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FEATURE ARTICLES

A vision for sustainable agriculture

Submission from the Sustainable Development Commission to the policy commission on the future of farming and food

Sustainable food and farming – our view

Why another definition of sustainable agriculture?

In the wake of BSE and the foot and mouth crisis, the language of sustainable development has moved firmly into the food sector. When we look at the food on our plate, whether at home or in a catering establishment, how much do we know about the way it was grown, processed, distributed and retailed? What have been the environmental and social costs and benefits at each stage? Whether the food product started its life in the UK or overseas, we need a

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better understanding of the impact of our consumption on such issues as energy use and pollution, biodiversity, rural communities and other sustainable development issues.

The Sustainable Development Commission (SDC) is uniquely positioned to suggest a more coherent view of sustainable food and farming than has so far been developed. We are an independent advisory body, set up by the Prime Minister to promote the delivery of sustainable development across all sectors of society. A major part of our role is to scrutinise the Government's policies and judge how far they promote sustainable development.

This paper is the first stage in our work on sustainable food production, and is intended to inform the Policy Commission on the Future of Farming and Food. The remit of the Farming and Food Commission is limited to England; but we believe the same broad objectives should also underpin future policy in Wales, Scotland and Northern Ireland. We have also developed an appraisal tool which will be used to assess policy proposals against a set of sustainability criteria. This assessment will include analysis against the Government's own sustainability indicators.

What is sustainable agriculture?

As used, the term 'sustainable agriculture' or 'sustainable farming' has embraced a wide range of issues and objectives, including the role of farming in rural communities; the need for greater protection of the environment; concerns about rural land use; animal welfare; development of local food markets; and the need for farming to support other sectors of the economy, such as tourism.

SDC defines sustainable agriculture as agriculture that contributes to the overall objectives of sustainable development - to meet the needs of the present without compromising the ability of future generations to meet their own needs.¹ The objectives and mechanisms below develop this definition further.

The scope of the task

Although its direct economic significance has diminished in recent years (contributing only 4 per cent of GDP in rural areas of England), farming remains a hugely important activity to the character and culture of the UK. Farming shapes over 70 per cent of our landscape, a higher proportion than any other OECD country.² The rural landscape created by farming activities creates the physical conditions necessary for the success of other sectors, especially tourism, and has important impacts on recreation and enjoyment. Farming also has impacts on our health, through the nutritional quality of the produce which reaches our tables. What happens on farms has major implications for both our local and global environments.

Equally, the impact of the food sector on our lives is not by any means limited to what happens on farms. The diagram below simplifies the complex set of relationships which underpin our food production and consumption. Power to change rests at many points along the food chain, and it is important not to underestimate the role of consumers – whose choices determine the viability of alternative agricultural practices – and retailers – whose buying policies shape the choices available to those consumers, and also the activities of farmers.

We also need to be aware that in food, as in so many other sectors, the UK has a complex set of production and consumption relationships with overseas producers and consumers, which are determined by international obligations such as the Common Agricultural Policy (CAP) and World Trade Organisation (WTO) regimes. Many of the outcomes which we want to see in a truly sustainable food production sector will depend on negotiated changes to these agreements, and we do not underestimate how difficult this would be to achieve. But we have deliberately not excluded these issues of WTO and EU compliance from our analysis, as our objective is to offer government a complete picture of what long term policy direction should be.

Sustainability is an issue which arises at many points along the food chain. It is not only the production of food, but also its transport and processing which determines its sustainability. The amount of food transported on UK roads increased by 20 per cent from 1978 to 1998, and the distance travelled increased by 50 per cent.³ There is a clear need for greater analysis of the social and environmental impacts of these trends, which we will be addressing at a future point in our work programme.

But to start with, SDC is focusing its attention on the narrow issue of the sustainability of agriculture in England. The scope of this paper is to assess the environmental, social and economic impacts of the business of producing food, feed and other crops on farms; the food and non-food benefits which this activity generates for society; and the policy measures needed to ensure these benefits are effectively delivered.

Sustainability issues in agriculture

The Organisation for Economic Co-operation and Development (OECD) estimates that world agrifood production will have to double in the next half century in order to meet increased demand for food – 'the challenge is whether agricultural activities can efficiently and profitably produce food to meet that growing demand over time without degrading natural resources and do so in socially acceptable ways.'⁴

Many people believe that the way in which we produce food in this country does not currently meet this challenge. Environmental concerns about the farming industry are far from new. Debate has raged for many years over issues such as energy emissions, removal of hedgerows, nitrates in groundwater and pesticide use.

But, in 2001, worries over environmental impacts have been matched by acute concern over the economic viability of the farming sector, and the implications of this for the social sustainability of rural areas. In 2000 farm incomes in the UK dropped to the lowest level since records began.⁵ The impact of foot and mouth disease has created a new imperative to establish a firmer basis on which farmers can make a decent livelihood from farming and looking after the land.

The following text sets out objectives and mechanisms which we believe should underpin the development of detailed policies for the future of the farming sector in England, and which we believe should also be applied in Wales, Scotland and Northern Ireland.

Objectives for sustainable agriculture

How should agriculture contribute to sustainable development? By meeting all the objectives below at the same time, agriculture could make a major input to a sustainable economy and society.

Box 1:

Objectives for sustainable agriculture

Sustainable agriculture must:

- Produce safe, healthy food and non-food products in response to market demands. now and in the future
- Enable viable livelihoods to be made from sustainable land management, taking account of payments for public benefits provided
- Operate within biophysical constraints and conform to other environmental imperatives
- Provide environmental improvements and other benefits that the public wants – such as re-creation of habitats and access to land
- Achieve the highest standards of animal health and welfare compatible with society's right of access to food at a fair price
- Support the vitality of rural economies and the diversity of rural culture
- Sustain the resource available for growing food and supplying other public benefits over time, except where alternative land uses are essential in order to meet other needs of society.

What do these objectives mean in practice?

Produce safe, healthy food and non-food products in response to market demands, now and in the future

In the broad-ranging public debate about the farming sector, it is too easy to forget that its central mission remains the production of food. We believe that the agriculture industry must regain the public's trust over the safety and quality of food. This means tackling head-on issues such as pesticide residues in food and use of veterinary medicines, particularly antibiotics.

Many food safety problems can be tackled at farm level. Intensive rearing of poultry and pigs is partly

responsible for food poisoning bacteria such as salmonella and campylobacter. The widespread use of antibiotics on livestock impacts upon human health as bacteria develop resistance. Risk of E.coli may be reduced by changing the diets of animals.

