housing plays a critical role in the welfare of the majority of farm animals. Improving the economic efficiency of animal production has entailed increased control over the animals' lives, leaving little to chance – epitomised by the fine control exercised over the temperature, humidity and lighting of the housed environment.

However, because housing systems are often complex entities, in which animals' behavioural freedom is a consequence of interacting physical and social factors, small changes in design or management practices can have disproportionately large effects. For example, in a free choice situation dominant animals may secure the best zones, leaving the subordinate animals with short shrift.

There is a particular problem in choosing the appropriate housing system. Should one aim to improve the *average* behavioural freedom for a group of housed animals or prevent the freedoms of *any* animals falling below a specified standard? The housing designs adopted to secure these two aims could be quite different. However, we might note that if human welfare were any guide, the principle of respect for the individual (cf. the Universal Declaration of Human Rights) would take precedence over the utilitarian motive of reducing aggregate suffering.

How well is this principle currently respected?

Only a few examples can be cited here. At the current EU approved figure of 450 cm^2 per bird, battery caging of laying poultry means that five chickens are commonly kept in a standard cage, preventing them from exercising any sort of normal behaviour (such as dust bathing, foraging or spreading their wings). This encourages aggressive behaviour towards cage mates, and weak bones through lack of exercise.[92]

Most calves raised for beef are derived from dairy herds, which means that they are separated from their mothers after about 24 hours, fed initially on milk replacers (generally based on skim milk powders) and then weaned on to cereal-based starter rations – frustrating the natural behavioural instincts of both cow and calf.[93]

Certain forms of mutilation sometimes frustrate animals' natural behavioural instincts. For example, nose ringing of pigs, which is aimed at better pasture management by preventing rooting in the soil, limits nest building, the digging of wallows and extraction of stones for chewing.[94]

However, some progress has been made in recent years and/or is planned. Thus, veal crates were banned in 1987, and tethers and stalls for breeding sows in 1999. In 1999, the EU Council of Agriculture Ministers agreed to a new Directive (1999/74/EC), specifying minimum standards for the protection of laying hens, so that from January 2003, no new battery cages may be brought into service and all use of battery cages will be prohibited from 2012. From that date, only 'enriched' cages will be allowed, which will give each hen 750cm^2 of floor space, a nest (permitting pecking and scratching) and 15cm of perch space per hen. These provisions seem likely to favour loose housing systems, such as perchery, deep litter or free range.[95]

More respect for the principle might be achieved by:

- Introducing a farm assurance scheme which improves standards of animal housing and husbandry and/or promoting existing systems with higher standards, such as organic farming
- Pressing for higher international animal welfare standards
- Reviewing the transport of live animals, e.g. to markets and abattoirs with a view to minimising transport and the stresses involved when it is necessary

[92] Turner J and Lymbery P (1999) Brittle bones: osteoporosis and the battery cage. Petersfield: CIWF
[93] See note 82, pp. 186-7
[94] See note 58, p.56
[95] EC (1999) Council Directive. www.europa.eu.int

3.9 Farm animals: intrinsic value

Respect for this principle entails:

- Treating animals with regard for their innate dignity as sentient creatures
- Avoiding 'instrumental' uses of animals
- Maintaining human dignity in our treatment of other sentient beings

The principle attempts to capture the notion that animals have a right to be treated fairly, according to their 'dignity' as sentient creatures, thus extending to them a right analogous to that accorded to all fellow humans. It underlies the concept of 'animal rights', e.g. as espoused by vegans who see no distinction between our ethical duties to animals and to humans, but it is also acknowledged by many others who do not share the absolutist positions of vegans, or of some vegetarians, but recognise lesser, but nevertheless significant, obligations to animals.

In addition, for many people, it captures a need to assert their humanity in the ways they treat other sentient, but non-human, beings. According to this view, excessively 'instrumental uses' of animals, or lack of due respect for them as living beings, demean us as much as they do them. Objection to the 'instrumental use' of animals is sometimes questioned on the grounds that we are not usually troubled that we often use other people instrumentally, e.g. when we hire a taxi or seek dental treatment. The difference clearly lies in the reciprocal nature of the process, because we enter into an unwritten contract with our cab driver or dentist, that is generally perceived as 'fair'. The idea that in using animals we should enter a 'notional contract' with them, in which we undertake to ensure them a 'good life and a gentle death' in return for the benefits we receive, was explored in our last report.[96]

There is clearly much overlap with the principles of respect for animal welfare (3.7) and behavioural freedom (3.8), but respect for intrinsic value might be invoked under conditions in which neither of these two principles appears to be involved.

A matter of particular concern to some people is the patenting of animals produced by means of modern biotechnologies such as GM. It is argued that the claim for human invention in relation to living organisms violates the belief in a divine creator. And even for those who do not hold standard religious views, patenting can be seen as a significant step in the further commodification of life, or a reduction of the intrinsic value of life to merely economic considerations.

How well is this principle currently respected?

There are several instances where the principle is infringed. For example, selective breeding of turkeys means that they are now incapable of natural mating, so that use of artificial insemination is virtually universal.[97] This undermining of their natural capabilities, while it might not cause suffering, offends their intrinsic value. Animals bred for productivity often have grossly abnormal anatomical conformations, such as Belgian Blue cattle, which exhibit double muscling. This also has welfare consequences because such animals cannot deliver calves normally but are subjected to Caesarian section.

Breeding programmes in several farm species now routinely employ manipulative procedures. A common example is multiple ovulation – embryo transfer (MOET), which entails injecting animals with hormones to increase the ovulation rate (up to 20 fold), further hormone injection to induce luteolysis, artificial insemination, 'flushing' embryos from the cow's uterus, and embryo transfer to hormone-treated recipient cows (sometimes involving surgery). This highly instrumental use of the animals shows little respect for their intrinsic value.

Commercial application of the techniques of GM and cloning to farm animals does not appear to be an imminent prospect, although GM fish seem to be closer to this objective.

According to EU law[98], inventions shall be considered unpatentable where their commercial exploitation would be considered contrary to public order and morality (Article 6.1) or where the processes involved "are likely to cause (the animals) suffering without any substantial medical benefit to man or animal, and also the animals resulting from such processes" (Article 6.2d). Such procedures might be said to undermine the animals' intrinsic nature. But it has been suggested that such constraints are not necessarily very restrictive.[99]

More respect for the principle might be achieved by:

- Encouraging wider recognition of the implications of the 1999 Treaty of Amsterdam which requires that animal sentience and welfare are recognised in the implementation of EU legislation
- Stringent regulation of biotechnological procedures which, by treating animals in a highly instrumental fashion, threaten their intrinsic value

[96] See note 81
[97] MAFF (1995) Report of the Committee to consider the ethical implications of emerging technologies in the breeding of farm animals. London: HMSO
[98] EC Directive 98/44/EC on the legal protection of biotechnological inventions. Official Journal L213, 30.07.98. pp. 0013-0021
[99] Noiville C (1999) in 'The future developments in farm animal breeding and reproduction and their ethical, legal and consumer implications.' eds Neeteson A-M et al. EC-ELSA project 4th Framework Programme. Utrecht, The Netherlands, pp.15-33

3.10 Ecosystem: conservation

Respect for this principle entails:

- Diminishing risks of environmental pollution (due to existing practices)
- Avoiding risks of future pollution (e.g. from prospective practices)
- Rectifying harm already caused to the ecosystem

The idea that the Earth functions as a single organism (named Gaia, after the Greek goddess), and that we need to respect limitations in its ability to adapt to changes induced by human activity, was elaborated by James Lovelock.[100] Many industrial activities adversely affect the ecosystem, and modern agriculture is culpable in many respects, particularly through the high levels of chemical application.

The rationale for use of agrochemicals, such as pesticides, fungicides, herbicides and artificial fertilisers, is that they increase yields and produce better quality products more cost effectively. But use of all chemical materials carries a degree of health risk, to people, animals and/or the ecosystem. The argument that aggregate benefits of using them outweigh the overall risks is short-sighted. It takes insufficient account of the fact that the risks are not evenly shared (e.g. for people living downwind of crops which are aerially sprayed) and that it is usually impossible to quantify risks accurately, since people's sensitivity to them may be very variable. The 'cocktail effect' of numerous chemicals interacting is also impossible to assess.

The essential problem was identified in the 1980s by David Pearce and colleagues. They pointed out that environmental goods and services and the general functions which environments serve (e.g. as a waste sink) are not invariably bought and sold in the marketplace. So, if the allocation of resources were left to market forces, it would tend to overuse the services of natural environments. Thus "In order to ensure a better allocation of resources, one that at least tries to correct the bias implicit in the unfettered marketplace, it is important to have some idea of what the environment is 'worth'." To achieve this they advocated a 'contingent valuation method', that asks people what they are prepared to pay for a benefit, and/or what they are willing to receive in compensation to tolerate a cost. The value of this approach can be summarised as follows:

- Trying to put money values on environmental quality emphasises that it is not *free*
- Trying to value environmental services forces us into rational decision-making
- We appreciate that many things cannot be valued in money terms
- A system that allocates resources according to economic values (i.e. consumer preferences) must take account of the positive economic values for environmental quality[101]

How well is this principle currently respected?

