JOURNAL OF FARM MANAGEMENT VOL.13. No. 11. PAGES 765-778

CONFERENCE PAPER

VISIONS AND NIGHTMARES – FARM POLICY IN THE 21ST CENTURY[1]

Professor Sir John Marsh

Agricultural policy has been driven by a succession of visions that have been the political orthodoxy of their day. Unhappily, the 'promised land', when it is reached, or even before, proves to have serious drawbacks, resulting at least in part from actions taken to deliver the vision. Eventually these accumulate into 'nightmares' that mean new visions have to be articulated. Sadly some of the nightmares may continue long after the vision has changed.

Key words Agricultural policy, Common Agricultural Policy, food security, climate change

Past visions and current nightmares

In 1947 economically weak and facing food shortages the vision for UK agricultural policy was increased domestic food production. Policy provided a system of price guarantees and deficiency payments and a variety of subsidies designed to encourage the modernisation of systems of production.

By the early 1960's, as the budget cost of price support rose in response to falling world prices, a nightmare was developing. Government needed to cut the cost of support, the industry facing higher costs and falling prices faced the possibility of falling real income. The government's response was to set standard quantities that limited the exposure of the Treasury and discussions with foreign suppliers on how they might limit their exports to us.

This nightmare was dispelled by accession to the European Communities. The UK had to apply a Common Agricultural Policy (CAP) already agreed among the six founder members. Its impact on the UK was initially masked by a surge in world commodity prices. However, when world prices fell, the CAP ensured that the cost to the UK consumers and the UK economy of imported food would remain high. Import taxes and levies became part of the 'Own Resources' of the Community. Community preference diverted imports from lower cost third countries to EU producers. The result was a net transfer of income to the budget and the farmers of the EEC. This provided a rational case for producing more at home. The white paper, Food From Our Own Resources (1976), encouraged expansion. For farmers, it seemed they had woken from the nightmare of falling prices and declining support to an even more attractive vision of growth.

In a remarkably short time the nightmares returned. By the early 1980's it became clear that the budget cost of removing and exporting EEC surplus was out of control. Food was being dumped in foreign markets, undermining the economies of low cost producers and local farm economies. The image of butter and wheat mountains; milk and wine lakes was a public relations disaster. Quantitative restraints were imposed in the form of quotas or

1. This lecture - the 2009 Geoff Alderman Memorial Lecture - was given at the UK National Farm Management Conference, Oxford, November 2009, and is printed by kind permission of the Conference organisers.

limitation on the area of crop that could be planted or milk that could claim support. These sought to curtail output whilst maintaining internal prices. They protected the budget but concealed growing economic cost, as resources remained trapped in uncompetitive activities in farming.

The nightmare of surplus was not the only cause of disturbed nights for farmers. Rachel Carson had published 'Silent Spring' in 1962. By the 1980's a growing and potentially devastating critique emerged from lobby groups who saw farming damaging the countryside, destroying habitat, polluting water, abusing animal welfare in intensive housed systems of livestock production and destroying traditional and well-loved rural landscapes. Changes in farming practice also reduced labour requirements and undermined the social fabric and economy of many rural villages. New farm buildings, erected without planning scrutiny, were claimed to have an unfavourable impact on the built rural environment.

From their status as national heroes who had saved the people from starvation, the farming community began to be seen as greedy subsidy addicts, ruthless exploiters of the countryside driven only by a wish to make money. This totally misleading caricature was exploited by growing, well-organised and funded lobbies. To secure their goals these organisations sought to position themselves as spokesmen for the whole community. They claimed to be unsullied by the pursuit of profit and sought to influence and, to a growing degree, came to influence agricultural policy. An analysis of the composition of advisory bodies over the 1980's and 1990's demonstrates how successful they were in claiming status and power as stakeholders in agricultural policy.

The nightmare was deepened by concerns about the safety of food. Incidences, of food poisoning and diseases related to food, were traced back to the farm. Outbreaks of food poisoning and the BSE crisis raised questions about the housing and feeding of intensively reared livestock. A growing animal welfare lobby sought to regulate livestock production. Health lobbies added their critique. Our food contained too much fat, too much salt and sugar; we ate too much, particularly too much meat.