It is particularly important to ensure that market interventions by the government have the effect of encouraging producers to deliver food that consumers actually want. Subsidies should not encourage production of goods for which there is little or no demand. However, there is a role for subsidies in ensuring that consumer needs are met – the market may not deliver all the food that people need at an affordable price.



Better nutritional standards are key to the future health of people in England. A healthy diet depends upon eating a balance of foods, and on those foods being processed, stored and prepared in ways that retain their nutritional value. But do growing and selection methods influence the nutritional value of food? And is nutritional content affected by long distance transport and storage? We are considering research on these issues later in our work programme.

Enable viable livelihoods to be made from sustainable land management, taking account of payments for public benefits provided.

Farmers and land managers need to be able to make an acceptable livelihood. Improved cooperation is one way to increase returns. The value of food leaving the farm is a tiny proportion of the value at which it is sold in supermarkets or restaurants. One way to improve the profitability of farming is to increase the farmer's share of the final price of goods produced.

A number of initiatives are already underway to improve the profitability of farming. Box schemes and farmers' markets enable farmers to sell directly to consumers; the Countryside Agency's 'Eat the View' scheme promotes locally distinctive produce. However, the majority of farmers are likely to continue to rely on conventional marketing of produce, so innovation is required here too. For example, on-farm and local processing of products could increase profitability.

SDC supports provision of subsidies for farming and land management, because of the public benefits provided, and also as there is not a level international playing field. Farmers here face higher land costs and social and environmental standards than competitors in many other countries, so it would be difficult to be fully financially viable without a degree of state support. In 2000, subsidies to UK farms were 30 per cent greater than the total income from farming.⁶

However, until recently payments have not been targeted at delivery of public goods. The subsidies system should not distort market signals of demand for products, nor should it simply encourage higher volumes of production. This principle is now broadly accepted in the UK, and support for farmers for providing public goods, such as environmental protection or energy crop schemes, has begun under the Rural Development Regulation. However, there is still a long way to go; rural development, business improvement and environmental payments account for only 8 per cent of subsidies paid to UK farmers by the CAP and the UK government.⁷

Farmers should be paid for providing benefits that the public wants. We would like to see subsidies paid for:

- measures that help farmers to diversify and contribute more to rural communities and economies
- protection of the character of the rural landscape
- improved public enjoyment of the landscape e.g. through provision of footpaths
- protection of the environment, above minimum standards
- carbon sequestration, habitat creation, restoration of biodiversity

- flood protection
- promotion of animal welfare, above minimum standards.

For each of the benefits we think we are buying, we need to take a hard look and see whether purchasing them via the farming sector is a cost effective use of public money. Of course, some of these benefits can only be achieved through farming.

Operate within biophysical constraints and conform to other environmental imperatives

Operating within biophysical constraints means not causing serious or irreversible damage to the natural resources that farming and all other human activities depend upon. This is an essential principle of sustainable development; clean air and water and fertile soils are vital for our future prosperity. Emissions to air, soil and water must not exceed the capacity of nature to neutralise harmful effects to humans and ecosystems. Box 2 below gives a summary of the environmental impacts of agriculture

But defining biophysical constraints is not a straightforward task – for example, what is an acceptable level of climate change? In some areas, such as soil degradation, we simply do not have sufficient knowledge to judge at which point irreversible damage is done. Respecting biophysical constraints does not mean eliminating all possible negative environmental effects. For example, we may be happy to have some rivers of low quality, provided that there are sufficient high quality rivers to meet our recreational needs and support wildlife.

Box 2:

Environmental impacts of agriculture

- **Soil quality** The soil itself should be protected from further erosion, salination, loss of organic matter and accumulation of heavy metals. Loss of organic matter from soils means increased greenhouse gas emissions as carbon is released. The National Soil Inventory has shown that the organic content of soils is decreasing.⁸ Soil quality is of course vital to the long term productivity of farming.
- Landscape Farming shapes much of our landscape over 70 per cent of UK land is farmed.
- Water quality and quantity Use of water for irrigation has increased dramatically over the past 20 years. Over-abstraction of water is already causing damage to ecosystems, while use of irrigation can cause soil salination over time. Surface and ground water must be protected from pollution by animal waste, Cryptosporidium, pesticides, nitrates and, phosphates. In 1999 agriculture was the source of 14 per cent of water pollution incidents in England and Wales. In addition to pollution incidents, agriculture also delivers low level pollutants to watercourses, such as pesticide and fertiliser run off from fields. Agriculture is also the main source of nitrogen in watercourses, which causes eutrophication.⁹

Air quality Farming creates dust and smells, and

contributes to acid deposition. Agriculture's contribution to acidification has become proportionally more important as other sectors have reduced emissions.¹⁰

- **Climate** Agriculture directly emits around 8 per cent of UK greenhouse gases. These emissions are projected to decline in the future, due to reduced and more targeted use of fertiliser, and a decrease in livestock numbers resulting from market and policy constraints.¹¹ Agriculture's contribution is predominantly through emissions of methane and nitrous oxide.¹²
- **Biodiversity** Protecting the genetic resource base, in terms of species used for food and also other life on and around farms, is essential. We must protect the current diversity of plants and animals used for food – this will ensure that food production systems are robust in the face of disease and changing environmental conditions.
- Wildlife and semi-natural habitats There is a need to protect the diversity of animal and plant life associated with farming. Wildlife is important as part of the genetic resource base, and also because of its value to people.

In order to fully understand the environmental impacts of our food, we need to consider the whole food chain, from farm to plate. We believe that in the long term, we should aim for a food production system with a net zero impact upon climate change. Local sourcing and distribution of food may be important in low energy food production and distribution systems. In later work, we plan to look at impacts of food production and consumption, particularly in terms of energy use.

Provide environmental improvements and other benefits that the public wants – such as re-creation of habitats and access to land

A steady environmental state is a very limited aspiration, particularly in view of the extent of degradation and loss of environmental quality in recent decades, exacerbated by public policy. As well as protecting the environment as it is now, and conserving the natural resources that farming depends upon, we should restore environmental quality and deliver other benefits that the public wants, such as access to land and attractive landscapes. Where the public is prepared to pay for these, we should provide support.

Indeed environmental improvements, both local and global, are only a subset of the wide range of benefits which the farming sector could provide for public benefit. The examples given in box 3 below are a selection of the benefits that farmers could provide, but are not an exhaustive list.

Box 3: Benefits that agriculture could provide

Biodiversity Biodiversity is not only essential to the robustness of farm and natural ecosystems, it is also a quality of life issue – songbirds, for example, have an aesthetic importance to us.

Maintaining biodiversity means conserving, enhancing and recreating habitats on and around farmland, such as wetlands, woodland, rivers and hedgerows. At an international level, it means not consuming food that degrades the environment of other countries.