Although total application of pesticides is less than at their peak in the 1980s, Harvey wrote in 1997 that "upwards of 11,000 tons of active ingredient – the raw chemical compound – are still being poured over British cereal crops each year. The total for all farm crops is 21,000 tons (and with) hundreds of individual products officially cleared for use, it is impossible to predict the long term impact on arable ecosystems of either the individual chemical or the pesticide cocktail."[102]

Inevitably, high levels of chemical application sometimes result in serious pollution, as when eight tonnes of phosphorus fertiliser entered the Exe estuary in Devon from just four fields of winter wheat,[103] or when the herbicide atrazine exceeded EU drinking water standards in 11% of samples taken from 3,500 sites in England and Wales.[104]

Every year, UK farmers apply 1.5-2 million tons of nitrogen (in the form of nitrate fertilisers) to the land, resulting in up to 300,000 tons of nitrates being leached into rivers. Consequently nitrate levels in inland groundwaters often exceed the EU statutory limit of 50mg/litre, particularly in the intensively farmed areas of eastern England.[105]

A recent study attempted to estimate the total external costs of UK agriculture in terms of a) treatment or prevention costs (to clean up the environment and restore human health to comply with legislation) and b) administration and monitoring costs (Box 2).

[100] Lovelock J E (1979) Gaia: a new look at Life on Earth. London: OUP
[101] Pearce D et al (1989) Blueprint for a Green Economy. London: Earthscan, pp. 51-7; 80-1
[102] Harvey G (1997) The Killing of the Countryside. London: Jonathan Cape, p.133
[103] Royal Commission on Environmental Pollution (1996) Sustainable use of soil. London: HMSO
[104] National Rivers Authority (1995) Pesticides in the aquatic environment. London: HMSO
[105] See note 102, p.148

Box 2:
External costs of UK agriculture

Costs were assessed for damage to:

- Drinking water, e.g. due to pesticides, fertilisers and zoonoses in the water, pollution and eutrophication
- Air, e.g. due to ammonia, methane, carbon dioxide and nitrous oxide
- Soil, e.g. due to erosion, losses of organic matter and carbon dioxide
- Biodiversity and wildlife
- Hedgerows
- Bee colonies
- Human health due to pesticides, nitrates, microorganisms, antibiotics and BSE/CJD.

The conservative estimate was that these amounted to £2.34 billion p.a. (for 1990-1996), with a range of £1.15 – 3.91 billion.

The mean figure in Box 2 amounted to 89% of average net farm income, and £208 per hectare of arable land and permanent grassland p.a.[106]

However, according to a recent analysis: "a developed country like the USA could reduce pesticide use by 50% without a substantial loss in either profits or crop production. (The) use of pesticides is cost effective only if most of the social costs or externalities are ignored."[107]

The significant cuts in greenhouse gas emissions that have been called for urgently by the Intergovernmental Panel on Climate Change and the recent Royal Commission on Environmental Pollution are sure to have a major impact on the way food is grown and distributed. For example, intensive livestock systems will be under pressure to reduce methane emissions. A more widespread effect is likely to be the increased costs of transportation as Government measures to reduce emissions are stepped up, possibly by introducing carbon quotas, direct taxation of road fuel in the UK and/or international action to tax aviation fuel.[108]

More respect for the principle might be achieved by:

- Introducing a farm assurance scheme which improves standards of environmental conservation and/or promoting existing systems with such standards, such as organic farming and IFM
- Introducing the 'polluter pays' principle by imposing taxes on use of pesticides, fertilisers etc
- Introducing the 'provider gets' principle by rewarding environmental benefits delivered

[106] Pretty J N et al (2000) Agricultural Systems 65, 113-136
[107] Shrader-Frechette K (1991) in 'Ethics and Agriculture' ed. Blatz C V. Moscow: University of Idaho Press, pp. 426-33
[108] Woodward L (2001) Farming and food – the future. Elm Farm Research Centre. www.sustainweb.org

3.11 Ecosystem: biodiversity

Respect for this principle entails:

- Maintaining faunal and floral biodiversity
- Preserving rare breeds
- Maintaining and fostering human cultural diversity

Biodiversity can be distinguished at three different levels: ecosystems, species and genes.[109] It has become an important issue since the realisation of how varied life on earth is, coupled with concerns that threats to its diversity might adversely affect the resilience and stability of the ecosystem. Moreover, it has recently been recognised that biodiversity has significant economic value.[110] Perhaps most importantly, loss of biodiversity may reduce the options for future evolution. Of course, beyond these practical concerns, the loss of species such as birds and butterflies also represents an impoverishment of human enjoyment of the natural world.

Human society is also diverse, and the ways we have adapted to the different ecosystems on Earth has contributed to mankind's cultural diversity. We all depend on biodiversity – of microorganisms essential for soil fertility, of plants and animals used for food and shelter, of forests for absorbing carbon dioxide and protecting land and water supplies – but poor people are the most dependent on this resources and the most vulnerable when it is lost.

Genetic diversity promotes healthy crops, due to several factors. For example, polyculture of different species within the same field makes more efficient use of resources such as light, groundwater and nutrients; while genetically diverse mixtures of single crops prevent the epidemic spread of diseases and reduce the selection pressure on pathogens.[111] A recent report demonstrated the dramatic effects on yield and on susceptibility to rice blast, the major disease of rice, of planting genetically diversified rice crops in Yunnan Province, China. Disease-susceptible varieties planted in mixtures with resistant varieties showed an 89% greater yield and 94% less severe effects due to blast than when grown in monoculture. Interspecific crop diversification thus provides an ecologically sound approach to disease control that is effective over a large area.[112]

The Convention on Biological Diversity, signed at the Rio Summit in 1992, recognises that development and the elimination of poverty are the overriding priorities for developing countries, and that all states have rights as well as responsibilities for their own resources (Box 3). A supplementary agreement to the Convention, the Cartagena Protocol on Biosafety, was introduced in January 2000. It seeks to protect biodiversity from the effects of any risks posed by organisms resulting from biotechnology.[113]

Box 3:
The United Nations Convention on Biological Diversity
Some key points

- Biological diversity is crucially important for evolution and maintaining life sustaining systems of the biosphere
- Conservation of biological diversity is the common concern of humankind
- States have sovereign rights over their own biological diversity
- States are responsible for conserving their biological diversity and for using their biological resources in a sustainable manner

How well is this principle currently respected?

Globally. Traditionally, economic analysis has failed to take account of the true value of biodiversity, and much has been lost because of the drive to increase agricultural production, both to meet the excessive consumption of the rich and the pressing needs of the poor. The outlook for many in the developing world is bleak. For example, "70% of the world's rural poor rely on livestock, many of which are adapted to local conditions and diseases (but) with a third of breeds threatened by extinction, there is a major risk to the food and financial security of the poorest families."[114]

In the UK. There is evidence that agricultural practices have seriously affected biodiversity: in the UK over 100 species were lost in the last century.[115] Birds are a good indicator of the health of the wider environment, so the 40% decline in populations of 20 farmland species since 1980 is a graphic illustration of the problem.[116] Recent research indicates, for example, that skylark densities and breeding success are lower under conventional farming regimes; that intensification of farming has led to reduced populations of grey partridge and corn bunting; and that pesticide use alone affects 24% of declining species of European conservation concern (SPECS) through indirect effects on food supplies, while direct toxic effects threaten 7%.[117]

The Countryside Agency states that "There have been major losses of downland, heathland, flower rich meadows, hedgerows and hedgerow trees, ponds... and a steep decline in the numbers of characteristic farmland birds and butterflies."[118] Although some losses are being stemmed and in the case of hedgerows and ponds possibly being reversed, "over much of the countryside the landscape and wildlife remain impoverished."

[109] European Federation of Biotechnology (2001) Biodiversity: the impact of biotechnology. Delft: EFB
[110] Stork N E (1995) in 'Issues in Agricultural Bioethics' eds Mepham T B et al. Nottingham: University Press, pp. 205-214
[111] Cherfas J (1996) in 'Food Ethics' ed Mepham B. London: Routledge, pp. 40-2
[112] Zhu Y Y et al (2000) Nature 406, 718-722
[113] Convention on Biological Diversity (1992). www.biodiv.org/biosafety
[114] DFID (2001) Biodiversity: a crucial issue for the world's poorest. London: DFID
[115] DEFRA (2001) The UK Biodiversity Action Plan. www.defra.gov.uk
[116] DETR (2000) A better quality of life: a strategy for sustainable development for the UK. www.detr gov.uk
[117] Crompton T and Hardstaff P (2001) Eat this: fresh ideas on the WTO agreement on Agriculture. Sandy: RSPB
[118] See note 27

However, the passing of the Countryside and Rights of Way Act (2000) promises radical improvements in the protection of wildlife. In particular, the new legislation introduces additional safeguards for the most precious wildlife habitats (Sites of Special Scientific Interest – SSSIs) involving protection and proper management of SSSIs, a legal obligation to implement the Rio biodiversity convention and tightening of existing laws protecting wildlife. According to Friends of the Earth, the Act "is the single most important piece of legislation concerning the preservation of wildlife in England and Wales since 1981."[119] Nevertheless, the Act and its package of policy measures cannot deal with all the threats to biodiversity, which are still encouraged by massive subsidies for industrial agriculture.

