

GA - SUSTAINABLE DEVELOPMENT BOX 111

SD14

SUSTAINABLE
DEVELOPMENT



Valuing the Environment



GLOBAL ENVIRONMENTAL
CHANGE PROGRAMME



ENVIRONMENT
AGENCY

This book is due for return on or before the last date shown below.

249102

Don Gresswell Ltd., London, N21 Cat. No. 1208

DG 0224271

ENVIRONMENT AGENCY



038738

VALUING THE ENVIRONMENT

Report of a seminar held at Church House, Westminster

7 July 1998

REPORT PREPARED JOINTLY BY:

**Ronan Palmer, Environment Agency
Jim Skea, ESRC Global Environmental Change Programme**

ESRC Global Environmental Change Programme

Environment Agency

PREFACE

This seminar was organised jointly by the Environment Agency and the ESRC Global Environment Agency to explore different ways of assessing environmental value. Thirty people representing business, government, agencies and the academic sector met to discuss the issues involved. In addition to the plenary sessions and break-out groups reported here, a set of posters which illustrated specific approaches and case studies were presented.

The seminar was planned and organised by Mary Cassell (Environment Agency), John Foster (University of Lancaster), Ian Langford (CSERGE, University of East Anglia), Chris Newton (Environment Agency), Hilary Ougham (ESRC Global Environmental Change Programme), Ronan Palmer (Environment Agency), and Jim Skea (ESRC Global Environmental Change Programme).

The Environment Agency and the ESRC Global Environmental Change Programme provided financial support for the seminar.

CONTENTS

	Page
Summary	iv
1. Introduction	1
2. Keynote Paper	2
3. Perspectives on Environmental Value	
Ethical	5
Philosophical.....	6
Psychological.....	6
Scientific.....	7
Cultural.....	8
Economic.....	9
Political.....	10
4. Wider Discussion	11
5. Case Studies in Environmental Valuation.....	12
5.1 River Quality Objectives	12
5.2 Siting a Waste Incinerator	14
5.3 Rural Housing Development	16
6. Discussion and Next Steps	
6.1 Plenary Discussion.....	17
6.2 Summary and Next Steps.....	18
Annex A: Agenda.....	19

SUMMARY

The Environment Agency's Perspective

1. This seminar was organised jointly by the Environment Agency and the ESRC Global Environment Agency to explore different ways of assessing environmental value. The Agency's interest in this topic stems from its strategic approach to the environment and the legislative background to its activities.
2. Four approaches frame the Environment Agency's strategy: the state of the environment; pressures on the environment; risks and values; and the Agency's own actions. Pressures on the natural environment are always changing as a result of stresses and strains including: natural forces; societal influences; abstractions and removals; releases and discharges; waste arisings and disposals; and compliance and illegal practices.
3. The Agency is concerned with broad approaches to environmental valuation and the range and applicability of tools and techniques. It is compiling a systematic database of different approaches to value which have been become explicitly available through research or are implicit in decisions which have been taken.

Valuation Approaches in Context

4. Many valuation methods are in use including: cost-benefit analysis/contingent valuation; risk assessment; life-cycle assessment; multi-criteria analysis; focus group discussion; stakeholder negotiation; and citizens' juries. The very range of these diverse valuation generation processes poses difficulties.
5. Broadly speaking, approaches fall into one of two categories, 'open' and 'closed'. Open approaches are exploratory and can involve a re-casting of our relations to the objects we value. Regulatory decision-making has to be more closed. These methods are used to adjudicate between different options and require assumptions to be made about the values of some things relative to others.
6. Methodological and conceptual problems associated with closed, quantitative methods, such as cost-benefit analysis, include: the framing assumptions; the way objects are represented; the use of measures such as imputed financial value; public understanding and acceptance; and the role of experts.
7. Equally, there are problems associated with open consultative and deliberative processes. These include: the problem framing process; the relationship between expert and lay judgement; the representativeness of the process; and tensions between process and outcome criteria
8. The various approaches configure the relations between policy makers, experts and the public in different ways. In doing so, they achieve different kinds of resolution. Individual approaches are favoured by different constituencies and are compatible with different institutional cultures. The various ways of finding values or preferences are not independent of the methods used to elicit them. The choice of how to access values is an integral part of regulatory action. *Different methods will be appropriate in different situations.*
9. The key questions with respect to valuation methods are:
 - what methods are appropriate in what kinds of situations, e.g. when does it make sense to quantify values and, if so, when can the metric usefully be money?
 - how can regulators recognise the tension between open and closed valuation, accepting the legitimacy of open methods?
 - how might we reshape existing institutions/processes?
 - what are the roles of practical innovation, research and professional development?

Perspectives on Environmental Value

10. The workshop considered seven different perspectives on environmental value. The papers presented illustrated a very wide range of approaches to environmental valuation.

11. **Ethical:** There is not necessarily a sharp distinction between anthropocentric and non-anthropocentric views of environmental value. Human interest is not concerned with material or financial interests alone, but with beauty and a flourishing natural world. The real issue is how our moral values for the environment can properly be articulated and taken into account in policy decisions. A fundamental problem with approaches like cost-benefit analysis is that they overlook the distinction between preferences and values. They treat all our commitments as simple preferences, differing only in terms of strength. However, some costs are of such a character that it would be wrong in principle to incur them.

12. **Philosophical:** A major part of what we value about the environment is its historical significance, the fact that it is part of a longer process. If we view the environment as a set of assets this invites us to look at it as if it could be bottled. The view that people 'place' values on the environment implies that people carry value around within them. Value has to be understood as responding to features of the object, and is sensitive to the context in which it takes place. We value differently depending on whether we are alone or in a crowd, whether we asked one particular question or a different one, and depending on how people behave. The Environment Agency is not above the value business, because it has options to interpret its legislative duties, for example by interpreting what is meant by a 'cost'.

13. **Psychological:** Social dilemmas are situations with two behaviour options, one serving self interest, the other serving collective interests. Many environmental issues fall into this category. Two basic strategies can be used to change behaviour. One can use: a) an individual or psychological approach, e.g. promoting awareness or strengthening social norms; or b) the more economic solution, e.g. promoting structural change, imposing rules, or introducing organisation change. We must understand better the interaction between structural solutions and individual solutions. More research is needed in this area.

14. **Scientific:** The scientific perspective sees the environment as a whole and sustainability as being about quality. In the absence of environmental damage, remedial action is not needed. Some in the scientific community see the environment as having intrinsic value, while others take a more functionalist view, valuing the environment for the services delivered to humans. Scientific approaches for looking at environmental value include: identifying areas that are largely uncontaminated; looking at numbers of species or the distribution of species; and assessing long-run effects, e.g. temperature change over time

15. **Cultural:** Valuing nature means engaging with rich and diverse cultural processes - the meanings, values, knowledges and practices - which shape nature. Environmental economists often conflate different dimensions of human relations with the natural world under the label of 'preferences'. When nature is valued through an inclusive and deliberative process, we can be more certain that methods of environmental appraisal do appeal to universal values.