- Landscape Changes in agriculture, such as a large increase in forestry, cause major changes in the landscape. There is a balance to be struck between making farming competitive and creating the type of landscape the public want.
- **Industrial crops** There is some potential for crops to provide alternatives to petro-chemical products. For example, oilseed rape can be used to produce an alternative to diesel. Bio-degradable plastics and plant-derived fuels would have environmental benefits (in that they would be less polluting than petrochemicals, could reduce landfill and would not add to climate change) but only if these industrial crops were grown to meet the same sustainability criteria as food crops.
- **Carbon sequestration** Farming could help reduce climate change emissions by storing carbon in soils. Planting forests may also help but more research is needed on this.
- **Food security** This was one of the original rationales behind a supported agriculture sector, but is widely viewed as less relevant today. However, with the prospect of climate change, it may be worth reassessing whether food security at UK or at least EU level could be a valid public policy aspiration. Food security is important both in terms of ensuring sufficient supplies for ourselves, and also in contributing to global food needs.
- Access Access to land can improve people's enjoyment of the countryside.

Achieve the highest standards of animal health and welfare compatible with society's right of access to food at a fair price

The UK has some of the highest animal welfare standards in the world. However, long distance transport of livestock and intensive systems of farming still cause suffering, and contribute to the spread of disease. The five freedoms drawn up by the Farm Animal Welfare Council (FAWC), and used as the basis of the RSPCA's Freedom Foods scheme, define what animal welfare means:

freedom from fear and distress

freedom from pain, injury and disease

- freedom from hunger and thirst
- freedom from discomfort
- freedom to express normal behaviour.

Animal welfare legislation has posed problems for farmers, as it is more difficult for them to compete with imports from countries with lower welfare standards. WTO rules may prohibit marketing or import regulations aimed at increasing animal welfare standards – but this has not yet been tested. The difficulties of promoting higher standards within free trade rules are discussed further below.

Support the vitality of rural economies and the diversity of rural culture

Supporting farming as an activity has often been seen as a proxy for supporting rural communities. For many rural communities, farming is still an essential defining activity, economically and culturally. Farming creates the landscape on which other local employment (e.g. tourism) depends. It may also, less tangibly, be seen as central to the character of an area, in a way that is valued by those who live in it and visit it. SDC believes that supporting farming is therefore an important cultural objective.

But, in reality, farming is no longer central to many rural economies. Indeed, there is no longer a very clear picture of what a rural economy is. In rural areas of England, farming accounts for only 4 per cent of GDP.13 There is no longer a dear divide between rural and urban; more than half of those who live in the country and work, work in the town, and employment patterns are similar in rural and urban areas. The growth of communications technology will further assimilate work opportunities in rural and urban areas, as location becomes less of a barrier. These issues are recognised in the Rural White Paper, which SDC supports.

With the town/country boundary more fluid, and agricultural employment in long term decline, it is clear that the relationship between the health of the farming industry and the health of the rural economy is no longer as close as it once was. We believe that while the major barriers to restoring high quality agriculture employment should be tackled, this should be alongside diversification and wider rural development measures, to raise the quality of life of both farmers and rural communities as a whole.

That is not to say that agricultural employment should be written off. New market-driven ventures will offer benefits for workers as well as entrepreneurs. Organic farming, for example, can increase both quality rural employment as well as low skilled casual labour for the horticultural sector. Measures to revitalise the competitiveness of agriculture as a business will also increase its attractiveness as a career.

But agricultural initiatives must fit with the wider needs of rural economies. There is scope for the government to tackle the main barriers to progress, for example through increasing opportunities for training in rural areas, providing local infrastructure, and removing barriers in the planning system to effective diversification. Reform in these areas could increase the potential for land managers to supplement their agricultural employment with employment and income from other sources.

Sustain the resource available for growing food and supplying other public benefits over time, except where alternative land uses are essential to meet other needs of society

Land provides a wide range of products and services, including production of food and fibre; space for residential and commercial developments; recreation; habitats for wildlife; and flood protection. Balancing the different uses of land is difficult, particularly since some public benefits cannot be given an economic value. However, this does not mean that they should not be fully taken into account in developing public policy initiatives for the agriculture sector.

We believe that there is an intrinsic value in maintaining diversity in landscapes and cultures, above and beyond the spin-off benefit of tourism. There is also an existence value to the rural landscape – people value it being there, even if they do not use it or see it themselves.

Balancing these benefits raises issues around land use planning and the function of rural land. Protecting the character of the countryside does not mean keeping it static. The economic viability of the countryside depends upon diversification and attracting new businesses; and rural communities must be populated to be viable. There is a need for affordable housing, to enable young people to remain in areas where they have grown up. But there is an obvious conflict here with preserving undeveloped land. The issue of rural land use requires much more study, and we plan to tackle this further on in our work programme.

How can we achieve sustainable agriculture?

All sorts of detailed policy measures will need to be considered, but we would advance the principles on which all measures should be based.

Box 4: Mechanisms to achieve sustainable agriculture

- Effective regulation to enforce minimum standards of worker safety, food safety, environmental protection and animal welfare
- Market measures such as farm assurance schemes, traceability and promotion of best practice to encourage high standards of food safety, environmental protection and animal welfare
- Economic instruments (subsidies, taxes and trading regimes) that reward provision of benefits the public wants (beyond the minimum required by regulations), and discourage pollution and other disbenefits
- Consistent application of the precautionary principle
- Education and training for all land managers and farm workers.

Effective regulation to enforce minimum standards of worker safety, food safety, environmental protection and animal welfare

Good regulation is achievable, enforceable, and not susceptible to evasion; it should also be transparent, targeted and proportionate. Regulations provide minimum levels of public health protection, environmental protection and animal health and welfare.

Where there are practical obstacles to immediate step changes towards sustainability, clear signals should be given that these changes will be required over the medium to long term, and that the industry should start to take steps now to deliver them.

Higher standards can make it difficult for farmers to compete with more cheaply produced imports. The

government should therefore take measures to promote the high standards of domestic producers, for example by funding promotions.

Local authorities, the armed forces and other bodies could support higher domestic standards through their own food purchasing policies. WTO rules may prohibit marketing or import regulations aimed at raising animal welfare, social or environmental standards. but this has not yet been tested. The position will not be clear until there is a challenge. This emphasises the global dimension of sustainable development. If we do not take the concept forward with other nations, tighter controls and higher standards here may simply result in exporting pollution elsewhere.

Market measures such as farm assurance schemes, traceability and promotion of best practice to encourage high standards of food safety, environmental protection and animal welfare

The buying policies of large retailers impact upon farming practices, and hence also upon landscapes and the environment. Identification and promotion of best practice by retailers could therefore be one way to promote more sustainable farming.