Conversion to organic farming could help reverse the decline in wildlife which has resulted from intensive practices, although with only 2.55% of UK land under organic management the overall impact is currently small. Evidence from 23 studies conducted in Europe over the last 13 years, shows that for organic lowland farms, in comparison with matched conventional farms, there were:

- 60% more arthropods that comprise bird food, three times as many non-pest butterflies and up to five times as many spiders in the crop area
- Up to twice as many species of spider in cereal fields
- 25% more birds at the field edge, over 40% more infield in autumn/winter, over twice as many breeding skylarks and, on average, more breeding yellowhammers
- On arable fields, almost 60% more wild plant species and twice as many species of rare or declining wild plant species
- Moreover, the biomass of wild plants in arable fields (including rare and declining species) was five times greater[120]

Even so, the report's author explains that the results are likely to have underestimated the beneficial impacts of organic farming on biodiversity and abundance for several reasons.

More respect for the principle might be achieved by:

- More Government support for work with multilateral agencies, such as the World Bank, EU and UN institutions, to ensure that funds and policies promoting biodiversity in the developing world are given higher priority
- More strenuous efforts, through the UK Biodiversity Action Plan, and building on the Countryside and Rights of Way Act (2000), to encourage environmentally-sound farming practices
- Introducing a farm assurance scheme/s which improves biodiversity and/or promoting existing systems with such standards, such as organic farming

[119] Friends of the Earth (2000). www.foe.org.uk
[120] Azeez G (2000) The biodiversity benefits of organic farming. Bristol: Soil Association

3.12 Ecosystem: sustainability

Respect for this principle entails:

- Increased use of renewable resources
- Decreased use of non-renewable resources (e.g. fossil fuels)
- Preservation of life supporting resources, such as soil and water

Sustainability was perhaps most famously defined by the Bruntland Commission as "meeting the needs of the present without compromising the ability of future generations to meet their own needs"[121] but many other definitions have been proposed. All would seem to address the perceived need for employing agricultural systems that sustain the Earth's growing population by maintaining the viability of the biosphere. Practices that use renewable or nonrenewable resources at rates that cannot be replaced by renewable resources, or that pollute the environment at rates exceeding the Earth's capacity to degrade, recycle or absorb them, will prove unsustainable.

Soil is a critical resource but, because nutrient depleted land cannot support the vegetation needed to prevent erosion by wind and water, top soil is being lost at an alarming rate. The global loss of soil due to water erosion alone is estimated as 75 billion tonnes p.a.[122] As well as land degradation due to erosion, adverse chemical changes result in acidification, salinisation and contamination, while structural changes due to compaction and waterlogging are a result of flawed irrigation systems and use of heavy machinery.[123] The effects of such changes are not always immediately apparent, but undermine the whole concept of sustainability.

About 8% of UK greenhouse gas emissions are directly due to agriculture, predominantly through release of methane and nitrous oxide.[124] But farming also produces dust and smells, and contributes to acid deposition. In fact, farming's contribution to acidification has become an increased proportion as other sectors have limited their emissions.[125]

In a sense, respect for this principle encompasses the concerns discussed under conservation and biodiversity (3.10 and 3.11) because in addition to their immediate importance they are also prerequisites of a future sustainable system. Two contrasting strategies have been proposed to meet our obligations to ensure sustainability.

Low external input sustainable systems. Advocates of low external input sustainable agricultural systems (LEISA),[126] notably organic farming, argue that their holistic approaches meet all these criteria. Reliance on organic manures in place of artificial fertilizers, prudent use of a very limited range of pesticides and extensive application of crop rotations, have achieved demonstrable benefits in enhancing soil fertility and maintaining biodiversity. For example, in a recent major study comparing organic, integrated and conventional systems, the organic system ranked first in environmental and economic sustainability, the integrated system second and the conventional system last.[127]

However, it needs to be emphasised that this approach is not incompatible with the introduction of appropriate technology. But the lack of investment in research and development on sustainable agricultural systems is certain to have limited the effectiveness of current practices. For all their undoubted virtues, current practices certified by the organic movement should not be regarded as the last word in sustainable agricultural development.

'High-yield conservation'. A challenge to LEISA systems is that proposed by advocates of high external input agriculture (HEIA), which, it is claimed, will yield adequate food from small land areas, allowing biodiversity to flourish in larger areas of uncultivated landscape. A prominent advocate of this approach, Dennis Avery (Director of the Center for Global Food Issues in the USA), cites the increased yields of GM crops, use of the hormone BST in dairying, and reliance on herbicides rather than ploughing to remove weeds, as features of this strategy.[128]

The logical extension of this scenario is the 'farm of the future' proposed by Jan Broeze, at Wageningen University in the Netherlands.[129] Designed for a site near Rotterdam (mainland Europe's largest port), this would occupy six floors on a land area 1km by 400m (totalling 200 hectares), which would house "300,000 pigs, 1.2 million chickens, tens of thousands of fish and a giant vegetable growing area all under one roof." The idea is that by 'clustering' production enterprises, environmental efficiency will be maximised, so that the "siren words 'ecological' and 'organic' are attached to it." Not surprisingly, the latter claim is rejected by the international organic movement (IFOAM).

Even in its own terms, the quest for ever-more industrialised food production, is a risky strategy. With its reliance on high inputs of energy in the form of fossil fuels, on problematical new biotechnologies and on monocultural crop and animal production systems that are vulnerable to unforeseen disease outbreaks or climatic changes, this particular hi-tech approach appears quite unsustainable. Moreover, the external costs (in terms of damage to health and the environment) generated by British agriculture, mostly HEIA, amount to £1-2 billion p.a.[130] Only 3% of the £3 billion EU subsidy received by the UK is currently allocated to environmentally sensitive farming schemes.[131]

[121] World Commission on Environment and Development (1987) Our Common Future. Oxford: OUP
[122] See note 117
[123] Pierce J T (1990) The Food Resource. Harlow: Longman
[124] DETR (2000) Climate Change- the UK programme. www.detr.gov.uk
[125] Office of National Surveys (2000) UK Environmental accounts. London: ONS
[126] See note 117
[127] Reganold J P et al (2001) Nature 410, 926-30
[128] Avery D T (1999) in 'The Meat Business' eds Tansey G and D'Silva J. London: Earthscan, pp. 15-22
[129] Davidsottir S (2001) Farm of the future (22.08.01) The Guardian
[130] See note 106
[131] Pesticide Action Network UK Review (2000). London: PAN

But for many people, this approach also represents a denial of the wholeness of creation or (in more prosaic terms) the 'integrity of biosphere'. While it is undoubtedly true that, collectively, mankind is now in many respects in the position of 'Earth manager', there is clearly a requirement for us to exercise our responsibilities with due respect for the ecosystem as a whole and for future generations, human and non-human. Excessive manipulation, with possible irreversible consequences, to suit contemporary human life styles, does not accord with respect for this principle.

A major threat to sustainability of the environment results from the unnecessary use of nonrenewable resources and the resulting pollution this causes due to transportation of food over long distances (so called 'food miles'). For example, beef is imported into the UK from as far afield as Argentina, Brazil and Australia; and chicken is imported from Thailand and Brazil, while at the same time being exported to Hong Kong, Russia and South Africa. The utterly wasteful nature of this process is emphasised by those cases in which the same food is simply 'swapped', e.g. in the case of the Netherlands, to whom the UK exported 33,000 tonnes of poultry meat in the same year as we imported 61,400 tonnes of poultry meat from the same country.[132]

Achieving sustainable systems would seem to require a combination of measures that discourage environmentally harmful practices, encourage better practices and reward achievement. In many respects, these are summed up by the advice to 'think globally and act locally'.

More respect for the principle might be achieved by:

- Encouraging localised food systems which entail local sourcing by supermarkets, catering businesses and rural businesses more generally, as well as 'rural partnerships'
- Introducing effective farm assurance schemes which improve standards of environmental sustainability and/or promoting existing systems with such standards, such as organic farming and IFM
- Introducing the 'polluter pays' principle by imposing taxes on use of pesticides, fertilisers etc
- Introducing the 'provider gets' principle by rewarding environmental benefits delivered

[132] Lucas C (2001) Stopping the great food swap. www.greenparty.org.uk

4. THE CURRENT GUIDING PRINCIPLES

Since none of us can foretell the future (which will be determined not only by how we choose to act now, but also by unforeseen and uncontrollable events), we all tend to rely on trusted guiding principles. Some appear to be held with passionate conviction, although typically their adherents claim only a 'realistic' basis for their beliefs.