What was attacked was the whole ethos of modern farming – its use of fertilisers and plant protection chemicals; its breeding policies with their focus on productivity; the elimination of many traditional varieties that could not compete.

For some the solution was 'organic farming'. This vision united anxious environmentalists and anxious food consumers. It became the darling of the Media. The myth that conventional food was unhealthy was widely propagated. For the affluent urban chattering classes organic goods were presented as a moral choice. Some went further, claiming that the world's need for food could be only met at an acceptable environmental cost through organic farming. To be organic became fashionable. In the media and in government attention it received coverage vastly out of proportion to its contribution to the nation's food supply.

What was clear was that the post war 'vision' of expansion had become for too many people a 'nightmare' and new visions were in demand.

Trade liberalisation

Not all the visions that direct agricultural policy emerge within the industry itself. One of the most important and challenging visions has been the wish to establish free trade. Following the devastation caused by protectionism in the 1930s, the vision of a world trading within an agreed system of most favoured nation rules was embodied in GATT and later developed into WTO. This vision was based on the concept of comparative advantage. It has been reinforced by evidence that economic growth is strongly associated with growing international trade. The agricultural policies of the US, EU and Japan became critical obstacles to the success of the overall negotiating process. Agricultural reform became inevitable as the political and economic costs to other sectors of the economy resulting from failure to liberalise agriculture outweighed the risks of confronting farm lobbies. Thus from the 1990's we moved into a world of decoupled support, of green, amber and red boxes and a commitment in WTO to move forward with the liberalisation agenda.

Not all agree. The vision of a world in which goods and services could be traded freely across frontiers is contested. It has been compromised by anxieties about impacts on farmers in developed countries, by developing countries seeking preferential terms to allow their economies to grow more rapidly, by anxieties about the power of multi-national corporations and about the process of globalisation. Such doubts have been strengthened by the fragility of the financial system, demonstrated in the current 'credit crunch'. Today, international meetings about trade and economic policy are besieged by a diversity of pressure groups, many of which seek to achieve changes in national policies through international agreement. These include environmentalists and aid agencies. The current DoHA round has as one of its major objectives making trade fairer for developing countries. Such negotiations provide a forum for many who are anxious about the process of globalisation and the power of enterprises beyond the control of either national governments or international institutions. These groups range from 'anti-capitalism' to those anxious to help the weakest in the world by reducing debt.

For those who have worked for the liberalisation of trade, the nightmare is not that negotiations have stalled but that the world trading system will slip backwards into regional and national protectionism. For them today's nightmare is the recurrence of mutually destructive trade restrictions. These include the recreation of barriers to agricultural trade and the substitution of regional bilateralism for the multilateral approach so painstakingly worked out in GATT/WTO. History suggests that this would not only make for a world that is poorer but one in which conflict is more likely.

Present visions and looming nightmares

As past visions generated nightmares a new vision emerged during the 1990's, a vision of a 'sustainable' agriculture. Quite what this meant depended upon who was talking.

For some it meant an agriculture that could go on for ever, not dependent on finite resources. It could be argued that this was attained by a farming system such as that of the bushmen of the Kalahari. However, the

consequences in terms of consumption, of human comfort and life expectancy were unacceptable. In the rhetoric of political realism sustainable agriculture required the maintenance of the current level of consumption and its extension to a growing world population.

For European farmers and agricultural ministers it meant funding farming to preserve and protect the traditional family farm, 'the European Model of Agriculture'. Less articulated but a necessary implication was that this meant that farm incomes for all farmers would have to rise in line with incomes elsewhere.

For the environmental movement it meant a farming system that gave full weight to the ecological consequences of current and emerging farm practices. Concepts of biodiversity and systems of organic farming became the orthodoxy of the day. Good marketers prefaced their products by the preface 'Bio' and claimed to offer authentic organic food. Those who farmed 'conventionally' were caricatured as ruthless exploiters.

Such plurality of interpretation provided ministers with a political fig leaf. Crucially it shifted policy away from concerns about the efficiency and competitiveness of production. It also undermined the system of publicly funded research, development and technology dissemination built up since the war. Budgets for research now focussed on supporting government policy not the agricultural industry. They were pruned and redirected towards health and the environment.