Numerous voluntary schemes already exist to market food on the basis of higher standards, such as the Red Tractor logo promoted by the National Farmers Union and the RSPCA's Freedom Food scheme. Such schemes could play an essential role in providing higher environmental and animal welfare standards. They provide consumers with the choice to support higher standards or different farming practices if they wish, and so should be encouraged as another tool to achieve sustainable farming. However, these schemes must provide standards that are significantly above minimum legal standards. They must be properly regulated and inspected so that the public may have confidence in them. There must also be good communication with consumers to ensure that they understand what they are paying for.

In addition to these national schemes, there is also an important role for locally based and private initiatives. People may be more willing to support a local assurance scheme, as land management by local farms has a direct impact upon them. An example is Taste of the West, a limited company representing industry, public and community sectors in the south west, which is developing a brand to promote food and drink from the region.14

Promoting food according to where it comes from, as Taste of the West is doing, could be an important aspect of assurance schemes. This could improve understanding of how food is produced, and provide consumers with more choices about where their food comes from and what farming regimes they support. **Economic instruments (subsidies, taxes and trading regimes) that reward provision of benefits the public wants (beyond the minimum required by regulations), and penalise pollution and other disbenefits**

Economic instruments offer greater potential for benefits than regulations, as they give an incentive to attain higher standards than the regulatory minimum. This would not be an appropriate way to encourage high levels of worker safety or food safety. But if used to promote higher environmental standards or to encourage rural development, it would give benefits to both land managers and the public. We should encourage use of efficient economic instruments (including trading systems as well as taxes) where possible, whilst protecting vulnerable consumers from possible negative price effects. Economic measures could also be used to encourage greater investment in technology and human resources.

Economic instruments can be used to address externalities, that is, when the full costs of an activity are not met by the actor. For example, the cost of removing nitrates washed into rivers from farmland is borne by water companies, not farmers. It is also possible to have positive externalities, such as an enhanced landscape created by farming. In these cases, the public can pay farmers for the externality through subsidies.

The 'polluter pays' principle is an essential tenet of sustainability. Making the polluter pay will work best where consumers have the choice to switch to a less polluting (and hence, potentially cheaper) alternative. The incentive effects should be carefully considered before implementing taxes or fines on polluters.

Consistent application of the precautionary principle

This is already accepted by the Government as a guiding principle for policy. The Rio Declaration defined the principle as follows: 'where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.' The term should be applied to economic, health and social impacts as well as to the environment. The principle should be applied for example when considering release of genetically modified organisms to the environment, or when dealing with a public health risk like BSE.

The precautionary principle has been interpreted differently by different people. There is rarely such a thing as definitive scientific evidence of safety; but how is acceptable risk defined?

Education and training for all land managers and farm workers

Investing in the development of skills for land managers and farmers is key to raising performance and improving competitiveness. Training in business management, land management, animal welfare and environmental protection should be made available to all land managers and farm workers. As well as improving profitability, such training would help land managers provide more of the benefits that the public wants. in addition to traditional training, we should consider making farming a 'profession', with continuing professional development. This could also help attract more young people into farming. We should learn from the Australian Landcare scheme, which uses farmer co- operation and community involvement as the means for better management of natural resources.

Conclusions

The objectives developed above aim to address the full range of economic, social and environmental issues around sustainable agriculture. However, in applying these objectives there are a number of conflicts to be resolved. How do we balance conserving the character of the countryside with providing the infrastructure and accommodation required for rural areas to thrive? To what extent should the taxpayer pay farmers to protect the environment? How can we have effective environmental, food safety and animal welfare standards that comply with free trade rules, without severely disadvantaging farmers? We do not yet have all the answers to these questions; but we hope that by providing a clearer picture of what sustainable agriculture should look like it will be possible to assess the sus-****** tainability of different policy proposals.

■ The above article is the text of a response to the consultative document issued by the Policy Commission on the Future of Farming and Food and is reprinted with the kind permission of the Sustainable Development Commission. Any comments regarding the content of this article may be made directly to the Commission through Felicia Kemp on 020 7944 4964. The Commission's website address is:

www.sd-commission.gov.uk

Further comment on the topic of agriculture is contained in the Editorial.

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The future of fisheries

Barrie Deas, Chief Executive, National Federation of Fishermen's Organisations

I would like to cover some of the same ground as Dr Horwood but from a slightly different angle. This could be summarised by 'How do we get from here to there?' And we are talking here about moving from the present depleted level of stocks, to a situation where stocks are fished at an optimum level to bring maximum economic and social benefit.

The Green Paper

The most important observation in the Commission's Green Paper is expressed in its second line. It says: 'The policy has not delivered sustainable exploitation of fisheries and will need to be changed if it is to do so.'

This is very significant because it is the first time that

This article is a follow-up to *The Case for Change* by Dr Joseph Horwood which appeared in the November/ December 2001 edition of *Environmental Scientist*. The background regarding the necessary revisions to the Common Fisheries Policy of the EU and the Green Paper issued by the Commission was fully described in that article and is not repeated here. the Commission has explicitly recognised that the CFP is fundamentally flawed and is incapable of delivering its basic objectives. For this reason the Green Paper is a highly significant and may even be a landmark development.

We would not disagree in principle with Joe Horwood's view that stocks are in many cases outside safe biological conditions. Indeed there is an uncanny similarity between the Commission's view and our own, as expressed in a 1996 policy paper. The Commission has said: 'Many stocks are at present outside safe biological limits. They are too heavily exploited or have low quantities of mature fish or both. At present the situation for most stocks is not catastrophic. If current trends continue however, many stocks will collapse.' (Green Paper page 8).

In 1996 we said: 'A sound and viable fishing industry requires sustainable fishing opportunities as a precondition. As a minimum, spawning stocks must be kept above levels at which there is a risk of stock collapse. It is both economically and biologically preferable to move from the present overdue reliance on catches of juvenile fish.' (NFFO Policy Document, December 1996).

So there is a broad consensus on the nature and the scale of the problem. There is however, less agreement on the way out of the morass.

Joe would suggest that a reduction in fishing effort through a reduction in the size of the fleet is what is necessary for stock recovery. And we would not fundamentally disagree. We have reluctantly concluded that the more that is done to reduce the size of the fleet, the more likely efforts to rebuild the stocks will be successful.

The CFP

But this is only part of the picture. Over-capacity is certainly one of the reasons why stocks have continued to decline but an over-rigid management regime which has alienated fishermen through its inflexibility is another. It has more than once been said that no conservation regime will he effective unless it has the broad support of the fishing industry. The CFP has almost been designed to prove the truth of that statement by managing to exhibit a regime which is at the same time both rigid and bureaucratic but also ineffectual. As a result it faces a crisis of legitimacy. Over-centralised, remote, inflexible, cumbersome, unloved and dysfunctional, the CFP in its present form has no future.