4.1 Questioning the principles

Among the current prominent guiding principles are i) the necessity of participating in a competitive global market, and ii) the critical importance of new technologies. Let us consider each in turn.

4.1.1 Global competitiveness

In 'A new direction for agriculture', the Government set out its long term strategy for the development of an industry that must be "competitive, diverse and flexible, that must respond better to consumer wishes, that must be more environmentally responsible, and that must play an integral part in the wider rural economy."[133] The theme was taken up by Lord Haskins, the Government's rural affairs coordinator, who recently claimed that "The best of all possible worlds is that where European agriculture can be competitive, this competitiveness should, within environmental limits, be maximised."[134] This will mean that many farmers will go out of business in the next few years, so that "farms will get bigger and that's a good thing".[135] He estimated that the number of UK farms will be halved by 2020.[136]

Indeed, facilitating the loss of farm jobs is apparently Government policy, for it was announced that "The government plans a reduction in the number of farms and farmers as part of a recovery package for British agriculture in the wake of the devastating foot and mouth outbreak".[137] On the other hand, the establishment of the Small Business Service in May, 2000,[138] which champions the interests of small businesses, reveals a fundamental inconsistency in Government policies.

In the EU as a whole, 500,000 farm jobs are lost each year, and the situation is likely to get much worse when the EU is enlarged to include countries of eastern Europe, where farming accounts for a much higher proportion of the total workforce than in the UK.

There have, of course, been efforts to ease the financial difficulties of EU agriculture through various reforms to the CAP. The McSharry reform of 1992 cut some support prices, introduced direct income compensation for some farmers, and established 'set-aside' as means of controlling production. The Agenda 2000 reforms, introduced in 1999, reformed the quota system, reduced compensation payments and made some provisions for rural development measures. And in November, 1999, at the Berlin meeting, further regulations were introduced to offer opportunities for the environment and rural development. But despite these reforms, very little has changed. The cost of the CAP remains formidable: at 40 billion euros it is over half the total EU budget.[139]

Many of the problems of our present day agriculture have been caused, or at least exacerbated, by the CAP, which has:

- Encouraged large intensive farms instead of smaller sustainable ones, with loss of farming livelihoods and consequent breakdown of rural society
- Generated massive surpluses which have been dumped on the world market to the detriment of developing countries
- Damaged the environment through excessive use of agrochemicals, heavy mechanisation and hedge removal
- Entailed costly remedial environmental measures offsetting the claimed advantage of the 'cheap food' produced
- Led to factory systems of animal farming which seriously reduce animal welfare, and
- Contributed to global warming through unnecessary animal, food and feed transport

According to Dr Caroline Lucas MEP, the central problem faced by UK farmers is "the curse of enforced global competitiveness... Farmers are being asked to perform two mutually exclusive tasks simultaneously. They are being asked to achieve ever greater levels of international competitiveness – to be ever leaner and meaner against international costs. At the same time they are being asked to achieve ever higher levels of social, environmental and animal welfare conditions". But, she asserts "It simply isn't possible."[140]

A stark example of the appeal to 'economic necessity' is the foot and mouth disease mass cull programme. Even in its own terms, the policy seems hard to justify, since protecting an export market of £310 million[141] has already cost over £5 billion, but it also takes no account of the suffering of farmers, of rural businesses or of over 4 million slaughtered animals.[142] Persisting with the mass cull, when the more humane alternative of vaccination remained unexplored, is an example of fervent adherence to a guiding principle that is now highly questionable.[143]

The global market also has features that cast a shadow over the worthiness of embracing it enthusiastically in its current form. Thus, while global production reaches ever higher levels, economic power is increasingly concentrated in fewer and fewer hands. The net worth of the world's 200 richest people is greater than the combined income of 41% of the world's population (about 2.5 billion), while "In the food and agriculture sector, mergers and acquisitions are rapidly reducing to single digits the number of companies involved in input production, food processing and food retailing."[144]

[133] MAFF (1999) A new direction for agriculture. www.maff.gov.uk
[134] Haskins C (2001) The future of European rural communities (17.07.01). www.fpc.org.uk
[135] Wintour P (2001) Blair forces farming shake-up (6.08.01) The Guardian
[136] Perkins A and Wintour P (2001) Special report (13.08.01) The Guardian
[137] Lucas C (2001) Transforming CAP to LEAP – the localist European agricultural policy. www.go-local.org
[138] DTI (2000) Business Support. www.dti.gov.uk
[139] See note 137
[140] See note 137
[141] Midmore P (2001) The 2001 foot and mouth outbreak: economic arguments against an extended cull. www.soilassociation.org.uk
[142] See note 90
[143] Woods A (2001) in 'A Countryside for all: the Future of Rural Britain' ed. M Sissons, London: Vintage, pp. 99-121
[144] FAO (2001) Ethics in food and agriculture. http://www.fao.org

Some of the most perceptive comments on the problems of global competitiveness have been made by the American farmer and essayist, Wendell Berry. He points out that: i) 'efficiency' in manufacture always means reducing labour costs by replacing workers by cheaper workers or machines; ii) competition entails a simple paradox, in that when competitors compete without restraint, their numbers reduce – ultimately to one; and iii) the global economy is based on cheap long-distance transport, which destroys local production capacities, local diversity and local economic independence. Yet "despite its obvious moral flaws and its dangerous practical weaknesses, the idea of the global free market economy is now the ruling orthodoxy of the age."[145]

4.1.2 Agriculture and technology

In a recent report 'A strategy for UK agriculture', the NFU states that "Agriculture and horticulture must stay at the forefront of technology – as they have been throughout history. Science and technology are part of the solution; they are emphatically not the problem."[146]

While recognising that enormous benefits have flowed from the application of certain technologies, this assertion is open to serious questioning. If modern technology is taken to be the application of scientific knowledge, then in principle it is possible for some applications to be better than others; indeed, for some to be good and others bad. So the notion that 'staying at the forefront of technology' is invariably desirable could be said to take insufficient account of the ways in which modern science and technology are conducted, and of the results they are capable of yielding.

The focus of scientific enquiry and the ways scientific knowledge is exploited in technology are products of the socioeconomic and political environments in which they are practised. In today's western industrialised society, market forces determine which biotechnologies are developed, but three features of these forces are that they respond: i) to 'wants' rather than needs; ii) to purchasing power rather than entitlement; iii) impulsively, to transient impulses (as revealed in stock market fluctuations) rather than with circumspection.[147] Consequently, there is no guarantee that technologies which yield short-term economic benefits for some might not prove to be, in the longer term, unsustainable, unsafe, liable to adversely affect the environment and farm animals, and detrimental to everyone.

Nobel Prize winning economist, Amartya Sen, claims that "the market mechanism is a basic arrangement through which people can interact with each other and undertake mutually advantageous activities."[148] Nevertheless, there are many examples of technologies which have passed the 'market test' but which a majority of people would reject if appropriate mechanisms existed.

A prime example is BST (bovine somatotrophin), a GM growth hormone used in the USA and elsewhere to increase milk yields of cattle. Before it was introduced in the USA, opinion polls showed that "most consumers were concerned about BST. Most people wanted milk from BST-supplemented cows to be labelled, a significant number indicated they would decrease consumption of milk if the milk came from BST-supplemented cows, and a majority said their image of milk would change if BST was involved."[149] Yet, the USA licensed BST in 1994, with no labelling requirements. In the EU the use of BST was banned following the publication of reports on the animal welfare and public health implications of its use,[150] but the USA regards this as contrary to WTO rules.

The fundamental problem of modern industrialised agriculture has been identified as the technocratic approach which has undermined integrated farming. Thus, "While cattle are concentrated on big specialist units their waste products will always pose a threat to rivers and streams. Arable crops grown in isolation from livestock will continue to need heavy inputs of chemical fertiliser, much of which will inevitably end up damaging the environment. It is the way farming is organised that makes it destructive."[151] Moreover, "market domination by a handful of yield enhanced varieties will further standardise the landscape and concentrate production in the hands of large farmers all of whom will rely on the chemical companies for their seed."