16. **Economic:** Economic thinking, in the form of extended cost-benefit analysis, can contribute to a more comprehensive and integrated approach to environmental assessment. A function-based model allows the analyst to make rigorous links between ecosystem processes and functions and related anthropocentric values. The term total economic value can describe the aggregation of use values and other option and existence value where these can be quantified. Monetary valuation methods and techniques should be deployed whenever possible but these can be combined with geographical information systems, psycho-social and cultural theory in order to enrich the set of variables included.

17. **Political:** All conflict resolution involves judgement. Environmental conflict arises as a result of the way in which the problem has been framed. Environmental problems are shaped by factors such as institutional priorities, pressures and negotiations. The shaping of regulation is itself a function of social processes. The Environment Agency, to be politically effective, needs to look at its own capabilities. Government needs to be more self-aware and re-dress the neglect of qualitative insights.

Case Studies

18. Three discussion groups addressed different case studies of concern to the Environment Agency and considered what types of approach to valuation might be brought to bear.

19. **River quality objectives:** Measurement was not seen as a problem. However, there would be constraints on target setting, including farming, housing developments, the physical characteristics of the area and rainfall. The Agency would also need to consider sewage treatment, extractions and industrial effluents. The benefits of improving quality include improved habitats for fish, birds and mammals and the enhancement of activities such as walking, fishing, swimming and boating. The intangible benefits include the knowledge that the river would be cleaner. Values relating to direct use (such as swimming, boating and fishing) are more amenable to economic valuation. A more discursive approach would be better for eliciting the value attached to the less tangible benefits.

20. **Siting a Waste Incinerator:** The central issue here was seen to be legitimacy, which meant involving the public. The group therefore focused on this rather than analytical procedures. There are difficulties involved in engaging the public in debate. Although people often say they want to be consulted, many will become involved only when they are affected directly. There is therefore a need to raise awareness, giving people a chance to discuss a wide range of options. It is also important to identify people as the source of the waste, and therefore as part of the problem. Compensation could be used as mechanism to secure siting consent but this approach cannot readily be accommodated in the British planning system. Involving the public needs to be distinguished from generating social intelligence about the public. Having a better sense of the nature of the community could equip the local authority to design the process of consultation and compensation. Trust is a central issue and more research is needed in this area.

21. **Rural housing development:** It makes sense to quantify two things: a) the background environmental facts (such as risk of flooding) in order to narrow the range of subjective discussion; and people's views and preferences. However, it is impossible to reduce everything to a purely numerical approach because quantification always occurs within a judgmental framework. Quantification can take place without aggregation. Separate metrics must be used for different types of value. But a deliberative process may be needed to decide which facts to take into account. However, there is no such thing as a neutral deliberative process. One of the problems with assessing rural housing is the number of spatial levels on which it is necessary to work. The Agency should be engaged in the higher levels, because local decisions may not be framed in a way that makes it possible for them to 'win'.

Conclusions and Next Steps

22. People are often concerned with whether they are being treated fairly and consulted properly, rather than with the actual outcome of a decision process. Fairness of procedures can make people identify more with the authorities and the collective issues that are at stake.

23. The Environment Agency faces the challenge of accommodating more open, deliberative processes. Will its culture change, and if so, how? How effective are these processes, and how can they be evaluated? Will the Agency be reflective enough?

24. The Agency is becoming more aware of the wider social debate, and the need to look at its own position. The seminar would help the Agency to be more aware of what it was doing and how it could better carry out its work. One of the key challenges is to produce an operational methodology. The environment is valued, not just in making a decision, but in choosing which bits of data to measure.

25. The workshop was part of the Agency's learning process. A forthcoming consultation paper will address what the Agency means by value, where it values the environment, and how it might engage both itself and its partners more fully. The Agency must also learn more by doing.

1. INTRODUCTION

**Jan Pentreath,
Chief Scientist and Director of Environmental Strategy,
Environment Agency**

From the perspective of the Environment Agency, this seminar addressed two separate but inter-related issues:

- the Agency's strategic approach to looking at the environment and its work; and
- the Agency's legislative background.

The Agency's strategic approach is based on four frameworks:

- description of the state of the environment;
- analysis of the pressures on it;
- what we do in terms of risk and values; and
- the action of the Agency.

The state of the environment is described in terms of six 'Viewpoints' (Table 1).[†] In terms of value, the first two are environmental capital, related to the attributes of or services the environment provides. Targets also show values, in that they show what we aspire to.

Table 1: Viewpoints on the Environment

- Land Use and Resources
 - Biodiversity
 - Standards and Targets
 - Environmental 'Health'
 - Long-Term Reference Sites
 - Acsthetic Quality
-

The pressures on the environment are always changing. These are described in Table 2, 'Stresses and Strains'. Each of the pressures can affect different viewpoints. Moreover applying pressure to change one of the pressures may lead to the pressure shifting to another pressure or affect another viewpoint. The Agency integrates this using the thematic approach, shown in its strategy.[‡]

Table 2: Stresses and Strains

- Natural Forces
 - Societal Influences
 - Abstractions and Removals
 - Releases and Discharges
 - Waste Arisings and Disposals
 - Compliance and Illegal Practices
-

The third framework concerns 'Risks and Values'. When risks are already present, the Agency's role is to reduce risk. In other cases, new risks to the environment can be created. The public's perception is important. Values can be analysed in a number of ways. Cost-effectiveness is useful where targets are set. Cost-benefit analysis is used where values can be monetised. Techniques such as multi-attribute analysis can be used where there is greater uncertainty over values. Action, the fourth framework, should follow from this analysis.

[†] *Viewpoints on the Environment*, Environment Agency, 1997.

[‡] *An Environmental Strategy for the Millennium and Beyond*, Environment Agency, 1998

The Agency's legislative duties under Environment Act 1995 also show the need to look at values:

- Section 4: contribute to Sustainable Development, taking into account any likely costs;
- Section 7: having regard to the economic and social well-being of Local Communities in Rural Areas
- Section 39: Costs and Benefits, taking into account any likely costs.

The seminar was about broad approaches to environmental valuation, the range and applicability of tools and techniques and, finally, databases. The Agency is compiling a systematic database of different approaches to value, where they have been become explicitly available through research or are implicit in decisions which have been taken. The Agency is producing a consultation paper on environmental values in late 1998.

2. KEYNOTE PAPER

John Foster,
Centre for the Study of Environmental Change, Lancaster University

This keynote paper set the framework for the day's discussions. Many valuation methods are in use including: cost-benefit analysis/contingent valuation; risk assessment; life-cycle assessment; multi-criteria analysis; focus group discussion; stakeholder negotiation; and citizens' juries. The very range and the difficulties posed by these diverse valuation generation processes is what inspired this workshop.

Table 3 shows a number of issues, both methodological and conceptual, which have been raised with the quantitative methods. For example, in the framing assumptions, there can be contestable problem definitions built into the relevant science. The objects to be valued may be represented as discrete and capable of being valued. The use of metrics matters: money for example has particular social and cultural significance. Ignorance is often represented as statistical uncertainty. There may be problems of public understanding and uncertainty re the above. The experts may be seen as expropriating values, in a sense taking them away from people who then have no further control over how those values are used.