It is to the Commission's credit that these flaws have been recognised in its Green Paper and at least some remedial measures suggested, although it is certain that we would want to go further and faster in reforming the CFP. Fisheries management must be made more relevant; it must therefore be adapted to the characteristics of fisheries in specific regions. Measures that are appropriate for the Irish Sea will not necessarily be relevant for the North Sea and vice versa.

Equally, fishermen must be brought into the heart of the policy process.

Regionalisation

The only viable mechanism we can envisage to achieve these goals is by providing a central role for regional or zonal committees, involving scientists, fishermen, and representatives from those Member States which hold quota in the relevant area. Their responsibility would be to develop and agree medium to long-term recovery plans and management plans which would then be put to the Commission and Council of Ministers for approval. Without fishermen and scientists working collaboratively at the heart of the policy formulation process, there is little hope of breaking out of the present spiral of decline. The changes to the CFP, which we have proposed and have at least partially been adopted in the Green Paper, are to a large degree about giving a legitimacy to the measures adopted under the CFP, without which any initiative will fail. Regional (or zonal) management, either as an effective advisory system or with real executive powers is, in our view, as important a pre-condition for stock recovery as an equilibrium between the catching capacity of the fleet and the resource.

Short-term losses

But neither is sufficient. The bald fact is that any conservation measure worth its name will involve shortterm losses for the vessel concerned. Their aim after all is to defer capture until a reasonable proportion of the stock has reached maturity. It is the short-term losses which limit how far and how fast the industry can move in adopting conservation measures, even though the end result is a vastly more productive fishery, both biologically and economically.

Short-term losses are the hurdle in the path of a move to sustainable fisheries and have crippled many an initiative to date.

This is an issue which has to be tackled head-on if we are to avoid the cycle of half-measures, failed measures and circumvented measures which has characterised the CFP to date.

Public investment in recovery plans is the answer to this problem and I choose my words carefully here. We neither want nor consider it politically feasible to move to a situation in which the fishing industry is permanently dependent on public subsidy. However, there is an overwhelming case for short-term, time-limited, public investment to offset the losses associated with meaningful conservation measures.

Breaking the log-jam

This is the only means of breaking the log-jam which prevents us moving from here to there. From stock depletion to stock recovery. It is also the reason why we have recently agreed to join an initiative with the World Wildlife Fund for Nature and the Scottish Fishermen's Federation to

develop and define the characteristics of a successful recovery programme. The project will:

- i) identify the specific measures necessary to rebuild stocks to optimum biological levels by region
- ii) calculate the amount of time-limited public investment necessary to offset the losses associated with that move
- iii) agree measures which would ensure that rebuilt stocks are maintained at that level

The purpose of the WWF/Fishing Industry project will be to identify and quantify the measures necessary for the costs and benefits of transitional aid.

This is something of a path-breaking initiative and the whole issue of transitional aid is the keystone to successfully rebuilding stocks. It is regrettable that the Green Paper sidesteps it by the usual reference to the Member States' responsibilities for financial support measures. This is the perpetual dance of futility, where the Commission blames the Member States and the Member States blame the Commission. It is important to appreciate why we label transitional aid as investment rather than subsidy. It is because there is much, if scattered, evidence to suggest that fisheries operating at optimum biological and economic levels can he vastly more prosperous than at present. Certainly, the fishing industry would benefit from rebuilt stocks, but equally the taxpayer, through increased tax receipts, would also see a return on his investment. Overall we believe the exercise would be fiscally neutral over a reasonable time-scale.

Summary

Despite the vagaries and imperfections of fisheries science, we share the scientists' analysis that many key commercial stocks within European Waters are fished well below biological and economic optimum.

The institutional failure of the CFP is a fundamental reason for this state of affairs.

We welcome the fact that the Commission in its Green Paper has recognised the need for decentralisation of the CFP and a central role for Regional Advisory Committees. We would wish to give Regional Committees executive powers but recognise that this probably needs to be a confidence-building exercise.

We accept that there must be a balance between the size of the fleet and the available resources and reluctantly accept that some decommissioning must take place.

Transitional aid is required to overcome the problem of short-term losses. It is the key to successful stock recovery.

Fisheries should have a bright future: our commodity is in demand – it is healthy and, if managed properly, it is infinitely renewable. We need decisive government intervention and assistance at this critical juncture to put stocks and thus the sector on an even keel.

■ Reprinted from *Science in Parliament*, Vol. 58 No. 4 Autumn 2001, with kind permission of the publishers.

Additional comment

All the issues currently being addressed were the same as those discussed in the previous negotiations nine years earlier, only' they were now all more critical. In the transition from the failing CFP to a more sustainable one it would be necessary to identify who bore the cost, how those costs would he distributed and the eventual gains for society. Transitional (or bridging) financing was essential.

It was known that many stocks were close to collapse. The worrying aspect was that no one knew how near they were to the critical levels. While quotas might be slashed the real need was to get the actual mortality rate down.

In fishery management many people were doing rather different things in different places at different times. There needed to be a strengthening of the regional structure. Fisheries management worked best when there was a sole owner with limited access to vessels.

One third of Europe's fishing harvest came from outside European waters. As an example, the Namibia/EU Fisheries Agreement was never closed as the EU never gave assurances on sustainable fishing practices. Surveillance, enforcement and exacting penalties were very expensive and beyond the capabilities of developing countries.

A reduction of fishing in European waters would create an increased pressure on third-world waters. Fishermen and scientists had to work together on a global basis.

Could consumer pressure he harnessed by labelling fish in some way as having come from well-stocked or critical waters? Nets were unselective. In nets cod swam down, whiting swam up. Therefore, graduated mesh sizes would provide some measure of selectivity.

Aquaculture was having an effect on wild fish. Industrial fishing affected the seabed environment and removed the feed of wild fish, It took 4kg of fish food to produce 1kg of farmed fish.

Editorial comment

Environmental policies have been much in the news lately and at least two issues are worthy of some additional reference. These relate to agriculture policy and fisheries policy.

The November/December 2001 edition of *Environmental Scientist* contained the text of an Institution response to the consultative document issued by the Policy Commission on the Future of Farming and Food. The response prepared by the Sustainable Development Commission is a more extensive and detailed document. However, on several key issues it shares a commonality of views with those expressed by the IES. It has therefore been included in full in this issue as a matter of importance for all of us.