Policy increasingly embodied a proliferation of detailed regulation of farming and farm practices to reflect priorities that were indifferent about the consequences for production. Animal welfare concerns led to tighter regulations about farming practice and live animal transport. The designation of protected wild animals has allowed some species to multiply imposing increasing costs on productive farming. The right to roam creates hazards for farmers whose animals may frighten or annoy the passer by or where farm chemicals, distributed to control pests and diseases, are involuntarily ingested by the casual visitor. The regulation of applied genetics has not only frustrated its use but made it impractical if not illegal to conduct experiments to discover its potential.

For farmers this vision embodied a nightmare. Policy moved from discrimination in support of farming to suspicion, hostility and regulation. For the wider community too there is a nightmare. NIMBYS of all sorts are now in driving seats. Institutions such as the Environment Agency and Natural England give clients direct access to government and much greater power to determine policy than was enjoyed by farmers at the height of the move to produce more food.

Today land use and the productive capacity of farming is increasingly constrained by special interest groups. In the EU, rural development, an outwardly attractive and progressive notion, has been captured by those who use it protect obsolete, uncompetitive farming structures. Closer to home it has been embraced by those who define development as the pursuit of some ecological nirvana – seldom defined but much praised.

These nightmares emerge from the useful but ill- defined vision of a

sustainable agriculture. They involve a growing, often hidden economic cost to the EU as a whole – a cost represented in part by higher food costs, in part by payments from the Common Budget to farmers, in part by the leverage impact of these policies on national expenditures in support of 'Pillar II' policies and, in a less measurable but potentially large form, from resources trapped in uses for which there is no market or social justification.

To an onlooker it is a scandal that the reformed CAP, said to make it responsive to market prices, far from cutting its overall cost has simply redirected funds to largely to the same people under new labels. The fig leaf is that these expenditures purchase 'public goods'. There is no objective way of deciding what these are, of evaluating them against the costs they impose on society or of determining who actually benefits. The methodology offers a carte blanche for pressure groups to offer sophisticated arithmetic that seems to justify their case. The outcome is a new and growing clientele dependent upon such policies and continued public payments.

Can we do things better?

Our starting point has to recognise the importance of visions as a means by which society can overcome the inertia that prevents change. Without visualising major improvement in the status quo, fears of loss by present beneficiaries are likely to lead to paralysis.

A second observation is that visions are always appropriated by interest groups within society. As implementation takes place governments tend to become dependent upon the people with the 'in depth' understanding of what is needed. Their consent and support is needed both politically and practically. Once given effect, the vision becomes the property of government and as such it will be defended. In effect visions that stem from the priorities of interest groups capture the processes of government. This is dangerous because discordant voices tend to be marginalised or trivialised. The warnings society needs to hear are greatly muted.

For some outside the 'in group' the new vision can rapidly become a nightmare. It absorbs more and more resources, public and private, and both financial and managerial. It tends towards ever more detailed micro-management and it may be seen as delivering little. Articulate critics begin to peck at its weaknesses. Some of the unanticipated costs begin to be evident – for example the impact of field enlargement on wild life or an accelerated exodus from hill and mountain areas as commercial farming is rendered unprofitable.

In due time any vision is overtaken by new anxieties. Different groupings gain the ascendancy and governments at first gradually and then dramatically shift the direction of policy. For those who benefited from the prevailing policy this is nightmare time.

A defect of this vision to nightmare policy process is that specific issues so dominate policy that political and economic balance is lost and avoidable and unintended real costs emerge. The entrenched power of dominant sectional interest groups resist change when, for most people, the signs that a change in direction is required are visible. It seems that government has, for a time,

become the tool by which parts of a community can enact policies on others that do not reflect the overall interest of society. This is not rectified by our two party approach to government. Any party is unlikely to be brave enough to contest the prevailing vision; all they do is to argue about their capacity to do it better.

Can we escape from this? A first escape route an economist might offer is to make all policy subject to a published cost benefit analysis. Such an analysis would have to include market and non-market variables and discount for uncertainties about the future. This might be thought to provide a straightforward answer. It is reassuring that in current policy-making processes considerable use is made of such analyses.