Table 3: Problems/Issues with Quantitative Methods

- Framing assumptions
 - representation of objects to be valued
 - use of metrics
 - determining over indeterminacy
 - public understanding and acceptance
 - roles of experts
-

Deliberative methods also have problems (Table 4). For example, who sets the deliberative agenda? What is the relationship of expert to lay judgement - advisory or stipulatory? If representation is not statistical, then how is representativeness achieved when you select random groups of people to discuss issues? How do we deal with open-ended processes that do not always produce robust decisions? How important is democratic inclusiveness?

These different approaches can all be understood as different social processes of valuation. They are different ways of configuring the relations between policy makers, experts and the public in different ways, employing different kinds of assumptions and achieving different kinds of resolution. Thus they are favoured differently by different constituencies and are compatible to different degrees with various institutional cultures. These different ways of finding values or preferences are not independent of the methods used to elicit them. The methods themselves are constitutive of the values elicited. The choice of how to access values is not a prelude to regulatory action, but is already a part of the action.

Table 4: Problems/Issues with Qualitative Methods (Deliberative and inclusionary processes)

- framing processes
 - relations of expert to lay judgement
 - representativeness
 - open-endedness
 - tensions between process and outcome criteria
-

Therefore different methods may be appropriate to different situations (Table 5). The Environment Agency's approach (Table 6) recognises that a wide variety of processes can be used to prepare decisions. These could all be called cost-benefit synthesis. The issue is how to discriminate intelligently between situations. Is it helpful for example to describe non-quantitative approaches as consensus-building, or would it be better to look at them as challenging and diversifying, and indeed creating, understanding of what is going on?

Table 5: Choosing Valuation Methods: Suggested Questions

1. What methods are appropriate in what kinds of situations?
 - 1.1 Where does it make sense to quantify values?
 - 1.2 Where can the metric usefully be money?
 - 1.3 Where must the approach be non-quantitative?
 2. What features (of situations and methods) do these discriminations reflect?
 3. How can the Agency recognise the tension between open and closed valuation?
 - 3.1 How can it identify the effects of this tension in particular cases?
 - 3.2 How can it accommodate this tension creatively in decision-making?
 4. How does this relate to wider issues of "governance"?
 - 4.1 How does it tie in to the reshaping of existing institutions/processes?
 - 4.2 What are its implications for the recognition of new/emerging ones?
 5. How do we take this learning process forward?
 - 5.1 What is the scope for practical innovation?
 - 5.2 What is the role of research?
 - 5.3 What is the role of/scope for professional development?
-

The question of which methods are most appropriate is not just a pragmatic one. Discrimination reflects basic features of the situations and methods themselves. There are other relevant aspects, such as social relations, power relations, the extent to which the environmental objective can be clearly delimited, institutional credibility, and the extent to which relevant economic information is available. To simplify this choice, different methods can be mapped according to the 'modes of valuation' (Table 7).

Table 6: Costs and Benefits: The Environment Agency's Approach

In carrying out all of its functions the Agency is required to protect or enhance the environment so that it contributes towards achieving sustainable development. In doing so, the Agency must have regard to Ministerial guidance issued to it and must take into account the likely costs of benefits of its actions.

We will develop and use methods to:

- assess the most cost-effective solutions when the benefits have already been decided on other (e.g. statutory) grounds;
 - assess likely costs and benefits when the choices can be clearly costed;
 - assess options when some aspects can be costed while others cannot, by using multi-choice techniques; and resolve conflicts by building consensus where matters are complicated and views are varied and extreme.
-

Table 7: Modes of Valuation

OPEN	CLOSED
<ul style="list-style-type: none">• exploratory• relational• constitutive	<ul style="list-style-type: none">• adjudicative• reifying• comparative

Exploratory types of valuation can take us beyond what we thought we know. These involve a substantial recasting of our relation to the things we are valuing, reshaping both the person carrying out the valuation and the object being valued. These processes are open-ended and do not take well to closure. By contrast decision making in regulation must use a more closed process. These methods are about adjudication, and require assumptions about the values of some things relative to others. Here, quantitative methods may be more suited to decision makers.

Deliberative methods are more responsive to open-ended valuation. Institutions may not be set up to allow them to recognise and respond to open-ended valuation, even though this type of valuation may be particularly important for the environment. Bodies such as the Environment Agency must recognise the tension between open and closed valuation and accept the legitimacy of open valuation methods. Institutions that do not acknowledge this legitimacy may lose credibility and authority.

Social dilemmas are situations with two behaviour options, one serving self interest, the other serving collective interests. The non-co-operative option gives higher personal benefit and is also harmful to others. If all or most choose non-co-operation, then all are worse off. Many environmental issues fall into this category.

Two basic strategies can be used to change behaviour. One can use an individual or psychological approach: e.g. promoting awareness or strengthening social norms; or the more economic solution, i.e. promote structural change, introducing rewards or fines, imposing rules, introducing organisation change, e.g. by giving authorities new powers, or adopt technology, such as water meters. Structural changes can also lead to a change in attitude. Examples of these include water metering in the Isle of Wight and car-pool lanes in the Netherlands.

We must understand the interaction between structural solutions and individual solutions. What are the psychological effects of structural interventions, and where do we come with our campaigns and attitude changes? More research is needed into how we should classify these solutions. We could soften the dilemma or remove decisional freedom, but we need to know how people perceive these structural changes. Do people think that drastic measures are appropriate? What evasion routes do they have? How do they evaluate the changes? Under what structural conditions are attitudes most predictive of behaviour? When people have no incentive, attitudes or values are not important; but if incentives are too high, they don't matter either, because people get such personal rewards that values are not predictive.

PAPER 4: Scientific

Dan Osborn

Institute for Terrestrial Ecology, Monkswood

Two principles underlie the scientific perspective:

- sustainability is about quality, which is about the lack of negative inputs. In the absence of damage there would be no need for remedial action;
- the environment is a whole.

There are different views on protecting the environment within the environmental science community. Some see the environment as having intrinsic value, while others take a more functionalist view, valuing the environment for the services delivered to humans.

Science can deliver information about the environment. A recent study for the Department of the Environment, Transport and the Regions (DETR) listed what had to be known about the environment if one were to be able to protect it. If one can assume that regulation is an objective activity, these requirements were derived objectively. This system could in theory be used to consider the most valuable square kilometre in the UK. However any measure using a single number would not be acceptable.

A number of methods for looking at value were illustrated, including the assignation of Sites of Special Scientific Interest (SSSIs). Among the possible approaches are: identifying areas that are largely uncontaminated; looking at numbers of species or the distribution of species; and assessing long-run effects, e.g. temperature change over time.

Discussion

One participant thought that this paper pointed up the tensions being addressed at the workshop. It illustrated a selective approach, typical of Whitehall, based on what could be measured. Other representations of the environment are outside this framing, but end up being squeezed inside it. The assertion was made that agencies are trying to adopt a more fine-grained approach, but the planning system finds designation of SSSIs, for example, useful for public inquiries. Agencies were hopefully moving towards a more sophisticated characterisation.

Scientists believe that they are trying to represent an 'objective', unified view of the value of the environment, which does not necessarily suit protagonists. Pressure groups respond by converting abstract notions into terms that will mesh with what powerful regulatory agencies recognise.

Another view was that the paper had illustrated that physical science does not on its own point towards unequivocal measures. It needs economic and social input.