Putting it another way, "the present-day agro-industry treats living systems as if they were simply advanced chemical systems, applying the methods of industrial chemistry to landscapes as a whole."[152]

4.1.3 The new agricultural biotechnologies

The USA is currently exerting considerable pressure on the EU to permit the growing of GM crops. In 2000, the global area devoted to GM crops was 44.2 million ha, with most being grown in the USA. Yet in the EU, optimism about the ability of GM to improve the quality of life has decreased. The most recent Eurobarometer survey shows that in 1999, only 31% of Europeans canvassed thought the application of modern biotechnology to food should be encouraged (compared with 44% in 1996), and only 37% thought it 'morally acceptable' (compared with 50% in 1996). Most agreed with the statements that 'GM food is basically against nature', 'if something went wrong with GM food it would be a global disaster' and 'GM food is simply not necessary'.[153]

Technologies proposed for animal agriculture, which have received overall endorsement in a recent Royal Society report (although "further research will be needed before developments aimed at growth modification have commercial application"),[154] are discussed critically in an earlier Food Ethics Council report.[155] But in the USA, research in this field appears to be pressing ahead regardless of reservations expressed elsewhere. For example, a recent report states that "Companies in the US are developing the technology needed to 'clone' chickens on a massive scale. Billions of chickens could be produced each year to supply chicken farms with birds that all grow at the same rate, have the same amount of meat and taste the same. This is the vision of the US's National Institute of Science and Technology, which has given Origen Therapeutics of Burlingame, California and Embrex of North Carolina $4.7 million to help fund research."[156]

[145] Berry W (2001) Resurgence 206. www.gn.apc.org/resurgence
[146] National Farmers Union (2001) A strategy for UK agriculture. www.nfu.org.uk
[147] See note 65, pp. 101-119
[148] Sen A (1999) Development as Freedom. London: OUP, p.142
[149] Smith B J and Warland R H (1992) in 'Bovine somatotropin and emerging issues' ed Hallberg M C. Boulder: Westview Press, pp. 243-64
[150] EC (1999) Consumer Policy and Health Protection Directorate reports on 'Animal welfare aspects of BST use' and 'Public health aspects of BST use'. Brussels: European Commission
[151] See note 102, p.151
[152] The author is indebted to Colin Tudge for this insight.
[153] Eurobarometer 52.1 (2000) The Europeans and Biotechnology. Brussels: INRA -ECOSA
[154] Royal Society (2001) The Use of Genetically Modified Animals. Policy document 5/01 London: Royal Society
[155] See note 81
[156] Graves A (2001) Cloned chickens on the menu (15.8.01) New Scientist

Another proposal from research in the USA is to increase piglets' weight at 2 months by 40% as a result of injecting them at three weeks of age with "a package of DNA that boosts the production of the pig's natural growth hormone"[157] (as if the 'natural hormone' made it acceptable!).

It is apparent that most of the pressure to adopt these kinds of modern agricultural technology is due to their actual, or prospective, adoption in the USA. But in the UK, and EU more generally, there is considerable resistance to following this route. Many express serious reservations about the safety and ethical acceptability of applying such forms of biotechnology to farm animals.[158]

4.1.4 These principles are flawed

We conclude from this brief analysis that the two guiding principles examined are seriously flawed. By adopting such thoroughgoing, monetary, utilitarian criteria they lack the vision and sensitivity to respond to other critical concerns. At worst, they concentrate on only one cell of the Ethical Matrix (3.1 in Table 1), that concerning the profits of the agricultural and food industries, and even so, only partially. Moreover, apart from numerous concerns over their impact on the physical environment and animal welfare, discussed in this and earlier reports,[159] they are dubious strategies because they are shaped by the commercial imperatives of a very few, very powerful multinational companies. Progressively, as mergers and takeovers occur, the companies increasingly wield enormous power over the food supply and physical environments of billions of people throughout the world, and exert a disproportionate influence over how the rules governing the food system are formulated.

This criticism does not, of course, seek to dismiss the importance of the financial consequences of our actions: they are clearly important. But profitability is not a 'good' that is sought regardless of other considerations. Few would admit that violence, theft, cheating or deceit could justify the quest for profitability (though the practices are hardly uncommon). In fact, the common morality maintains the diametrically opposite position: it is only when duties of respect for others (entailing honesty, fairness and civility) have been observed that profitability is deemed ethically acceptable. These so-called 'deontological principles' are represented in the Ethical Matrix as 'respect for autonomy and justice'. By according them priority a threshold might be established, above which the utilitarian consideration of costs and benefits might legitimately take effect.

Nor does this analysis deny the importance of scientific understanding and its appropriate technological application. Both of these are important ingredients in addressing current and future social and environmental problems. But they need to be used according to a holistic understanding of the issues, and not, as so often in the past, without regard to wider ethical concerns.

In an earlier report, we considered the possible role of GM crops in UK agriculture. While expressing considerable reservations about the acceptability of certain GM crops then under consideration, we wrote that our approach "should not be interpreted as suggesting that we are opposed in principle to the techniques of genetic engineering." We continued: "The essence of the case presented is that the acceptability of any technology must be dependent on an appropriate ethical analysis... The idea that such matters can be 'left to the market' is not a viable option in the complex, rapidly changing and highly interactive world in which we now live."[160] We reiterate those opinions and recommend that they be considered in the light of recent authoritative statements on the value of applying the Precautionary Principle to biotechnological advances.[161]

[157] Coghlan A (1999) More is Less (18.12.99) New Scientist p.22
[158] Eurobarometer 46.1 (1997) The Europeans and Modern Biotechnology. Brussels: European Commission Directorate XII
[159] Food Ethics Council reports. Southwell: FEC
[160] See note 81, pp. 30-1
[161] EC (2000) The Precautionary Principle. COM 2000; Royal Society of Canada (2001) Elements of Precaution. Ottawa: RCN, pp. 194-210

5. AN ETHICAL VISION OF FUTURE AGRICULTURE

Numerous recent reports have sought to define the goals of future agricultural, food and rural policies, and have usually done so by combining the desire for economically efficient food production with wider environmental, social and animal welfare objectives. These are important aims, but adherence to the twin mantras of 'global competitiveness' and 'technological advance' carries the risk that they will become an 'albatross around the neck', that will stifle all hope of real progress.

We suggest that a different approach is needed, one that starts with bedrock ethical principles and explores how they might be implemented to achieve agreed ends in the challenging environment of modern technologically-oriented society. This, then, is an explicitly democratic approach, driven by grass root values, rather than submissive to decisions handed down from on high.

The assessments in sections 3.1-3.12 appealed to widely accepted principles embodied in the common morality. Numerous areas of concern were identified and proposals made for how respect might, in theory, be increased for the specified principles. The point has now been reached where we need to pull these separate strands together to see what sort of food system they imply.

But it is worth recalling here what the ethical assessments framed by the Matrix seek to achieve. **A two-stage process is involved. First, application of the ethical principles to the different interest groups aims to encourage an attitude of care, in which we 'place ourselves in others' shoes' to assess their situation.** While not too difficult for other human groups, this demands a degree of imaginative insight for farm animals, and may seem to become highly abstract in the case of the ecosystem. Even so, in the latter case, not only are sentient beings often involved but we are also considering matters that impact directly on present-day and future human life. The essential point is that, since the interests of members of all these groups are claimed, by some people at least, to be 'ethically relevant', the Matrix provides a structure for giving those interests due attention.

The second stage entails examining the different assessments and 'weighing' them to decide how they should affect our overall judgements. For example, most people consider it right to put human interests above those of animals but they rarely put *all* human interests, however minor, above *all* animal interests. Nor does, say, profitability necessarily take precedence over fair trade or ecological biodiversity. **The Matrix seeks to encourage rational decision-making by making explicit the ethical concerns for each interest group, and showing how they have been weighed.**

The signposts for an ethically acceptable vision of the future agricultural industry can thus be encompassed by the principles tabulated in the Ethical Matrix. In our view, this vision should entail fostering the development of thriving rural communities by ensuring the viability of autonomous farming enterprises; delivering safe, acceptable food to all through practices that respect the welfare and dignity of farm animals; while conserving the biodiversity and sustainability of the natural environment.

Because authentic ethical principles are impartial, the vision applies to the whole global community, in which equity and harmony are universal objectives and enmity needs to be transformed into creativity and personal fulfilment. Moreover, our obligations to future generations demand that we act as conscientious stewards of the biosphere and wise tutors to our descendents.

5.1 Ethical signposts for a reformed agriculture

We identify below some key areas where we believe that appeal to the identified principles suggests that radical changes are required. However, most of these proposals are not new. In reviewing recent reports of certain other organisations, we find that several of their recommendations on specific issues concur with our own assessments. In such cases, we believe that our endorsement of these recommendations adds to their impact, and we are pleased to attribute them to their original sources. (Space constraints prevent us from listing all such sources.)

5.1.1 Adequate, safe, acceptable food

Clearly, ameliorating the problems of hunger and malnutrition must have the highest priority, wherever they occur. The nations of the world are, however, highly interdependent and vulnerable to global influences. If anyone doubted that, the events of September 11th 2001 have made it plainly evident. We can no longer seek to protect exclusive national interests, shored up behind our geographical borders. The global, cultural and economic divisions need to be addressed urgently, with compassion and justice. Indeed, Prime Minister Tony Blair, in his speech to the Labour Party Conference in September 2001, while condemning terrorism unreservedly, recognised the interconnectedness of global unrest and the shameful poverty of certain less economically developed countries (highlighting Africa).