Unfortunately this does not present a definitive agreed escape route. To conduct an adequate cost benefit analysis of complex policies is costly. Impacts in first and subsequent periods may affect differing groups of people, some of whom we cannot visualize. For major policy shifts impacts stretch into decades ahead. By then both the economic and social values of society can be radically different. Further there are areas where the same 'on the ground' change will benefit some and damage others. This cannot be resolved simply in terms of the numbers of people affected. The depth of the impact varies greatly. This is especially difficult when some of the values involved are aesthetic or reflect different visions of society. What is too likely to emerge is an analysis in which the impacts on the articulate are much more heavily weighted than of those who remain silent and who may not even be aware of potential costs or benefits.

This is uncomfortable for policy making. The more detailed the intervention planned, the deeper the bottomless pit of possible impacts, interests and effects becomes. An understandable response is to hive this off to specialist agencies such as the Environment Agency, The Food Standards Agency, the Rural Payments Agency and Natural England. These are defined by areas of concern; they become unrivalled experts in their field, custodians of relevant data, policy planners and administrators. They can intervene with the force of the law and impose severe penalties if their regulations are breached.

The result is that policy is planned and applied by institutions with a relatively narrowly prescribed remit. They naturally become (and may be expected to be) advocates for their territory within government. For the officials what is at stake is not only delivering important goals; but jobs, status and promotion. This is not to doubt either the competence or the integrity of the people involved; experience suggests this is often outstanding. What it does question is whether such single mindedness is compatible with the interest of the public at large. It encourages policy silos and a situation in which related pressure groups develop a symbiotic relationship with relevant government agencies. Both seek to extend their influence and forward their mission.

If nightmares are to be detected and avoided early, then there is a need to reclaim the making, monitoring and administration of policy to central government to ensure it is open to question in Parliament. Satisfactory policy

requires that all the interests that compete for support by government are considered and balanced.

There is a clear role for specialist agencies that research and represent the important territories in which they operate. It is important that they should be in dialogue with all interested pressure groups. In depth understanding must form an essential element in a modern government, where policy reaches in detail into multiple areas. Within the framework suggested here the job of such agencies would be more like that of the governments laboratories – knowledgeable, independent of commercial or political bias, accessible to interested parties, contributing enlightenment to a policy debate that always takes place in an arena where all interests participate.

Shifting the policy process in this direction would make the tendency to micro-management; beloved by all governments, more difficult and more costly. This requires acceptance within the community that governments cannot and should not attempt to put right every fault in economic or social behaviour by businesses or consumers. Acceptance is needed because the costs of attempted intervention often exceed the benefits.

This does not mean that issues that give rise to public concern would be ignored. The most powerful tool in changing behaviour is public opinion. If in the minds of business decision takers it is clear that a specific course of action will lose them market share, political support and give competitive benefits to their rivals, they will respond. Self-regulation can be more potent than administrative intervention that is only partly effective and involves high cost to business and the state. An important role of both official agencies and interest groups is to produce the evidence, including evidence about business behaviour, that informs public expectations. What results may be a less organised, less tidy environment but one in which businesses choose to change because being seen to be out of tune with what the public wants will damage their 'bottom line'.

There is a further lesson to be learned from our experience of visions becoming nightmares. It is that this transition is natural. The appropriate response is not to seek to justify or blame yesterday's vision but to replace it by one appropriate for today. Too often policy stagnates because the people who devised the old vision and those who benefit from it mount opposition to change. That should not be our position. We should value past visions as right for their day but treat them as stepping-stones to an unfolding future. In that future we must accept our duty to create new visions for today.

Emerging visions and potential nightmares.

Visions for agriculture are changing. Sustainability 'visions', have been about having both food and nature. Newer visions embody a Malthusian pessimism. At the centre of this are doubts about our ability to live within the 'global envelope'. Discussion focuses on two broad strands of concern. The first is 'food security'. The second is the threat that human activity will itself destroy much of the capacity of the world to produce food. Heading the list of concerns in this area is climate change. If we are to recognise potential nightmares before they arise it is worth decomposing some of the elements

that make up these generally pessimistic visions.