PAPER 5: Cultural

**Jacque Burgess
Professor of Cultural Geography, UCL**

Valuing nature means engaging with rich and diverse cultural processes - the meanings, values, knowledges and practices - which shape nature. The different dimensions of human relations with the natural world are often conflated, or captured by environmental economists under the label of 'preferences'.

Recognition of the cultural significance of nature, combined with new ways of thinking about sustainability which recognise the complexities of interlocking environmental, economic and social systems are contributing to more sophisticated approaches to environmental management. The New Forest Local Environmental Action Plan (LEAP) case study demonstrates, conclusively, that individuals representing very different world views and interests can come together and debate the bases of their values. These representatives can work amicably towards compromise. In the New Forest, there was a surprising level of consensus over the principles on which to base judgements about prioritising local environmental actions.

Such workshops will assist in the development of this more open and democratic form of decision-making. The Environment Agency, in supporting the New Forest work, and agreeing to take the approach developed into its national guidance for all the LEAPs, has shown itself willing to embrace the 'common good' approaches to valuing nature which have, for so long, been ignored in environmental management.

When valuing nature is approached through an inclusive and deliberative process, we can be more certain that methods of environmental appraisal do appeal to universal values. Equally, because stakeholders are involved in this process, policies based on these agreed values will gain wider support than those 'values' elicited through a process confined to expert groups alone.

It is often said that 'there is no alternative' to expert-driven systems of valuation for policy-making. The LEAP case study demonstrates that there is an alternative. The strengths of a rigorous and defensible analytical process can be combined with a more inclusive and deliberative approach to agreeing values for nature and deciding what should be done.

Discussion

One participant was concerned that deliberative might reject financial costs. The Environment Agency is faced with options and decisions, which inevitably involve trade-offs, some of them financial. How can we be sure that people have fully understood all trade-offs in all options? It was pointed out that financial costs were part of the LEAP process. The stakeholders spent much time discussing the costs, benefits and risks associated with possible actions. They felt that the Agency knew its own financial resources. Once the broader based criteria had been agreed, the allocation of costs would become a 'commercial' decision for the Agency.

It was also observed that there should not be false distinctions between analytic and deliberative processes on the one hand, or between free markets and collective provision on the other.

3. PERSPECTIVES ON ENVIRONMENTAL VALUE

INTRODUCTION

Sara Parkin
Forum for the Future

The broad question to be addressed in this session was: how might we systematically be able to integrate non-quantitative values into the decisions that we make? Seven different perspectives were presented.

PAPER 1: Ethical

Michael Banner,
Professor of Theology, Kings College London, Member of RCEP

This talk looked at what lies behind the issues raised in the introductory papers.

The environmental ethics debate of the last 20-30 years has been dominated, unhelpfully, by discussion between anthropocentric and non-anthropocentric views. The contrast between the two is not as sharp as made out. This debate has taken away from the real issue: how can our moral values for the environment properly be articulated and taken into account in policy decisions?

The dispute about anthropocentric and non-anthropocentric approaches is one about whether environmental regulation should serve human interests alone or should serve wider interests, e.g. plants, animals and ecosystems. Once we see human interest as not being concerned alone with narrowly material or financial interests, but as concerned with beauty and a flourishing natural world, the difference can disappear. Both approaches reject reductionistic accounts of human well-being which treat the environment as a resource, as capital or as stock. These terms set people on edge, not because the environment is not a resource, but because speaking only in these terms appears reductionistic.

There is a rationale in Christianity and other religions for the repudiation of reductionism. In the Christian tradition, nature is understood not as a raw material on which we may impose purposes to give it meaning, but, because it is created as something that possesses significant form and meaning in itself.

The real debate is the role of methods of valuation. The Royal Commission on Environmental Pollution (RCEP) has been studying the setting of environmental standards. The role of economic analysis has created particular interest. However, in Europe very few people seem to think that economic analysis, in the form of cost-benefit analysis, has any role to play.

A fundamental problem with cost-benefit analysis is that it overlooks the distinction between preferences and values. It treats all our commitments as simple preferences, differing only in terms of strength. Take for example the statement 'we should not fish in the Amazon'. This might be because it affects indigenous people or because it affects the environment. That position would not be changed if one were to find out that fish catches in the Amazon were twice as large as previously thought. The point is not that the benefits were not sufficient to outweigh the cost, but that the costs were of such a character that it was wrong in principle.

Discussion

Economists responded to Michael Banner's presentation by asserting that economics could consider all preferences, not just financial ones. It was also observed that, in Michael Banner's final example, it might make a difference whether catches in the Amazon differed by one fish or two, or whether they were orders of magnitude different.

PAPER 2: Philosophical

**Alan Holland,
Lecturer in Philosophy, Lancaster, editor 'Environmental Values'**

This paper addressed three propositions.

Values are context dependent. The view that people 'place' values on the environment implies that people carry value around within them. Economists and psychologists act as if this were the case. Some psychologists, such as Paul Stern, do acknowledge sensitivity to context. But they treat them as deep-seated 'value orientations', shaped by pre-adult socialisation, which may be difficult to reshape. This form of psychology recognises three different value-orientations - egoistic, social-altruistic and biocentric. This is wrong, because it treats the relation between object and value as external or contingent. Value has to be understood as responding to features of the object, and is sensitive to the context in which it takes place. We value differently depending on whether we are alone or in a crowd, whether we asked one particular question or a different one, and depending on how people behave. Values are also accountable, structured, and authoritative.

What is it about the environment that we value? The view of the environment as a set of assets invites us to look at it as if it could be bottled. Environmental capital does remind us that a loss cannot always be made good, and shows that environmental loss can have economic impacts. However, a major part of what we value is the environment's historical significance, the fact that it is part of a longer process. One definition of conservation is that 'it is about preserving the future as a realisation of the potential of the past; it is about negotiating the transition from past to future in such a way as to secure the transfer of maximum significance'. However, this characterisation approach is not an improvement because it focuses on the separable attributes of the environment. This perpetuates the mistake of anti-historicism, and adds the idea of abstractionism.

The Environment Agency is not above all this value business, listening in and taking soundings. The Agency has its own value-laden agenda. It is not freely chosen, because it is part of its legislative background. However the Agency has options to interpret its brief. For example, a managerial approach to the environment almost dictates that sustainability is the most important aspect of biodiversity. An accounting approach implies the weighing of costs and benefits. However costs can be interpreted in different ways. For example, costs can be seen as anything that detracts from quality of life.

Discussion

One participant contended that, at bottom, people have a robust value system. Intrinsic values may not be context specific. Another view was that there is a continuum between destruction, adaptation and conservation. Some kinds of change preserve what is important and some do not.

PAPER 3: Psychological

**Mark van Vugt
Lecturer in Psychology, University of Southampton**

This paper reviewed three psychological models relevant to the environment. Psychology is involved in the study of environmental behaviour because: environmental problems result from human behaviour; and these behaviours can be modified, in order to solve problems.

Two dominant models explain behaviour and say where values come from. The reinforcement model, from the Skinnerian tradition, sees motivation as determined by costs and reward. Adding costs to destructive behaviour and rewards to good behaviour should result in change. The attitudes model, from social psychology, assumes that behaviour is determined by values and what people think. To secure change in behaviour one has to change values. The social dilemma model complements the others. It is rooted in rational choice and game theory: destructive behaviour happens because benefits are immediate and personal, whereas costs are long term and shared. Therefore costs must be made more immediate and more personal.