How far the sweeping proposals to transform agriculture, announced by the Government at the end of January, will achieve some of the objectives recommended in the response remains to be seen. However, initial reaction of the NFU and the farming community to these proposals is distinctly unfavourable.

Fisheries policy within the EU have long been an area of considerable difficulty. Support for our own

U.K. fishing industry, control of the abuses of over-fishing by the fleets of some countries and the necessity to effect sustainable fishing policies throughout European waters is a daunting task. The two articles on this subject in the previous and current issues will advise and advance our thinking on these issues at large but only inter-governmental political action will provide solutions.

Members' views would also be welcomed on these two topics.

RF

New web site and e-mail addresses

The IES has new e-mail and web site addresses:

- e-mail: ies-uk@breathemail.net
- web site: http://www.ies-uk.org

Environmental News

Boost for LPG as 1000th gas station opens

Brian Wilson, Energy and Industry Minister announced a £1m programme to boost sales of cars powered by Liquid Petroleum Gas as he opened the country's 1000th LPG station.

The 'Boost Programme' aims to:

- raise consumer awareness through a targeted publicity campaign;
- introduce grants for garages to become approved converters;
- promote the benefits to rural communities where reliance on fuel is greater;

work with manufacturers to put more production line LPG vehicles in showrooms.

Brian Wilson said: 'LPG is better for the environment and the motorist's pocket. Promoting these benefits will ensure the potential of LPG is fully realised. This 1000th site shows that LPG is widely available across the country and, thanks to a low level of fuel duty, is nearly half the price of petrol and diesel.

'A typical motorist can save more than

Government seeks views on priorities for Environment Agency

The Government has invited interested organisations and individuals to give their views on the work of the Environment Agency over the next five years.

The first Financial, Management and Policy Review of the agency notes that, while the environmental agenda has progressed considerably since the Agency was set up in 1996, there was no single statement bringing together the Government's strategic objectives for the Agency nor was there up-to-date guidance on the contribution the Agency was expected to make to sustainable development.

The revised guidance sets out objectives for the Agency's work on flood defence, water quality and water resources, waste management, process industry regulation, fisheries, radioactive substances, contaminated land, navigation and biodiversity. It also sets objectives for how the Agency should go about its task, for example adopting an integrated approach to environmental protection and enhancement, and discharging its functions efficiently.

The draft guidance identifies two roles for the Agency in contributing to the achievement of sustainable development. These are to protect and enhance the environment in a way which takes account (so far as is consistent with its legal obligations) of economic and social considerations, and to be an independent advisor on environmental matters affecting policy-making, both within Government and more widely.

It also states the principles which the Environment Agency should follow in deciding its priorities.

Traffic levels 1 per cent higher than last year

Motor vehicle traffic levels in 2001 were about 1 per cent higher than in 2000.

Estimated traffic levels rose by 3 per cent between the fourth quarter of 2000 and the same quarter of 2001.

The figures, and analyses by vehicle type and road class, are published in *Traffic in Great Britain – 4th Quarter 2001.*

£400 a year by converting to LPG.'

■ Dr Chris Fay, former chairman and chief executive of Shell UK Ltd, has been appointed as official 'Champion' of a scheme that will enable British business to be at the forefront of global emissions reductions.

The UK Emissions Trading Scheme, a partnership between business, government and other organisations, was launched two years ago in response to the threat of climate change.

Cycling fund planned

Plans for up to £2million in funding for cycling projects have been presented to the newly formed National Cycling Strategy Board.

John Spellar, the Minister for Transport, outlined proposals for the provision including creating new cycle parking areas, improving existing cycling routes and creating new cycle routes.

Official freedom from F&M

The Standing Veterinary Committee of the European Commission has agreed to lift the remaining restrictions on imports and exports of British meat, animal products and livestock.

The SVC decision provides the legal basis for EU trade in animals and animal products to resume.

New deal for wildlife

Threatened farmland birds and plants will benefit from new habitats created with Government environmental grants to arable farmers.

Arable farmers across England will be able to apply for the DEFRA grants to create wildlife areas around their fields as part of new arable options being made available under the Countryside Stewardship Scheme.

Consultation on flood defence funding arrangements

The Government has launched a consultation on the best way to fund the national flood and coastal defence service.

The Flood and Coastal Defence Funding Review suggests a number of improvements that might be made to existing arrangements. It asks:

- Should developers wishing to build on flood plains pay a one-off charge to help fund flood defences in their area?
- Should funding arrangements across the country be organised by river catchment area, via new, simplified 'Regional Customer Bodies', comprising local authority representatives and other local stakeholders, and which could have the power to raise funds locally?
- Should responsibility for dealing with high-flood risk watercourses be trans-

ferred to the Environment Agency, rather than be shared among multiple agencies, as currently?

■ Should funds for defence works be provided on a speedier block grant basis rather than on the current scheme-by-scheme basis?

DEFRA flood and coastal defence funding is set to increase from £66 million last year to £114 million in 2003-04.

Consultation on the Research Assessment Exercise

A response to the Commons Select Committee from the Institution of Environmental Sciences

The Institution of Environmental Sciences (IES), one of the UK's leading professional bodies for the environment, understands that consultation is taking place on the process and outcomes of the 2001 Research Assessment Exercise (RAE). IES is keen to see that the highest standards of environmental research are attained in UK universities and that a diverse and sustainable base of research is maintained in the UK. In our view the outcomes of the UoA 21. Environmental Sciences Panel are anomalous and threaten to undermine the standards and diversity of environmental research in UK universities.

In addition to this response we also support and endorse the consultation response from the Committee of Heads of Environmental Sciences (CHES) with whom we work closely. I understand you received the CHES response from Professor Eastwood, Chair of CHES on 21/1/02. You will be aware from this response that CHES was sufficiently concerned with the outcome of the 1996 RAE to seek a meeting with the Funding Councils to seek urgent rectification of the structural inadequacies of the joint Earth and Environmental Sciences Panel. IES supported CHES in its approach and, like CHES, is dismayed that the Funding Councils were unable or unwilling to ensure that the Panel was representative of the environmental disciplines and would operate in such a way that the quality of the diverse research undertaken by the UK environmental sciences community was properly assessed. In our view the continuing inadequacy of the

IES tion

Panel to address important components of the UK research capability has the potential to do a major disservice to the UK research effort in the environmental sciences. Furthermore it is likely to accelerate the decline and closure of environmental science capabilities in those universities who have done less well in the assessment by the UoA 21 Panel.

IES concerns can be summarised as follows:

The panel descriptors do not cover the range of research activities undertaken in UK environmental science departments. In particular:

The operating criteria of the panel gave insufficient attention to areas of environmental policy, legislation and management. These are important UK environmental research strengths which are not given due attention in the operating criteria. No panel member is identified as covering these areas of research.