Food security

Food security is essentially about consumption; the ability of people to acquire the food they require when it is wanted. Most of us do not have the means to produce food ourselves. For us food security depends on the ability to buy what we need – in other words upon our real income. Rich people do not starve and if the UK economy prospers, maintains its relative power in the international market, there is no reason to believe that as a country we will become unable to acquire the food we need, although it may cost more. There will be people within the UK who do not have enough food but the solution to their problems lies in social security rather than in producing more food. In contrast for too many of the world's population food supply is already insecure. Some 854 million people are chronically undernourished. Such people have neither the means to produce nor to buy food. If at a global level food prices rise, then we shall see more tragic scenes of malnourished and starving people.

At the global level shortages of food result in higher prices, readily outpacing the capacity of low income consumers to buy in world markets and creating great pressure for governments with rising urban populations to steer their own farming towards exportable rather than subsistence food production. For most of these countries the agricultural and food industries are the largest economic sector. Their continued growth in efficiency and competitiveness is critical for the overall performance of their economies. However, creating incomes for the rising urban populations of such countries cannot lie entirely within the realm of agriculture or agricultural policy. This needs both economic and political progress that release autonomous market forces to generate higher incomes.

Anxiety about the global envelope fear stems from a belief that if incomes in poor countries grow, the underlying natural resource base will be incapable of supplying the volume of food that will be demanded. This creates a potential nightmare in the form of a vicious circle of economic growth followed by rising real food prices. In rich and middle-income countries rising prices may change eating habits as well as requiring a larger share of income to be spent on food. In poor countries rising prices lead to more malnutrition, hunger and famine.

Forecasts suggest that world population will reach 9 billion by the mid twenty-first century and that real income levels will continue to rise. The nature of the expected population growth deepens concern. Much will take place in countries where the income elasticity of food is relatively high – what will be demanded is not just more food but more animal protein. This makes much higher demands on natural resources than equivalent nutrition from crops. Much of the population growth stems from increased human survival rates. This leads to more elderly people whose demands on the resource base do not lessen but who contribute little to output.

The prospect of food prices rising as a result of economic growth is reinforced by the belief that more agricultural resources will be used to supply

fuel. Demand for energy is strongly income elastic and also price inelastic. Much of the growth in demand will have to be met by sources such as nuclear, coal, wind, sun and tide. However agriculture is likely to occupy a role. The impact on food could be disruptive. Shortfalls in any part of the energy supply system may lead to sudden and substantial surges in demand for bio-fuels. In volatile energy markets such demand may fluctuate once agricultural resources and infra structure are diverted to this market, they may only be returned to food production if food prices rise dramatically.

The demand of rising and more affluent populations for land and water for housing, leisure and transport will add to the pressure on resources for food.

Faced by growing demand and diminished resources the vision that emerges is of world agriculture unable to provide sufficient food, fuel and industrial raw materials to sustain an acceptable standard of living for the expected population. Increasing the productive capacity of farming becomes an important policy goal.

This resurrected importance of production clashes with some current visions driving policy in Europe and North America. That demands food production to operate within a framework of policies designed to protect landscapes, habitats, wild animals and parts of the traditional built environment. As real incomes in these communities continue to grow such constraints are likely to intensify to combat pollution and greenhouse gas emissions. Any reduction in domestic output will be plugged by purchases elsewhere. The impact in terms of food security will be felt by poor people in low-income countries.

There may be more pressing risks to food security in industrialised economies. Modern, urban communities acquire their food in shops and restaurants not as it leaves the farm. The food service and food distribution industries are much larger than farming and are vital to food supply. Food is processed, stored, transported, presented in forms ranging from bulk raw material to ready made meals. The costs of paper and plastic in packaging, of storage and in distribution outweigh the cost of the raw ingredients. Businesses thrive on minimising the level of stocks. A breakdown in delivery can rapidly lead to empty shelves. The fragility of this system is not in the production of raw material food but in its resilience to economic events outside the farming sector.