The approach advocated here indicated how economic thinking could make a contribution to a more comprehensive and integrated approach to environmental assessment through extended cost-benefit analysis. At the core of this approach is a function-based model which allows the analyst to make rigorous links between ecosystem processes and functions and related anthropocentric values. The model is not reductionist in the sense that it neglects the overall systems perspective that is key to the understanding of the environmental change process. However, its foundations are more narrowly drawn at the level of individual ecosystem functions. This provides analytical rigour as well as practical regulatory/policy relevance. At no time is the overall value of a healthy, evolving set of environmental systems lost sight of.

The term total economic value is meant to describe, when appropriate, an aggregation of use values and other option and existence value where it is thought feasible to quantify these. Total economic value is therefore less than total system value which takes account of life support functions and perhaps other dimensions of environmental value such as intrinsic value. Intrinsic value is incommensurate with the 'economic' values.

This approach to valuation adopts a mixed methodology in terms of its treatment of value quantification. Wherever feasible and meaningful, monetary valuation methods and techniques should be deployed. But at this level interdisciplinary insights are possible, as economic theory is combined with geographical information systems, psycho-social and cultural theory in order to enrich the set of variables included in methods such as travel cost, hedonic pricing and contingent valuation. Many use values (direct and indirect) can in any case be quantified quite properly in market price/value terms and compared with alternative resource use options and their values.

A study of bathing water quality carried out by CSERGE illustrates the application of the mixed methodology. Perceptions of bathing water quality and willingness-to-pay for improvements were investigated at two coastal sites in Norfolk. Focus group sessions were used both to scope the issues before the survey and to test reactions afterwards. Both the conceptual model of 'total economic value' and the empirical investigation worked well. The results passed commonly accepted 'internal' norms of reliability and validity. A similar model has also been successfully tested in other environmental use contexts.

This type of economic valuation data can play an important heuristic role in an extended cost-benefit analysis process, alongside other quantified but non-monetary data and more qualitative information derived from a number of possible deliberative process methods. At the 'sharp' end, the policy decision marking process takes place in a political economy context which is attempting to satisfy multiple (sometimes conflicting) policy objects, under budget constraints. The inevitable trade-offs involved require: the setting of relative values (either implicitly or explicitly); an appreciation of the economic realities (opportunity costs) of life in a market-based economy and society; and a recognition of the moral issues and dilemmas present.

Discussion

It was observed that economics may be operational, without always being adequate. The bathing water quality may have been relatively non-controversial, but this would not always be the case.

Again, participants questioned whether the opposition between analytic and deliberative approaches was helpful. There is an important cross-cutting dimension relating to the operationalisation of the two approaches. The style of presentation of the discursive approach emphasises the fuzziness of issues, whereas the presentation of analytic approaches emphasises the need to reach a decision. Analytic approaches, such as risk assessment, may appear precise at the level of individual studies. However, if a range of studies is examined, very large differences can be found in answers to ostensibly the same question. This calls into question how operational they really are. Also, one can understate the extent to which deliberative approaches are black-boxes, hiding the way in which decisions are made.

The emerging trend to place deliberative process as one among a range of process options was highlighted. However, as the paper on scientific perspectives had shown, we are in the realm of deliberation, interpreting information, all the time. We always make judgements, but attempts to involve local stakeholders are more focused and 'deliberately deliberative'. However, the decision-making process, including the use of analytic tools, is deliberative down to the bottom.

PAPER 7: Political

Robin Grove-White

Director, Centre for the Study of Environmental Change, Lancaster

This paper addressed the political dimensions of decision-making then suggested some ways forward.

All conflict resolution involves judgement. The problems with environmental values arise from the methods used. Environmental conflict is about how the problem has been framed. The Environment Agency's approach neglects to mention that environmental problems are not problems given in nature. They arise and are shaped by factors such as institutional priorities, pressures and negotiations. The shaping of regulation is itself a function of social processes, many of which are unacknowledged. These realities need to be acknowledged. It is very necessary for agencies to have clear unambiguous definitions, but such definitions can become minefields.

Take the case of Brent Spar. The BPEO (best practicable environmental option) methodology was arrived at after much discussion within government and elsewhere. It decided that the single installation is what mattered in decision making. Greenpeace, however, looked at the issue in a broader way, seeing it as an open-ended issue that could have implications if taken as a precedent.

Legally defensibility is an important criterion for government and agencies. Greenpeace's definition of the problem was more explorative and open ended, and had public resonance. These contrasting frameworks are typical

Quantitative approaches tend to be narrow and reductionist, whereas public concerns are broader, cumulative, relational and open-ended. This is based in part on public experience of the inadequacy of institutions. This is the central issue, and meeting point for a discussion about the political relevance of these various methodological possibilities

This analysis has three implications.

- a creative experiment is needed, involving interaction between agencies and academics, about these issues. There is an intellectual poverty about much of the understanding of questions of environmental value. The academic discussion does not get enough significance in government, although industry is more open.
- the Environment Agency, to be politically effective, needs to look at its own capabilities. Our particular political culture is very responsive to quantitative methods. The pressure of decisions and accountability push towards a measure of quantification and reductionism. Methods such as contingent valuation can be very useful, but are fair weather friends. Qualitative methods, for their part, can be very fuzzy. More self-awareness is needed by organisations.
- to avoid more controversy based on differences of framing, government needs to be more self-aware. Persistent neglect of the qualitative insights is significant.

To sum up, the Environment Agency could play a very creative role in renewed intellectual configuration aimed at both policy and interdisciplinary thinking.

4. WIDER DISCUSSION

Some participants were concerned that deliberative approaches could be unrepresentative and open to institutional capture. Proponents argued that deliberative approaches were not claimed to be statistically representative. The validity of the approach comes from building by case study, and assessing similarities and differences between case studies. The New Forest LEAP process had identified stakeholder groups and the result was checked, in a sense, via wider consultation. The openness and transparency of the process makes institutional capture more difficult.

It was argued that different values and different institutional relationships can emerge from different methodologies, e.g. contingent valuation and citizens' juries, being applied to the same case study. Different trajectories are possible. There might be scope for a new paradigm. The Environment Agency could be creative by getting people to focus on particular problems, outside intellectual baronies, exploring their own processes of engagement.

It was questioned whether objections to 'reductionism' referred to reductionistic knowledge itself or to the way in which it was used. The response was that the range of variables, or the typology of environmental issues, which emerge from the scientific perspective and which appear in official documents, is a normative view that is widely accepted. This is a product of a particular set of preoccupations and disciplines but is not exhaustive. But it does not capture the full range of issues. NGOs put the environmental argument in terms of this reductionistic normative model, simply because it is embedded in government. However, scientists argued that the government does not use the normative model in this way. Officials and the government are concerned with other issues.

Others took the more pragmatic view that the priority was to make good decisions, that is to say decisions that have good outcomes. Something in the processes used for this purpose should make them internally valid. The processes used should also be capable of resolving conflict and should be persuasive in the way in which they reach that resolution. Cost-benefit analysis may satisfy the first criterion, but not the second. Finally, processes should also be defensible under challenge. Cost-benefit analysis also meets this criterion.