In pursuing the objective of ameliorating such problems, we commend those elements of Oxfam's Strategic plan (Box 4), referring to the universal human right to a sustainable livelihood.

Box 4:
From Oxfam International's Strategic Plan 2001-4

Among the objectives in securing sustainable livelihood are:

- People living in poverty will achieve food and income security as well as a greater protection of, and control over, the natural resources on which they depend
- A shift in focus away from subsistence production towards empowering poor people to participate in and benefit from a wider range of economic opportunities
- Giving priority to land, forests, water and other natural resources ...will help poor people, especially women, to compete in local and international markets on a fair basis, to achieve food and income security, to sustain their own livelihoods and to build secure futures for generations to come

www.oxfam.org/strategic_plan

The 'food futures' outlined in Box 1 indicate some of the options from which we have to choose. If guided by the principles illustrated in the Ethical Matrix (Table 1), humanity will need to choose a food system that can fulfil the vision we have outlined.

Critically, food is not only vital for human survival but, almost uniquely, its production both profoundly influences, and is influenced by, the environment in which it is produced. Furthermore, the cultural significance of food is incomparable. A reductionist conception of food, which views it principally in terms of nutrients or 'mouth feel', ignores its full significance. Because there is a risk that our 'cultural food heritage' is being submerged in a fast-food culture, in which uniformity, low price and convenience are regarded as paramount, measures need to be taken to introduce new educational programmes on the production, preparation and cultural dimensions of food. As importantly, public understanding of the links between diet and health needs to be developed, at least in part through the efforts of the Food Standards Agency.

5.1.2 Reform of Common Agricultural and other Policies

There is now widespread agreement that the CAP needs to be radically reformed. Our assessments suggest that it should be transformed into a new system of aid that encourages sustainable land management practices, and switches payments away from production support and towards rural development. According to the Countryside Agency, "by 2010 at least one third of the CAP budget should be allocated to agri-environment schemes, one third to rural development and only one third to income/ market support."[162]

Reform of WTO rules is also necessary. The issues discussed under the terms of the Agreement on Agriculture are many and complex, but there is some justifiable concern that in the ongoing negotiations trade liberalisation will take precedence over consideration of how to use trade policy to achieve more sustainable and equitable outcomes. The ethical assessments of this report lend support to the call for trade policies to be "construed such that they do not infringe upon the rights of countries which opt to privilege sustainable local production for domestic food security over and above production of commodities for world markets."[163]

5.1.3 Sustainable land management

The ecosystem demands our respect for several reasons. Firstly, it is the very basis of our current life-support system; secondly, its rich variety of life forms is at risk of being irretrievably damaged by careless human action; while, thirdly, we owe it to our descendents to bequeath them a world fit to live in. It follows that we have moral obligations to protect the ecosystem from the polluting effects of excess herbicides, pesticides and fertilizers; to protect the biodiversity of wild and domesticated species (and the cultural diversity of human societies); and to ensure sustainability of the biosphere by prudent use of the earth's resources (both non-renewable and renewable).

Support for the agricultural and food industries thus needs to be conditional on their delivering the appropriate goods, in terms of high quality food products and environmental benefits. The current plight of the farming community, brought about unforeseen circumstances such as FMD, and the disease Rhizomania (which is currently having a devastating effect on sugar beet yields) clearly needs Government assistance. However, it has to be recognised that some farms will be unable to become financially viable again, and Government assistance will be needed to help displaced farmers leave the industry, e.g. in terms of affordable housing.[164]

But a more fundamental problem is concerned with how "a very powerful small group of retailers and a comparatively weak fragmented supply base should commercially relate to each other." Nicholas Saphir's suggestion of a formal code of engagement, backed by regulatory enforcement deserves serious consideration.[165]

As a plan to achieve many of the objectives of sustainable land management, we commend the recent strategy proposed by the Countryside Agency, which involves four guiding principles (see Box 5).[166]

[162] See note 28
[163] See note 117
[164] Arthur Rank Centre (2001) The Future of Farming. www.arthurrankcentre.org.uk
[165] See note 33
[166] See note 28

Box 5:
Countryside Agency's principles of sustainable land management

- Multifunctionality: land managed to deliver a wide range of benefits as well as food and fibre
- Sustainability: reflecting the principles of sustainability
- Integration: land management integrated with rural development
- Subsidiarity: a framework reflecting regional and local needs and aspirations

'Subsidiarity' is EU-speak for what is now more usually expressed by the term 'localisation', a key element of attempts to revive rural communities. In many ways its objectives are captured by the phrase 'Eat the View', the Agency's programme to encourage consumers to buy local products. Evidence for its effectiveness is provided by results of a recent New Economics Foundation survey which showed that locally-produced food generates almost twice as much income for the local economy as the same amount spent in a supermarket.[167]

Localisation, however, could aim higher than simply seeking to satisfy a niche market. It should entail local sourcing by supermarkets, catering businesses and rural businesses more generally, as well as 'rural partnerships', for example by combining the post office, local store and public house –thus making the 'pub the hub'.[168] As this report was going to press, an important initiative relating to localisation was launched with the publication of an IGD/Business in the Community report. This is part of a campaign that seeks to encourage business involvement in three areas: i) building enterprising communities; ii) strengthening market towns; and iii) supporting local sourcing.[169]

As well as encouragement for sustainable practices, there is a strong case for penalising unsustainable practices. An example of this approach, based on the 'polluter pays' principle, is the imposition of pesticide or fertiliser taxes. The best example of a successful pesticide tax is probably Sweden, which thereby achieved a 65% reduction in pesticide use.[170] The advantages of this approach deserve serious consideration in the UK.

However, such strategies may not be enough, and some form of licensing that lays down acceptable levels of food safety, animal welfare and environmental protection might be the soundest way of improving overall standards. The assurance schemes introduced in recent years by supermarkets, manufacturers and farmers have sought to achieve this end, but the multiplicity of schemes has proved unsatisfactory. Such considerations have suggested the desirability of introducing a single farm certification scheme, possibly drawn up in negotiations between DEFRA, the FSA and the industry.[171]

5.1.4. Organic farming

The most prominent form of farming to meet many 'assurance scheme' requirements for sustainability and animal welfare is organic farming, which is experiencing a marked increase in popularity. The fact that in the UK 75% of organic food is currently imported emphasises the need for its much greater adoption. In this light, the ethical case for localisation of food production, processing and consumption becomes incontestable.

The recently launched Organic Action Plan provides practical steps by which a target of 30% of UK land being under organic management might be achieved by 2010 (see Box 6). Currently, the UK, with 2.55% of land converted to organic farming, is seventh in the EU table (with Austria top at 7.96%). In view of the considerable social and environmental benefits of conversion, there is an overwhelming case for continuing payments to farmers following conversion. This is the practice in 13 EU countries, and average payments in Italy are as high as £440/hectare.annum.[172]

At the same time, there is a need for much greater investment in research into organic and other holistic systems in general. And that research needs to be publicly funded to ensure that it is directed to public rather than corporate benefit. Holistic, sustainable systems are undoubtedly based on sound ecological principles but exploiting them more effectively needs a deeper and broader knowledge base.

Box 6:
Elements of the Organic Action Plan

- Increase the organic research budget to 30% of the Government's R&D budget
- Make market planning, advice and training an integral part of organic conversion
- Introduce regional initiatives for the development of marketing cooperatives
- Adopt organic purchasing policies for public bodies (schools, hospitals, prisons etc)
- Develop a network of standards within EU member States
- Apply different support rates for different sectors, reflecting costs of conversion

[167] Countryside Agency (2001) Local products key for rural local economies. www.countryside.gov.uk
[168] See note 25
[169] IGD/Business in the Community (2001) Local Sourcing – Growing Rural Business. Watford: IGD
[170] Pretty J (1998) The Living Land. London: Earthscan, p. 281
[171] See note 33
[172] Sustain (2001) Organic targets. www.wsustainweb.org

5.1.5 Integrated Farm Management (IFM)

But organic farming is not necessarily the only approach and it may prove too difficult an option for some farmers to implement. Hence there is also a need to promote sustainable systems which deliver many of the benefits of organic farming, even if they do not meet all its exacting standards. IFM is one such approach. LEAF (Linking Environment and Farming) defines IFM as 'a whole farm policy providing the basis for efficient and profitable production which is economically viable and environmentally sustainable. IFM integrates beneficial natural processes into modern farming practices using advanced technology. It aims to minimise environmental risks while conserving, enhancing and recreating that which is of environmental importance'.[173] LEAF (which is part of a European wide movement, EIF) promotes IFM through its demonstration, research and self-assessment auditing programmes. As Pretty notes: "...farmers can cut inputs with the adoption of ICM (integrated crop management) or integrated farming system technologies without losing out on profitability. It used to be thought that more sustainable agriculture, whether organic or integrated, would mean substantial reductions in both crop and livestock yields and economic returns. However, this generalisation no longer stands."[174]

The Countryside Agency's vision for 2020 is that "approximately two thirds of farms will be managed either according to the principles of ICM or have organic status."[175] In either case, such an approach will lay less emphasis on mass production for global markets and much more on processing and marketing produce in the areas in which it is produced.