Gloom is inevitable for those who fit curves to current trends. Malthus writing in 1798 saw growing population leading to poverty, disease and conflict. His iron law of labour was devised at a time when for most people there were few recreational opportunities other than procreation. The first Director General of FAO saw the prospect of a population of six billion as beyond the capacity of the world food system to supply. In fact the outcome of investment in new technology led to oversupply and depressed prices. It is, perhaps, reassuring that the first government economic advisor on agricultural policy, Joseph, offered a more constructive, if limited solution to forecasts of famine by proposing the creation of what we would now call buffer stocks. He had some dream like assistance but the policy he proposed embodied the critical notion that we did not just accept dire prospects as beyond our control

but that we used our brains to adjust our behaviour and safeguard our bellies.

We have experienced a huge increase in our ability to utilise our resources to meet our needs. In the UK had we used the technologies of 1947 to produce our wheat in 2007 we would have required 5.3million hectares rather than 1.3 million hectares. At the yield per cow of 1947 we would have needed 6.4 million cows to provide the milk produced in 2007 by 1.9 million. At the outset we did not know where such increases would come from, indeed we remained anxious about food supplies well into the mid 1950s. What we did do was to utilise the science we had, embody it in practical technologies that worked within the current agricultural system and invest in research to deepen our understanding of every part of this process so that new, more productive technologies came forward.

There has never been a time at which the potential of science to improve the human condition has been greater than today. In the biological sciences we have new understandings of the processes of life, of the relationships between animal and plant characteristics. In the world of electronics we have capacities to communicate, to analyse and to control at increasingly refined levels. As our understanding of the development of human personality grows and we have greater opportunities to communicate we can better recognise and respond to the determinants of human behaviour. None of these developments are without risk but each offers substantial potential to surmount the difficulties we face.

One of the high cost indulgences of the past two decades has been, stagnation in the name of the 'precautionary principle'. It has allowed our fear of bad outcomes from new science to deny the opportunity to secure those that are good. This breeds on a nostalgic hostility to development. The Victorians, for all their faults and mistakes, believed in and encouraged progress. As a result the lot of the poorest people improved in the nation to a degree that would have astonished Malthus.

The vision we need if we are to escape the nightmare of food insecurity must hinge upon a recovery in our belief in our capacity to use science and technology and to modify our human behaviour in ways that make economic growth within the global envelope attainable. No new technology is without risk. We will not avoid this by seeking to shut Pandora's box. In the 21st Century agricultural policy must support innovation, sustain scientific capacity and deliver structural change on the ground. From seeking to preserve the past, whether of farming systems or environmental assets it must focus on building the future.

Climate Change.

Had I listened to my teachers in the 1940's I would now be wearing fur lined boots, have heavy weight duvets on my bed and a set of snow tyres on my car. Expectations for 60 years ahead are quite the reverse – Mediterranean sunshine, a diet of vegetables and wine but little meat and rising prices for properties sheltered from the sun.

This prospect is based on a large body of scientific work that suggests that the world's temperature is rising – and, still more guilt making, that it is rising

as a result of human activity. Like all long run forecasts it is no more valid than the assumptions upon which it is based and there are some respectable scientists, if less favoured by the media, who take a different view. I cannot judge between them on scientific grounds but like governments I have to take seriously the possibility that radical and rapid changes in climate are likely and to adjust policy thinking to take that into account.

The first response of government is to hope it can be stopped. Thus much of the debate has focused on 'mitigation'. Two questions emerge. Will it work and what will it cost?

The assumption that anything done on the scale of the UK will have much impact on global climate seems fanciful. In the context of rapid economic growth major industrialising economies such as China and India, it seems like spitting in the wind. Policies applied across the world, minimally in all the major developed and industrialising economies might work. Much attention is therefore focused on international conferences and the search for agreements such as that achieved, but not fully implemented at Kyoto in 1997. If they produce joint action then some domestic discomfort will be acceptable. However, uneven implementation where the UK is strict but others drag their feet could have the opposite impact. Production could migrate from countries that take mitigating action and countries where rules were less strictly applied.