It was questioned whether theoretical perspectives could help to compare the significance of the risks inherent in industrial processes with the costs of action which could affect a business severely. It was suggested that some of the approaches could be brought together. For example, in relation to wetlands, we could use monetary values for the functional values, such as flood defence, and multi-criteria analysis for 'non-use' values.

Another way of framing the discussion was to ask: 'what are we going to do about public opinion'? The challenge is whether there are more democratic ways of involving public, of tapping into other kinds of meanings, values and expertise held by lay public, and how can this be facilitated. One of the benefits for the Environment Agency in going down this route is to become more open and democratic. There are also issues to do with tapping into other kinds of knowledge. The Agency does not have total command of knowledge about the environment. The Agency also needs partnership, because it does not have total responsibility. For example, local authorities could help the Agency develop local plans. Finally, the Agency needs to legitimate itself as an open and transparent organisation. This will also be helped by more open processes. The Agency should therefore avoid seeking solutions that ship in people's knowledge in a reductionist manner.

However, it was counter-argued that the reductionist, economic, paradigm might not be a bad place from which to start. The decision making process has actually moved beyond that stage. However, operational decisions must be made, often in the face of much complexity.

5. CASE STUDIES IN ENVIRONMENTAL VALUATION

Introduction

Jim Skea
Director
ESRC Global Environmental Change Programme

Discussion Chair

Chris Newton
Head of Sustainable Development
Environment Agency

In the afternoon, three discussion groups addressed different case studies of concern to the Environment Agency and were invited to consider what types of approach to valuation might be brought to bear in each case. From the morning session, and from the posters presented at the seminar, it was clear that an impressive range of approaches is available for environmental valuation. Reconciliation between the various approaches was too much to ask for, but there was the possibility of some engagement. The approaches did not fall into two categories, economics and 'the others', but reflected a much wider set of possibilities.

The discussion groups were invited to address the five basic questions set out in Table 5. In addition, a useful starting point was: how could the various perspectives covered in the morning papers be applied to each of the case studies?

5.1 Setting River quality objectives

Background

The Environment Agency regulates river water quality in England and Wales. Any discharge has to have a consent to comply with the law. The consent specifies the quality of the discharge.

River water quality objectives were first proposed during the 1970s as a system to define targets for the quality of our rivers. The Environment Agency has inherited procedures developed for the purpose of the Surface Waters (River Ecosystem) (Classification) Regulations 1994. These define a specific method for setting targets against which subsequent performance can be measured. The system deals with the chemical quality of waters and is summarised in Table 8.

Table 8: The River Ecosystem Classification

Class	Description	Biochemical Oxygen Demand Limit	Ammonia Limit
RE1	Water of very good quality suitable for all fish species	2.5	0.25
RE2	Water of good quality suitable for all fish species	4	0.6
RE3	Water of fair quality suitable for high class coarse fish populations	6	1.3
RE4	Water of fair quality suitable for coarse fish populations	8	2.5
RE5	Water of poor quality which is likely to limit coarse fish populations	15	9

Notes: Biochemical oxygen demand is a measure of oxygen depleting substances present. Ammonia is simply the amount of ammonia in the water. Both of these are normally inversely related to the quality of the ecosystem, and therefore the likely quality of the fishery. Biochemical oxygen demand and ammonia are indicators of the impact of sewage effluents and of any pollution caused by poorly managed agricultural activity. However good water quality does not in itself guarantee that fish will be present.

In setting targets the Environment Agency must take account of the degree of treatment provided to all sewage effluents which may affect the water concerned, agricultural impacts and also the fact that natural algae cause biochemical oxygen to increase in some lowland rivers relative to rivers in upland areas.

Targets are normally set for specific stretches of river of length 2-10 km, and are subject to consultation through the Environment Agency's Local Environment Action Plans (LEAPs). Monitoring is undertaken to demonstrate whether the targets are met.

In most catchments, the level of the environmental target chosen will have implications for the local population, specifically with regard to future demographic change and the local economy. This is because the target represents a specific environmental capacity available for human use. Efforts will be made to ensure that the limits identified are not transgressed. In March 1996, the National Rivers Authority (NRA)^{*} consulted on setting statutory water quality objectives for eight pilot rivers. The objective was based on a simple assessment of the costs and benefits (social, economic and environmental) for each stretch of river. A river stretch is defined by reference to topographical features as well as the existence of convenient monitoring points. Each stretch is assigned to one of four target quality classes. This is a relatively labour intensive process.

The Agency is deliberating how to develop this approach so that there is a national framework for water quality, which sets short and long term objectives.

Issues arising

- how do you measure quality (in a scientific sense)?
- whether, and how, long term quality objectives might be limited by economic considerations?
- what social and cultural aspirations are relevant?
- how might non-human use of rivers be factored in?

Case Study Report

The group were asked to look at setting water quality objectives using the Agency's five-point scale of classification (Table 8), and decide what methods were appropriate in reaching judgements as to how stretches of rivers were classified. They decided that measurement was not problematic. There would be constraints on target-setting. Exogenous constraints included farming, housing developments, physical characteristics of the area and rainfall. Constraints that were endogenous to the Agency included sewage treatment, extractions and industrial effluents.

The group then discussed the benefits of upgrading water quality, and whether quality could be defined purely in terms of the characteristics used in the classification system. The group had no real answer to this, but decided to limit themselves to the classification system given. Benefits of upgrading water quality included reductions in biochemical oxygen demand, ammonia, and levels of phosphate and nitrate, leading to improved habitat for fish, birds and mammals. Other tangible benefits would be of significance to people, for example by enhancing activities such as walking, fishing, swimming and boating. There were also intangible benefits to people, such as the satisfaction of knowing that the river was cleaner.

The group decided that the values relating to direct use (such as swimming, boating and fishing) were more amenable to economic valuation than those which were less direct (such as casual recreation). The greatest difficulty was with the less tangible satisfaction/awareness element. Some members of the group thought it was easy to miss the value to society in cost-benefit terms. The consensus was that a more discursive approach would be better for eliciting the value attached to these less tangible benefits.

^{*} A predecessor body of the Environment Agency

Further discussion

It is readily possible to describe water quality, but it was also essential to discuss whether the pristine natural state of a river represents an appropriate starting point, and whether the value judgements inherent in that assumption can be accepted. One can categorise different river states, but it does not necessarily follow one state is better than any other. That can only come about from discussion with the communities concerned.

5.2 Siting a Waste Incinerator

Background

The siting of municipal waste incinerators is a significant environmental issue in the UK. Incineration is relatively little used as a means of waste management in the UK.

The Royal Commission on Environmental Pollution (RCEP), in its Seventeenth Report, stated that waste management must be based on a four-stage decision procedure:

1. wherever possible avoid creating wastes
2. where wastes are unavoidable, recycle them if possible
3. where wastes cannot be recycled in the form of materials, recover energy from them
4. when the foregoing options have been exhausted, utilise the best practicable environmental option to dispose of wastes.

Incineration raises a number of critical environmental issues. In the public mind, the most prominent is the release of dioxins. A 1996 report for HM Inspectorate of Pollution (HMIP)[†] states that incinerators operating to new plant standards 'will not pose a significant health risk to individuals exposed to plant emissions of PCDD/Fs (polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans) ...'. It also noted that the 'Tolerable Daily Intake could be exceeded during the period of breast feeding' but noted that the Committee on Toxicology had concluded that this should not be a contra-indication to breast-feeding.