The panel descriptors give undue prominence and weight to physical environmental science (i.e. Earth Sciences) and do so to the detriment of the biological environmental sciences.

The Panel descriptors do not appear to give weight to policy or industrially relevant research outcomes although the intention of the RAE was to recognise the importance of these areas to the UK. The UK's environmental research is undoubtedly applied and it appears that this has not been ranked highly by the Panel. In discussions with submitting universities it appears that the research income from industrial and policy relevant research has been high but even where peer

IES ties are available exclusively to members. They are dark blue or dark green polyester with a gold woven IES logo. Please mail meties. Colour:BlueGreen Ties cost £6 including postage (<i>UK only: add £2 for overseas orders.</i>) I enclose a cheque for £					
Name: Membership No:					
Address:					
Send orders to: IES, PO Box 16, Bourne, PE10 9FB.					

reviewed publications have followed from this work it does not appear to have been rated highly by the Panel. Furthermore, informal views from submitting institutions seems to suggest that indicators of esteem linked to industrial and policy activity, such as advice to Government, work with industry or engagement in learned society activities do not appear to have carried any particular weight in the UoA 21 Panel.

The outcome of the UoA 21 Panel deliberations appears to be significantly different from the RAE as a whole, from UoA20 (Earth Sciences) and the umbrella panel of sciences. It has a strongly bimodal distribution of scores, a mean score of 3.26 (the lowest mean in the RAE) and a mode of 2 (whereas the whole RAE mean is 4.1, mode 5). There are only two 5* (both of whom had panel members) and two 5 universities equating to just 12 per cent of the submitted total. This is the lowest proportion of 5* departments in all of the Panels.

The joint UoA 20 and 21 Panel contained just two members whose institution submitted to UoA 21. This calls into question the peer review capability of the Panel.

In summary the IES is concerned that we have now arrived at a position where UK research in environmental science is judged to be the worst performing area in the RAE.

Either there is an intentional or accidental application of bias in the UoA 21 deliberations and outcomes that have disadvantaged and undervalued the UK environmental science research effort or there are severe and structural problems in the nature and quality of UK environmental research.

We do not accept that the latter case is true but in either case environmental science research demands urgent attention from policy makers and the funding councils. In partnership with colleagues in CHES, the Institution of Environmental Sciences would be happy to provide further information on the nature, state and diversity of environmental research in the UK.

Professor James Longhurst FIEnvSc

1. IAQM initiative

A new initiative has recently been launched in the Institution and reference has been made to this in the Chairman's report in the Annual Report. A new body to represent the professional interests of air quality practitioners has been seen as desirable and a measure of interest identified.

Agreement has been reached with the interested parties that for an initial period, a 'parenting' process will be provided by the IES to enable this special interest group to be set up and evolve. In due course it is hoped that this will develop into a new institution, currently referred to as the Institute of



The Hon. Secretary's news desk...

Air Quality Management (IAQM).

Details of how these arrangements will be made and operate are under discussion and will be published in the Journal in due course.

2. CHES/IES accreditations

The accreditation programme described in the November/

December issue has had a sound start in the new year.

Accreditations have been approved for a suite of six programmes at Manchester Metropolitan University, a programme at Ulster and a programme at Plymouth, with a further conditional approval for a new programme about to commence at Plymouth.

3. Responses

Responses have been submitted to the following consultation documents:

- Uncultivated Land and Semi-Natural Areas – Provisions of the Environmental Impact Assessment Directive (to DEFRA)
- Sustaining England's Woodlands (to the Forestry Commission)
- Countryside and Rights of Way Act 2000: Consultation on Proposals for Regulations on Provisional and Conclusive Maps of Open Country and Registered Common Land (to DEFRA)

RAF

Forthcoming conferences and courses

4-8 March 2002 Planning and managing conservation and amenity sites for people Plas Tan y Bwlch, Wales £310. Short course which aims to explore ways of optimising sustainable public use of conservation and amenity sites. Details: The Director, Plas Tan y Bwlch, Maentwrog, Blaenau Ffestiniog, Gwynedd, LL41 3YU 01766 590324

email: plas@eryri-npa.gov.uk

19 March 2002

Emissions monitoring exhibition Weetwood Hall, Leeds.

30 stands with equipment suppliers and consultants, etc. Details: Alison Whiteley, 0113 233 2494

18-20 March

Industrial Air Pollution Monitoring Leeds £260-£640 Short course on emissions monitoring

Short course on emissions monitoring Details: Alison Whiteley, 0113 233 2494, email: cpd.speme@leeds.ac.uk

18-19 March

Profiting from opportunities presented by the Kyoto mechanisms London £1395 Third annual event. Details: Marcus Evans Conferences, 020 7436 5735 www.marcusevans.com/banking/kyoto

24 April 2002

Profiting in the green economy Annual conference of the UK's environmental technology and services industry. British Library, London. £225-325 (£50 discount on £325 fee for IES members) A one-day conference reviewing the key competitiveness issues for succeeding in the UK, looking at future environmental policy and business issues such as exporting and finance. Details: Environmental Industries Commission Ltd, 45 Weymouth Street,

London, W1G 8ND; 020 7935 1675.

24-26 April 2002 Landscape management of marginal land

Plas Tan y Bwlch, Wales £185. Short course to provide an introduction to the development of historic landscapes to allow the sustainable conservation strategies to be evolved. Details: The Director, Plas Tan y Bwlch, Maentwrog, Blaenau Ffestiniog, Gwynedd, LL41 3YU, 01766 590324 Email: plas@eryri-npa.gov.uk

27-30 May 2002

Upland conservation management Plas Tan y Bwlch, Wales £270. Short course to develop the skills and understanding required for the effective conservation of upland and moorland habitats.