This does not mean that we should not seek to minimise our contribution to climate change. There are some significant 'win wins' here. Greater efficiency in our use of energy of all sorts lowers both contributions to greenhouse gas emissions and the costs of production. Developing long run secure non-polluting sources of energy may cost more than the least cost way of generating short run supplies now but can be sensibly bought as an insurance against the interruption of imported supplies of oil or gas.

More draconian efforts to reduce emissions, for example, by penalising users of motor transport, raise financial costs for consumers and industry and imply high non-market costs on individuals for whom public transport is at best a very poor substitute. Policies to enforce such high cost strategies can only be justified if they are part of a global strategy that actually does reduce the rate of global warming. How likely it is that such a strategy can be made to work is a matter of political judgement. Past evidence does not give great grounds for optimism.

What is inescapable is that we have to respond to the climate change that is already happening. The total cost to the UK will be influenced by how we do so. This has immediate relevance for farming. We must expect to cope with more extreme weather events, a different distribution of rainfall and with the arrival of exotic pests and diseases. In some areas land may be lost to the sea whilst in others the availability of water seems likely to fall. We can reasonably anticipate that world commodity prices will tend to strengthen. In real terms the value of UK farm output will grow.

Some actions are already underway. Government is well aware of the need for vigilance to recognise, identify and respond to challenges from new pests and diseases. Crop production will need varieties better able to cope with the changed climatic profile and the use of machinery that can accurately plant

and harvest crops at times when weather and soil conditions are appropriate. Shortages of water, especially in some of the most productive areas of UK farming already poses questions about the need to store water and adapt farming methods. The transport of water from the wetter rural west and north to the drier and more urban south and east is likely to need careful exploration and potentially substantial investment. The ability of farm buildings to cope with more extreme storms and sustained high summer temperature must now influence design and construction.

It is tempting to seek to address such issues as part of agricultural policy as is currently done via Pillar II of the CAP. However, such an approach is too narrowly focused. Agriculture has an important role in the process of adaptation but the problems of industrial restructuring cannot be solved within single sectors. Nor can adaptive policies reproduce a geographical pattern of employment that corresponds to the technologies of past generations. In the 21st century economies as a whole will need to develop methods that can increase their flexibility and lessen the costs of economic change. Critical to this are education, transport and the more economic diversity within areas of growth and development.

We started with visions and warned of nightmares. In translating our vision for policy in the 21st Century into reality farm managers and advisers must play a central role. They must be expert in communicating with the industry and government and with the world of science. They are the interpreters who help put into action ideas for improvement that can be generated far away from the farm. Their role is both to promote the development of the industry as the world copes with the challenges of food security and climate change and yet to be sensitive to the value of our countryside as a resource for living. We have a vision but we also have a duty to recognise and help avoid the inevitable nightmares that lie in wait.

About the author

Professor Sir John Marsh (john.marsh27@ntlworld.com) is an Emeritus Professor of the University of Reading. He was appointed a Research Economist in 1956 and became successively Lecturer and Reader in Agricultural Economics at the University of Reading. In the 1977 he was appointed Professor of Agricultural Economics in the University of Aberdeen and Chairman of the North of Scotland College Economics Group. Between 1984 and 1997 he was Professor of Agricultural Economics; Dean of the Faculty of Agriculture and Food 1986-1989, Head of the Agricultural Economics and Management Department 1985-1991 and Director of the Centre for Agricultural Strategy 1990-1997.

From 1969-1984 he was Secretary to the Agricultural Economics Society and its President in 1985-1986. He is an Honorary Fellow of the Royal Agricultural Society and a Fellow of the Institute of Biology. He is Chairman of the Council of RURAL, (the Society for the Responsible Use of Resources in Agriculture and on the Land), he is Chairman of the Board of the Centre for Dairy Information; a former governor of the Royal Agricultural College, Cirencester, and of the Scottish Crop Research Institute. He is the immediate

past President of the British Institute of Agricultural Consultants (BIAC). He was Deputy Chairman of Defra's Science Advisory Council and has acted as specialist adviser to several parliamentary select committees. His academic interests include agricultural and food policy, the development of the common agricultural policy, and the role of research in economic development. He was awarded the CBE in June 1993 and Knighted in the Queen's Birthday Honours List in 1999.