Incinerators may also involve many transport movements, conveying waste from where it is produced to the incinerator. The RCEP recommended that incinerators be located to take advantage of rail facilities, rather than road.

Disposal of waste also involves emissions of greenhouse gases. For each million tonnes of municipal waste, landfill releases the equivalent of 0.5 million tonnes of carbon, whereas incineration releases the equivalent of 0.15 million tonnes. Both calculations assume that energy is produced from the processes, offsetting production from coal-fired generation.

On balance, incineration is a more expensive option than landfill, although much depends on the relative cost of energy and land, and the composition of waste. Incinerators are regarded as industrial plant and so located in industrial areas. For planning reasons, it is usual to construct new incinerators on the site of existing incinerators. A number of authorities have used innovative consensus building techniques to assist in planning decisions.

Issues arising

- public perception and expert risk assessment
- local detriment, given the transport of waste to a central location
- the balance between benefit to the global environment as opposed to detriment to the local environment

[†] A predecessor body of the Environment Agency

Case Study Report

This group discussed what methodologies could be used in making this kind of decision. It became apparent that the central issue was legitimacy, and this meant involving the public. The group therefore focused on this rather than analytical procedures.

The group felt that there were several difficulties involved in trying to engage the public in debate. Conflicts were bound to arise between employment concerns and the local environmental damage and disamenity impact of the incinerator. It would be difficult to get people involved in the wider debate. Although people often say they want to be consulted, many will become involved only when it affects them directly, for example if it is proposed to site the incinerator in the vicinity of their homes. There was a need to raise awareness of such issues generally, for example by featuring it in a soap opera, to get the debate started. It was also important to involve the public from the start, giving them a chance to discuss a wider range of options than just the incinerator. It was important to identify people as the source of the waste, and therefore as part of the problem.

The idea of compensation came up. The suggestion was made that it might be possible to compensate the 'losers' living near to the incinerator using the difference in costs which would arise as a result of choosing the incinerator over more expensive disposal methods. However, this approach cannot readily be accommodated in the British planning system.

How the public was treated during the debate was seen to be important. If people were treated fairly and consulted properly, they were more likely to accept the outcome of a decision, even if they did not agree with it.

The difference between short and long term costs was also explored. Would the public accept large scale industrial installations like an incinerator once they became used to it? For example, future generations might consider the incinerator to be an interesting piece of industrial archaeology. If so, how could this be taken into account in making a decision?

Trust was also seen as a central issue. The public appears to trust privatised companies less than they do public bodies.

More research might be needed in this area. A research project could look at ways of involving communities, particularly if there was going to be a need to build more incinerators. This should not prejudice the issue about whether or not more incinerators were needed, and should not preclude, for example, waste minimisation.

Further Discussion

In discussion, the point was made that involving the public needed to be distinguished from generating social intelligence about the public. Having a better sense of the nature of the community could equip the local authority to design the process of consultation and compensation. Existing social science research could help here.

I was also pointed out that there were two outcomes from this type of decision process: a) where the incinerator is located; and b) how people feel about that decision. The nature of the process may change either or both outcomes. Another view was that public bodies like the Agency might have a clearer remit, and should act consciously and transparently as technocratic bodies, given that that is where they are coming from.

From the chair, Chris Newton observed that it would be possible to identify more case studies and the Agency, along with others, could try out existing work already in the literature.

5.3 Rural housing development

Background

Many small towns in rural areas face substantial changes in population. Some of this is due to population increases, but much is due to overspill from neighbouring larger communities.

In many cases, urban development can be dealt with by building on brownfield sites. However some new construction may be in greenfield locations. Many rural villages have such sites, often left over from industries that flourished in the distant past. However much business will have migrated to neighbouring towns, and there will have been significant job losses in agriculture. Hence, there may be considerable local unemployment.

Growth in rural populations often means substantial increases in use of local water supplies and discharges to the river, with consequent pressure on the local environment. In many cases, that development may mean building on the floodplain. While the new property can be protected against flooding, it may force the problem further downstream.

In many cases, a large percentage of local people will object to substantial development. Some of the objectors may be long-standing residents, others more recent arrivals.

Issues arising

- local perception of the quality of the environment
- access to the environment
- equity between incomers and existing population
- analysis of the capacity of the environment
- social heritage

Case Study Report

The discussion focused on the circumstances in which it make sense to quantify. The group agreed that it makes sense to quantify two things:

- the background environmental facts (such as risk of flooding) had to be taken into account, in order to narrow the range of subjective discussion; and
- people's views and preferences should be elicited.

However there is also much judgement behind this. How many facts do you need to take into account? Who decides which background facts are measured? A deliberative process may be needed to decide these issues. There was some debate over how views could be measured. If you send out questionnaires, how do you ask the questions? One idea is to allow the public to set the questions themselves.

Quantification always occurs within a judgmental framework. It is impossible to reduce everything to a purely numerical approach. Quantification can take place without aggregation - separate 'currencies' must be used.

Also, there is no such thing as a neutral deliberative process. There is the danger that certain pieces of information assume inappropriate levels of importance. For example, when comments are invited from the public, 'memorable quotes' are often used even if they are not representative. To ensure maximum accuracy of information, it is good practice to be transparent and to check back with participants in the consultation. Not everything can be reconciled. What matters is getting the facts and the process agreed, so that the range for difficult judgements is narrowed.

One of the problems in relation to this issue is the number of spatial levels on which it is necessary to work. Although at a local level one is dealing with a particular building or group of buildings, there are broader considerations, such as the local structure plan, national policies and planning guidance. Instead of discussing whether or not housing should be built in rural areas, one could start with asking why people liked living in rural areas or disliked living in urban areas, and how one could alter these preferences? The Agency should be engaged more in the higher levels, because the local decisions may not be framed in a way that made them possible to 'win'.

The observation was made about this group's debate that although there had been useful discussion of ways of quantifying inputs to the decision-making process, and on designing processes, very little had been said about quantifying values themselves. Valuation, in the literal sense, was left out in the cold.

Further Discussion

It was observed that we need to be clear about how we define values. Do we mean values as guiding 'proper conduct' or simply preferences? Another view was that the group had been reluctant to choose between deliberative and analytic approaches. We should not over-emphasise the choice between methodologies.

Another participant asked how wide-ranging and complex were the impacts that had been looked at. Was it possible to leave the units in their own terms, as apples and oranges, while still giving the decision maker enough information? The group had preferred to leave quantities in their own units where these were incommensurable.

It was observed that the discussion seemed to have avoided resource issues, thereby neglecting the existence of resource constraint, which is a very important issue in both economics and political decision making.

6. NEXT STEPS

6.1 Plenary Discussion

Following the report-back from the three case study groups there was a more general discussion about the outcome of the seminar. The first point made was that it is necessary to take into account how people perceive authorities. Often people are more concerned with whether they are treated fairly and consulted properly, rather than with the actual outcome of the process. This is particularly important in situations where people may lose out from a decision. Fairness of procedures can also make people identify more with the authorities and the collective issues that are at stake.