5.1.6 Respect for farm animals

In considering our ethical obligations to farm animals, account needs to be taken of recent legal changes in the EU. The 1997 Protocol on Animal Welfare (an amendment to the Treaty of Rome) first recognised animals as sentient beings rather than merely as agricultural products; while the 1999 Treaty of Amsterdam now requires that animal sentience and welfare are recognised in the implementation of EU legislation. Some governments have gone even further: for example, the Swiss Federal Constitution relating to the genetic modification of animals (and indeed, of plants and other organisms) has been amended to take into account "the dignity and integrity of living beings."[176]

Concerns for sentience and dignity are novel departures from the traditional emphasis on animal welfare, but they reflect a growing recognition that the latter omits important aspects of the common morality. It might, after all, be claimed that reducing an animal's ability to experience pain (e.g. using techniques of genetic modification) would enhance its welfare – which could be true for some conditions in which animals are kept. But the clearly unacceptable logic of that approach is that transforming animals into highly prolific 'vegetables', untroubled by the sensation of pain, would be a laudable objective.

In the Matrix, respect for animal welfare and behavioural freedom are complemented by concerns for animals' intrinsic value. Respect for the latter is clearly inconsistent with modern biotechnologies that involve extensive surgical operations on animals that are not sick, that increase productivity by hormonal implantation or injection, or that regard sentient beings as mere cogs in a meat machine (as envisaged in the proposals for 'billions of cloned chickens'.)[177]

But, of course, animal welfare and behavioural freedom do matter, and sections 3.7 and 3.8 suggest several ways in which improvements are urgently needed. Specific requirements will include reduced stocking densities, especially of broiler and laying poultry, and increased numbers of skilled stockpersons. There is a need to introduce training courses and only to allow qualified persons to become registered farmers/farm workers.[178]

Moreover, the recent report from FAWC suggests that many improvements are required in the animal welfare provisions of current farm assurance schemes.[179] For example, the report recommended, among others, that: i) greater emphasis is placed on eliciting evidence in the form of welfare compliance on assured farms... by expanding the scope of information collected during SVS inspections; ii) demonstrable stockmanship competence should be an integral part of farm assurance schemes; iii) the Government consider ways of directing future agricultural policy so as to encourage greater participation in farm assurance schemes.

Some technological developments could facilitate the achievement of improved animal welfare. Increased use of breeding programmes which curtail yield/growth increases but enhance resistance to disease (e.g. mastitis resistance in cattle and resistance to leg deformities in broilers) are now feasible using marker-assisted breeding,[180] while a move to housing systems which allow healthy growth of animals could remove dependence on prophylactic antibiotic administration.[181]

A reassessment of the need to transport animals is required, because gathering and mixing them at livestock markets may not be so necessary in the age of internet communications, while the quality of the in-vehicle environment could be greatly improved.[182] Re-establishment of small abattoirs will mean shorter journey times.[183]

The RSPCA has recently put forward a 10-point plan, looking towards more sustainable and welfare-friendly farming systems. Some of their recommendations are shown in Box 7, and we endorse these as consistent with our assessments and recommendations.

It seems clear that organic farming standards ensure significantly higher animal welfare than is common in non-organic systems. However, they are not immune to criticism, since they allow certain practices that might adversely affect welfare, such as castration.

[173] LEAF (2001) www.leafuk.org
[174] See note 170
[175] See note 28
[176] Mepham B (2000) J Ag Env Ethics 13, 65-78
[177] See note 156
[178] RSPCA (2001) The Future of Farming: ten point action plan. Horsham: RSPCA
[179] Farm Animal Welfare Council (2001) Interim report on the animal welfare implications of farm assurance schemes. London: FAWC
[180] Sandoe P et al (1999) Animal Welfare 8, 313-28
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[183] See note 182

Box 7:
RSPCA: The future of farming

- Institute detailed welfare standards (e.g. as in its own assurance scheme for 'Freedom Foods')
- Introduce a monitored and enforced licensing system for all premises where farm animals are kept
- Review the system of multiple livestock journeys in the UK, and reduce the EU 'maximum journey time ' to 8 hours
- CAP payments that encourage intensification should be de-coupled from production and made dependent on welfare standards
- CAP funds should be transferred from commodity support to encourage welfare-friendly management and environmentally-friendly sustainable agricultural methods

5.1.7 Research Priorities

There has always been a strong link between what happens in research laboratories and what happens in the agricultural and food industries. The 'men in white coats' have for long had a critical influence on our food and the rural environment.[184] But the era of *supply-side economics* has now been supplanted by one of *demand-side pressure*. Food price is no longer people's sole, or main, concern; and in democratic societies public opinion ought to have a more significant influence on Government research priorities.

In line with the strategy for sustainable farming systems, a broad consensus is now growing that industrialised countries need to embrace 'dematerialisation' of their economies, by making intensive use of information and skills rather than natural resources.[185] This will entail, among other things, reducing use of resources such as fisheries and natural forests, and of carbon emissions, by a factor of more than ten in coming decades. It could also entail use of knowledge-based precision farming.[186] Our assessments (3.10-3.12) suggest that LEISA systems (typified by organic farming) are sound approaches to achieving this objective. But there is a real need for much greater investment in research on these systems to enable us to use them more effectively.

5.1.8 The pains of structural adjustment

However, it needs to be appreciated that in moving from conventional to more sustainable systems, there will be some losers as well as winners. Farmers, as a whole, should be 'winners', because their gross margins will improve, their environments will become healthier, and they should have increased business opportunities. Rural communities and food consumers should also benefit. But the major 'losers' are likely to be the input companies, who currently supply fertilisers, pesticides, feedstuffs and seeds. Food manufacturers, processors and retailers will be less significant losers.[187] In achieving radical change there will be 'pains of structural adjustment': the justification for desiring such change is that without it the pains are likely to prove terminal.

5.2 Conclusion

We suggest that respect for the principles outlined in the Ethical Matrix is much more effectively achieved by adopting holistic, localised systems, in which reliance on agrochemical inputs is drastically reduced and there is emphasis on sustainability, diversification and rural regeneration. A significant hurdle to the introduction of such systems is a conceptual inertia that can only envisage solutions to problems in terms of existing industrial technology. Because most conventional hi-tech approaches (e.g. GM crops) are, in one sense, 'business as usual', their advocates often take comfort in the belief that their worthy exhortations to apply them to needy causes are all that can, realistically, be done.

But ethics cannot be simply about accommodating to existing power structures, in the hope that they might offer a few crumbs of comfort to the needy. Rather, the appeal to ethics demands that we 'tell it how it is', uncomfortable as that might be. In reality, a large part of the reason why the hungry are hungry is that others have too much – not just food but also power and control over energy, material resources and health provision. The average person in the UK and other economically developed countries consumes and pollutes at vastly higher rates than those in less economically developed countries. So, "we cannot hope to uncover the root causes of hunger until we appreciate the degree to which economic policies pursued by the wealthier nations undermine the development of poorer nations".[188] It follows that enabling the hungry to have sufficient will entail curbing the surfeits of those with excess.

It is clear that a global sustainable food system will not be easy to achieve. But it should be a more just and secure system, building on indigenous knowledge and skills, life enhancing and respectful of diversity and cultural heritage.

[184] See note 65, pp.154-69
[185] UNDP (1998) Human Development Report. New York: OUP, p.81
[186] See note 69, p. 105
[187] See note 69, p. 303
[188] Bennet J (1987) The Hunger Machine. Cambridge: Polity Press, p.13

6. RECOMMENDATIONS:

The following recommendations are derived from the report's ethical assessments (section 3), which are themselves based on the framework called the Ethical Matrix. **Whether or not our readers reach the same conclusions, we recommend an approach that starts from a consideration of commonly accepted ethical principles and then apply them to the relevant interest groups.**

The recommendations are not necessarily directed at specific political actions but rather, in several cases, at promoting the changes in attitude that are a prerequisite of effective policies. Although they are listed under four separate headings there is much overlap between the different interest groups, and the headings chosen are sometimes arbitrary.

The agricultural and food industries

1. **A much greater priority should be accorded to respect for the ethical principles of autonomy and justice in formulating policies on agriculture and food, rather than relying on a simplistic utilitarian (cost/benefit) agenda that emphasises 'lean efficiency'.** The latter inevitably results in an increasingly unequal industry, which is detrimental both to farmers and the wider society. Trivial increases in productivity introduced with the aim of maintaining a competitive edge may produce severe and irreversible adverse effects on farmers' economic viability.