Details: The Director, Plas Tan y Bwlch, Maentwrog, Blaenau Ffestiniog, Gwynedd, LL41 3YU 01766 590324 Email: plas@eryri-npa.gov.uk

24-26 September 2002 Waste 2002: integrated waste management and pollution control, research, policy and practice

Stratford Upon Avon. The second in a series of international bi-annual conferences on the management and regulation of controlled wastes. Details: Conference Office, 02476 412170, email: info@waste2002.com



New members

The IES is pleased to welcome the following to membership of the Institution:

Miss V.R.H. Appleyard Environment Protection Officer, SEPA		Mr P.G. Livingstone	Senior Environment Protection		
Miss L.E. Asher	Environment Protection Officer, SEPA		Officer, SEPA		
Ms M.J. Austin	Principal Environmental Scientist,	Ms F.H. Logan	Hydrologist, SEPA		
	Babtie Group	Mrs A.M. MacEacherr	Hydrologist, SEPA		
Miss K.A. Bauros	Assistant Marine Biologist, SEPA	Mr B.J. McCreadie	Scientist, SEPA		
Mr K.H. Bawden	Sustainable Development Consultant	Mr J. McCulloch	Scientist, Chemistry Department, SEPA		
	Self Employed	Mr T.D. McKenzie	Environment Protection Officer, SEPA		
Miss F.M.J. Berry	Marine Chemist, SEPA	Mr C.J. Mathieson	Environment Protection Officer, SEPA		
Mr J. Bourke	Environmental Manager,	Ms S.M. Millar	Hydrologist, SEPA		
	Cahill Printers Ltd	Mr A.N. Morgan	Technical Assistant,		
Mr R. Boyce	Environmental Modeller & Data		Geoffrey Schofield Laboratories		
	Analyst, SEPA	Mr S. Murran	Marine Scientist		
Mr J.G. Brydon	Environment Protection Officer, SEPA		Hydrographic Surveys Ltd		
Miss D.J. Caffrey	Environmental Quality Planning	Dr F.H. Naysmith	Environment Protection Officer, SEPA		
	Assistant, SEPA	Mr R.V.O. Ondhowe	Environment Officer		
Mr C.G.B. Campbell	Environment Protection Officer		United Nations Mission in Kosovo		
Dr A. Cargill	Hydrologist/Scientist, SEPA	Mr A.D. Paton	Chemist, SEPA		
Ms F.E. Carley	Student, University of Manchester	Mr S.H. Pattullo	Assistant Environment Protection		
Mr B.D. Cowan	Environmental Quality Scientist, SEPA		Officer, SEPA		
Miss E.G. Cowle	Environment Protection Officer, SEPA	Mr A.M. Rose	Lecturer, Dubai Aviation College		
Mr R. Davidson	Environment Protection Officer, SEPA	Miss W.L. Shepherd	Environment Protection Officer, SEPA		
Ms J.C. Davies	Environment Protection Officer, SEPA	Ms E.P. Swan	Environment Protection Officer, SEPA		
Miss L.G. Davis	Area Support Team Officer, SEPA	Miss C. E. Young	Environment Protection Officer, SEPA		
Ms J.J. Graham	Senior Consultant, SEPA				
Dr D. Habron	GIS Project Officer, SEPA	Students at Swansaa Institute of Higher Education.			
Mr K.D. Hadden	Scientist, SEPA	Stutents at Swansea	institute of fingher	Education.	
Mr M.P. Hastie	Environmental Scientist,	Ms K. Atchison	Miss M. Barnett	Mr S.A. Bennett	
	Wardell Armstrong	Mrs K. Davies	Mrs M.G. Davies	Miss J.J. Myhill	
Miss F.M. Johnstone	Environment Protection Officer, SEPA	Mr J.G. Morgan	Mr P. Northcott	Mr M. Snook	

Mr A.I. Knox Mr S.S. Leith

Environment Protection Officer, SEPA Environment Protection Officer, SEPA

'The voice of the future' event for young scientists

Miss T.A. Wadham Miss B. Williams

Mr D. Thomas

Mr S.A. Thomas

Mr J.L. Williams

Miss K. Tate

Stephen Benn of the RSC is inviting young scientists from all over the country to an event on 19 March including a Science Question Time chaired by Ian Gibson and with other MPs from the Science and Technology Select Committee.

Young scientist participants are sought from all branches of science. If you would like to participate the following information applies:

- Tuesday, 19 March, 2002 at Burlington House, Piccadilly, London W1J 0BA from 10.30am to 4pm.
- More details at website: http://www.rsc.org/lap/parliament/vof.htm.
- One or at most two young scientists from each participating body.
- Those attending will be asked to submit beforehand questions they want to ask, although topical questions will also be possible on the day.
- Application form can be downloaded from the website and sent to Julie Smart at RSC stating the organisation to which they belong (first come first served).
- Travel expenses will not be paid by RSC so if assistance is required by a participant they must take it up with their own organisation.
- Lunch will be provided but RSC will ask for a modest contribution. The intention of the event is to strengthen the links between the scientific community and Parliament and to help a two-way dialogue on issues with which you are concerned and with which the Science and Technology Select Committee is dealing.

If you wish to apply, please check first with the Institution Secretariat to ascertain if places allocated are still available: phone 01778 394846.

Changing jobs?

Moving?

Remember to let us know promptly with your new address, telephone number, etc. This can avoid loss of communication, wasted postage and unnecessary complications.

Write to:

IES PO Box 16 Bourne **PE10 9FB**

Tel/Fax: 01778 394846

E-mail: ies-uk@breathemail.net

Earth Centre, in conjunction with Ball State University, USA are proud to host An International Think Tank on *Education for Sustainability:* a conference for all those with a responsibility or an interest in promoting sustainability.

Tuesday 12 March 2002 in Castle View Conference Centre, Earth Centre.

The event will provide opportunities to:

- Hear some of the latest thinking on implementing education for sustainability
- Share examples of good practice in education for sustainability
- Contribute to an international project on resources for education for sustainability.

Booking fee of £75.00 (includes organic lunch). Please call 01709 513944 for bookings.

SUSTAINABILITY

Want to learn more about the most significant issue for the professions in the 21st century?

The Institution for Environmental Sciences in cooperation with the Earth Centre (near Doncaster) is running a series of participative, solutionsbased workshops entitled

PROFESSIONAL PRACTICE AND SUSTAINABILITY.

These workshops will be based at the unique carbonneutral conference centre at the Earth Centre. The events will be facilitated by practitioners and experts from the Environment Agency, NGOs, and the professions. All participants will receive a copy of the recently published training manual – PROFESSIONAL PRACTICE FOR SUSTAINABLE DEVELOPMENT – on which the workshop is based.

The next workshop will be held on 12-13 March 2002. We would like to hear from all interested parties, whether companies, individual members or non-members of the IES. The cost is £350 which includes provision of the training manual (cost £250).

For further information and costs contact

The Institution of Environmental Sciences on 01778-394846 or email: ies-uk@breathemail.net

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Notice Board

Diary dates for 2002

6 March Education Committee 10.30

6 March AGM & Council 13.30

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Contributors

The *Environmental Scientist* aims to provide a forum for members' contributions, views, interests, activities and news, as well as topical feature articles. Articles up to 3,000 words should be submitted to the Editor, *Environmental Scientist*, PO Box 16, Bourne, PE10 9FB, three weeks prior to publication in the last week of January, March, May, July, September and November.

Views expressed in the journal are those of the authors and do not necessarily reflect IES views or policy.

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