One view was that participants in the seminar had balked at the stark choice between methodologies. Here, research has a role, but that is not to suggest neat answers to the questions we have been asking. Its role is to uncover the things that make a difference, to experiment and to explore the possibilities. This can be hard for a Government agency to do, but the issue needs to be addressed.

There was a discussion about the need, or otherwise, to deal with trade-offs in taking decisions. This started with the observation that trade-offs were not inevitable. One cannot avoid decisions, but perhaps it is possible to avoid construing them as trade-offs. This discussion continued with the pragmatic point that one should start by deciding what the social goals are, and then use the available tools and techniques, including the economy, to achieve those goals.

But, from another perspective, even if utilitarian tradeoffs are accepted, one still has problems when different dimensions are mixed together. When analysis collapses a complex decision down to a single number, it is possible that different sets of contingent events could result in different numbers being generated, even when these appear precise. The reason for involving the public is not just to show them

respect or to gain legitimacy, but also to provide analytical rigour. The final decision has to be rationalised not analytically, but politically. Related observations were that UK planning processes do not recognise trade-offs through compensation mechanisms; and that trade-offs arise are a reflection of allocating scarce resources. In order to make decisions at some level, costs and benefits have to be commensurate.

Finally, the question was raised as to how questions concerning deliberative processes could be taken back into the Environment Agency. Will its culture change, and if so, how? Different things might be required of staff. How effective are these processes, and how can they be evaluated? Is the Agency going to be reflective enough?

6.2 Summing Up and Next Steps

Ronan Palmer

Chief Economist, Environment Agency

Ronan Palmer drew together the conclusions of the workshop from the Agency's perspective. It had initiated this seminar because it used a number of different approaches, including cost-benefit analysis, multi-criteria analysis and consensus building. The Agency was becoming more aware of the wider social debate, and the need to look at its own position. This seminar was intended to raise these issues, so that when the Agency carried out its work it would be more aware of what it was doing and how it could do better.

Many participants highlighted the challenge of producing an operational methodology. However one cannot make assumptions about the process of decision making. One can know when a decision has been taken, but it can be hard to say when the decision was actually taken. In practice decisions are not the only, or even the most important, issue faced. The environment is valued, not just in making a decision, but in choosing which bits of data to measure, or in looking at water quality rather than water resources rather than rivers.

This is part of the Agency's learning process. The consultation paper due later in the year will be more specific in how it looks at what the Agency means by value, where it values the environment, and how the Agency engages both itself and its partners more fully. The Agency also has to learn more by doing.

ANNEX A
AGENDA

VALUING THE ENVIRONMENT
Church House, London
7 July 1998

- 9.00 Arrivals and Coffee
- 9.30 Plenary session Sara Parkin, Forum for the Future, Chair
- 9.35 Introduction Jan Pentreath, Environment Agency
- 9.45 Key points John Foster, CSEC
- 10.00 Discussion, with invited speakers and contributions from the floor
- Speakers: Michael Banner, Kings College
Alan Holland, Lancaster
Mark van Vugt, Southampton
Dan Osborn, ITE
Jacquie Burgess, UCL
Kerry Turner, CSERGE
Robin Grove-White, CSEC
- 12.30 Introduction to break out groups Jim Skea, Sussex University
- 12.45 lunch
- 13.30 Break-out groups
- A: Setting River quality objectives Chair: Nick Hanley
B: Siting a Waste Incinerator Chair: Ian Bloore
C: Rural housing development Chair: Andy Stirling
- 15.00 Report back (15 minutes each) and open discussion Chair: Chris Newton
- 16.15 Summary and next steps Ronan Palmer, Environment Agency
- 16.45 Coffee and Close

**Sustainable Development
Publication Series**

- SD1 Introductory Guidance on the Agency's Contribution to Sustainable Development
November 1996
- SD2 The Agency's Conservation Duties
November 1996
- SD3 Taking Account of Costs and Benefits
November 1996
- SD4 Rural Communities
March 1998
- SD5 Sustainability Examples from the USA and Canada
June 1997
- SD6 The Agency's Contribution to Sustainable Development - Waste Minimisation
June 1997
- SD7 A Strategy for Implementing The Environment Agency's Contribution to The UK
Biodiversity Action Plan
July 1997
- SD8 Conservation Designations in England and Wales
February 1998
- SD9 The Agency's Contribution to Sustainable Development - Case Studies
October 1997
- SD10 Guidance on The Agency's Involvement in the Administration of EC Structural Funds
October 1997
- SD11 Resource Demand Management Techniques for Sustainable Development
March 1998
- SD12 Consensus Building for Sustainable Development
March 1998
- SD13 An Analytical and Descriptive Model of Sustainable Development for the Environment
Agency
June 1999
- SD14 Valuing the Environment
July 1998

*For further information in relation to any of the above, please
contact the Sustainable Development Section at:*

**Environment Agency
Rio House
Waterside Drive
Aztec West
Almondsbury
Bristol BS32 4UD
Tel: 01454-624349
Fax: 01454-624034**

MANAGEMENT AND CONTACTS:

The Environment Agency delivers a service to its customers, with the emphasis on authority and accountability at the most local level possible. It aims to be cost-effective and efficient and to offer the best service and value for money.

Head Office is responsible for overall policy and relationships with national bodies including Government.

Rio House, Waterside Drive, Aztec West, Almondsbury, Bristol BS12 4UD
Tel: 01454 624 400 Fax: 01454 624 409

ENVIRONMENT AGENCY REGIONAL OFFICES

ANGLIAN

Kingfisher House
Goldhay Way
Orton Goldhay
Peterborough PE2 5ZR
Tel: 01733 371 811
Fax: 01733 231 840

SOUTHERN

Guildbourne House
Chatsworth Road
Worthing
West Sussex BN11 1LD
Tel: 01903 832 000
Fax: 01903 821 832

MIDLANDS

Sapphire East
550 Streetsbrook Road
Solihull B91 1QT
Tel: 0121 711 2324
Fax: 0121 711 5824

SOUTH WEST

Manley House
Kestrel Way
Exeter EX2 7LQ
Tel: 01392 444 000
Fax: 01392 444 238

NORTH EAST

Rivers House
21 Park Square South
Leeds LS1 2QG
Tel: 0113 244 0191
Fax: 0113 246 1889

THAMES

Kings Meadow House
Kings Meadow Road
Reading RG1 8DQ
Tel: 0118 953 5000
Fax: 0118 950 0388

NORTH WEST

Richard Fairclough House
Knutsford Road
Warrington WA4 1HG
Tel: 01925 653 999
Fax: 01925 415 961

WELSH

Rivers House/Plas-yr-Afon
St Mellons Business Park
St Mellons
Cardiff CF3 0LT
Tel: 01222 770 088
Fax: 01222 798 555



For general enquiries please call your local Environment Agency office. If you are unsure who to contact, or which is your local office, please call our general enquiry line.

**ENVIRONMENT AGENCY
GENERAL ENQUIRY LINE
0645 333 111**

The 24-hour emergency hotline number for reporting all environmental incidents relating to air, land and water.

**ENVIRONMENT AGENCY
EMERGENCY HOTLINE
0800 80 70 60**



**ENVIRONMENT
AGENCY**