2. **The pros and cons of introducing an obligatory licensing system for all farms merit consideration. Moreover, the serious imbalance between the fortunes of most of those working at the production end of the food chain compared with those at the retailing end needs to be rectified, possibly by introducing a new code of practice enforced by regulatory powers.** The recently introduced code, approved by the DTI, appears too weak and ambiguous to provide a satisfactory basis for a necessary new relationship of trust between suppliers and retailers.

3. **More resources need to be allocated to encouraging greater numbers of farmers to convert to integrated, sustainable farming systems such as organic farming and integrated farm management, and support should continue following conversion.** Specifically, the Government should produce an Organic Action Plan (as do eight other EU countries) entailing increased research, adoption of organic purchasing policies for public bodies and providing sufficient funding to enable a significant degree of conversion to organic systems over the next decade. This might not only aid rural regeneration by providing greater employment opportunities but also prove cost effective in terms of reduced pollution and use of nonrenewable resources. Moreover, encouragement should be provided for the establishment of appropriate new rural industries, which might effectively reutilise redundant farm buildings and land.

4. **Policies should be introduced to promote localised food systems, in which local inputs are used, there is nutrient recycling, cooperation between farmers to use shared resources efficiently, and encouragement for direct sales, farmers markets and alternative marketing schemes. Supermarkets should recognise the economic opportunity to market regional foods that are sourced locally, and caterers to buy local and speciality products.** These measures will reduce the 'anonymity' and 'food miles' of the food chain, and wasteful import/export regimes. Apart from the social and economic advantages of localisation, there will be significant reductions in the use of transportation energy and in greenhouse gas emissions.

5. **A much greater proportion of Government funding for agricultural research and development should be invested in research on sustainable food production systems, achieved, at least in part, by a reversal of the reduced public funding in this field.** Such systems promote farmers' autonomy, animal welfare, food safety and the efficient use of both non-renewable and renewable resources. The current emphasis on inappropriate hi tech approaches almost inevitably concentrates power in the hands of large multinational corporations, which might not only undermine many farmers' independence but also risks compromising citizens' freedom of choice.

6. **Recognising that preserving the heritage of our countryside depends on thriving rural communities, more resources need to be directed to maintaining or rebuilding the educational, cultural and commercial infrastructure of rural societies.** Further reduction in the number of farmers is likely to exacerbate the current trend towards gentrification and suburbanisation of the countryside and its transformation into a 'commuter dormitory'.

Citizens

7. **The attainment of universal global food security is a priority demanding urgent action on an international scale.** The problems of economically developed countries pale into insignificance by comparison with the hunger and malnutrition experienced by many in less economically developed countries. Higher priority should be assigned to the needs of the poor, for example, through increased investment in the programmes of the UK Department for International Development, through WTO negotiations concerning the regulation of international trade, and in support of the development programmes of the FAO.

8. **In the wake of so many problems in livestock farming (such as the outbreaks of BSE, FMD, swine fever, Salmonella and Campylobacter), there is a need to ensure more openness about the workings of the food chain, and thereby rebuild consumer trust.** This will entail the adoption of good practices, effective traceability and comprehensive labelling, but it also means that agricultural and food enterprises need to earn public trust by being more open to inspection (subject, of course, to necessary biosecurity measures).

9. **Further measures are needed to rectify the adverse effects of poor diet on public health. An important role for the Food Standards Agency is to instigate public education campaigns stressing the link between food and health. At the same time there is a need to investigate policy measures to ensure that the poorest sections of society have access to affordable, healthy food.** Not only does diet-related illness lead to premature deaths and much personal suffering but the prevalence of conditions like coronary heart disease and obesity place an enormous financial burden on the State.

10. **Ways need to be found to incorporate into the school curriculum increased consideration of the nutritional and cultural significance of food and of the ways in which it is produced and marketed.** The bioethics of food production and consumption should feature across a number of core subjects in the National Curriculum, which would highlight these important issues without adding an additional burden to the curriculum.

Farm animals

11. **The Government should use its influence in the EU (and other relevant bodies, such as the OIE) to press in forthcoming negotiations for the inclusion of animal welfare among the 'non-trade concerns' to be taken into account under Article 20 of the WTO Agreement on Agriculture.** There is also a need to examine the full legal implications of the recent EU Protocol which requires that farm animals be treated as sentient beings rather than agricultural products.

12. **Technological developments need to be directed away from productivity promotion and towards support for sustainable food systems and better animal welfare.** For example, marker assisted breeding can be used to produce animals less susceptible to disease, while improved housing and management practices removes the perceived need for prophylactic medication.

13. **We recommend a form of regulation of new animal biotechnologies, such as GM and cloning, that is based on comprehensive ethical assessments coupled with application of the Precautionary Principle, in place of the standard 'cost/benefit' approach.** Persisting with the increasing application of inappropriate hi-tech approaches may pose a threat to humane systems of farm animal husbandry which respect both the welfare of animals and their intrinsic value as sentient beings.

14. **Recognising that animal welfare is seriously affected by unnecessary transportation of animals, within and between countries, there is a need for the live export of animals to be stopped, for supermarkets to source meat supplies from an increased number of local abattoirs, and for use of livestock markets to be markedly reduced.**

The ecosystem

15. **New approaches should be introduced which incorporate full cost environmental accounting, operating the 'polluter pays' principle and switching of CAP subsidies from production to environmental benefits (the 'provider gets' principle).** The common understanding of the term 'efficiency' takes inadequate account of external costs, in terms of environmental pollution and degradation, reduced biodiversity and use of non-renewable resources.

16. **Increased measures should be taken to stem the loss of species and reverse the declining numbers of, for example, farmland birds and butterflies.** The progress made as a result of the introduction of the Countryside and Rights of Way Act (2000) should be built upon, and measures taken to fully implement the provisions of the Convention on Biological Diversity.

17. **Should commercial GM crops be introduced into the UK, measures would need to be introduced to ensure that separation distances protect farmers who wish to farm organically, or in conventional systems which exclude GM incursion, from adventitious contamination of their crops. Urgent consideration should be given to establishing a liability regime for GMOs and other products and processes involved in agricultural and food technologies.** According to the recent AEBC report, "a threshold limit of 0.1%" of GM material in nominally non-GM crops "would not be impossible to achieve for most if not all crops", and we recommend that research be instigated to discover how this might be ensured in practice.

18. **Greater financial support is needed to sustain non-agricultural rural resources.** Tourist attractions such as hill and coastal areas, woods, lakes and wildlife parks all need appropriate investment to ensure their value is preserved and not diminished by overuse and misuse. But apart from such 'honey pots,' measures are also needed to link rural tourism with environmental goods produced by farmers.

FOOD ETHICS
COUNCIL
THE INDEPENDENT COUNCIL FOR ETHICAL STANDARDS IN FOOD AND AGRICULTURE

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ANNEX 1

Background Ethical Theory

- Respect for ***wellbeing*** corresponds to issues prominent in utilitarian theory, which characteristically employs a form of cost/benefit analysis to decide on what it is right to do. Most famously articulated in the eighteenth and nineteenth centuries by Jeremy Bentham and John Stuart Mill, it can be epitomised as 'The greatest good for the greatest number'. While this might seem a worthy objective, naïve forms of utilitarianism suffer from several defects e.g.:

- They depend on predictions of outcome (which might be wrong) and (fallible) assessments of who or what counts in the cost/benefit analyses
- They can be held to justify gross inequality (as long as the majority 'are happy') or even crime (stolen money distributed to the needy)
- Goods and harms are often incommensurable (how can we weigh the safety of a new hair shampoo against the suffering of animals used to test it?)

- Respect for ***autonomy*** corresponds to the notion of 'rights' advanced in the eighteenth century by Immanuel Kant, which appeals to our responsibilities and duties to 'treat others as ends in themselves': in essence, the Golden Rule: 'Do as you would be done by'. For Kant, ethics was about respecting others as individuals, not calculating costs and benefits (i.e. in contrast to utilitarianism, it applies irrespective of outcome).

- A major defect of this approach taken in isolation is that there is no rule by which to decide how to prioritise duties, e.g. the duties to protect others from harm and to tell the truth – if, as may happen, telling the truth is a cause of harm.

- Respect for ***justice*** corresponds to Rawls' notion of 'justice as fairness'. For Rawls (a contemporary US philosopher): "Justice is the first virtue of social institutions, as truth is of systems of thought. A theory, however elegant and economical, must be rejected or revised if it is untrue; likewise laws and institutions, no matter how efficient or well arranged, must be reformed or abolished if they are unjust".*

- However, there is a problem in defining what fairness means: e.g. does it mean that goods should be distributed according to need, or ability, or effort?

- In practice, all these theories are likely to contribute, to varying degrees, to people's attitudes on what should be done in specific circumstances. It seems unlikely that anyone could consistently act as an out-and-out utilitarian; or as an out-and-out Kantian. Instead, each of us blends these theories (consciously or unconsciously) with intuitive responses, and subject to cultural influences, to achieve what has been termed a 'reflective equilibrium'.

** Rawls J (1972) A Theory of Justice. Oxford: Oxford University Press*