BRITISH SCIENCE ASSOCIATION

PEOPLE & SCIENCE

DECEMBER 2009 WWW.BRITISHSCIENCEASSOCIATION.ORG £6

Costing the earth: public engagement and biodiversity

Population growth

Engaging through the arts

The value of mathematical models

FROM TRAGEDY TO TRUST IN CANADA
Graham Sher
p20

LITTLE SUPPORT FOR ENGAGEMENT
Lisa McDaid
p23

EDITORIAL

2010 is the International Year of Biodiversity. Early in the year, we will see the government's UK National Ecosystem Assessment. It is the first ever analysis of the benefits that the UK's natural environment provides to society and economic prosperity. In the cover story (p8), Bob Watson explains why it's essential to value ecosystems properly in policymaking, and describes the importance – and some of the difficulties – of engaging the public in this new way of thinking.

Population growth is another subject on which it's hard to engage the public. Christine McCafferty (p16) argues that drawing attention to its effects on environmental sustainability, climate change, development, migration and ageing can be politically inflammatory. She describes the dramatic difference between old-style, coercive family planning, and the current rights-based approach to reproductive health programmes which has been developed following engagement with women in poor countries. Lamenting the media's lack of interest, she urges citizens to pressurise politicians to help women in developing countries who want to limit their fertility.

The Spat takes public engagement by the collar and shakes it. Andy Stirling and Chris Caswill (p10) agree that engagement as we know it hides the differing power of the various participants. But they disagree on what to do about it. Stirling argues that bottom-up participation should be strengthened to 'open up the detailed implications of different perspectives and so help illuminate and invigorate wider politics.' Whereas Caswill plumps for reforming representative democracy, which 'offers vital opportunities for deciding the distribution of resources, the handling of genuine conflicts, and challenging inequalities of power and resource between citizens and large institutions such as global corporations.'

The Exchange (p14) looks at the mathematical models that lie behind planning and performance in so many areas of society. How much confidence can the public have in them? David Hand concentrates on banking, while Lindsay Davies and Sheila Bird discuss swine flu.

From Canada, Graham Sher tells a heartening story of the role of public engagement in rebuilding public trust in the blood transfusion service (p21). From the US, David Guston cries, 'No innovation without representation!' (p22) He relates how representative groups across the United States, linked by the internet, discussed developments in nanotechnology, and came up with conclusions that reflected national and regional concerns. Even with the far-flung geography of the US, he writes, 'we can design processes for the participatory governance of science and technology.' Closer to home, Julia Garritt (p24) asks whether the European Union's first Science and Society Action Plan can influence the nationally- and culturally-specific character of member states' public engagement programmes.

Wendy Barnaby, Editor
wendy.barnaby@britishscienceassociation.org

Costing the Earth

Ahead of 2010, the International Year of Biodiversity, **Bob Watson** explains why we need to engage the public in valuing our natural environment

Earlier this year, Defra (the Department for Environment, Food and Rural Affairs) launched the UK National Ecosystem Assessment – the first ever analysis of the benefits that the UK's natural environment provides to society and continuing economic prosperity. One of the key objectives of the project is to raise awareness of the importance of the natural environment to human wellbeing and economic prosperity, and to encourage different stakeholders and communities to participate and interact.

True wealth

The benefits that environmental systems bring to people's lives are traditionally very difficult to take into account in policymaking. How do you put a price on a beautiful view or the sound of birds, for example? Gross domestic product (GDP) is a very limited concept, taking into account only the financial wealth of a country. The true wealth of a nation would also take into account natural capital, as well as human and social capital.

As we become increasingly aware of the valuable role environmental goods and services play, we realise that we need to find a way of considering them in policy decisions. We also know that the environment is interconnected and decisions that affect one species or feature can have profound effects elsewhere. An ecosystems approach to policy-making will help us take account of these interconnections in decisions.

Work to date

The Millennium Ecosystem Assessment (MA), initiated in 2001, stimulated much thinking in this area. It set out to assess the consequences of ecosystem change for human wellbeing, and the scientific basis for action to enhance the conservation and sustainable use of those systems. The MA has involved the work of more than 1,360 experts worldwide. Their findings provide a state-of-the-art scientific appraisal of the condition and trends in the world's ecosystems, the services they provide (such as clean water, food, forest products, flood control, and natural resources) and the options to restore, conserve or enhance their sustainable use.

The bottom line of the MA findings was that human actions are depleting Earth's natural capital, putting such strain on the environment that the ability of the planet's ecosystems to sustain future generations can no longer be taken for granted. At the same time, the assessment showed that it is possible to reverse the degradation of many ecosystem services over the next 50 years. However, the changes in policy and practice required are substantial and were not underway.

UK progress

As a result of this work, an 'ecosystems approach' to policy making has been promoted. This is a way of looking at whole ecosystems, rather than just individual species or processes, in decision making, and valuing the goods and services they provide. Defra launched their own ecosystems approach in *Securing a healthy natural environment: an action plan for embedding an ecosystems approach* which was published in December 2007.[1]

The UK National Ecosystem Assessment (NEA)[2] was inspired by the MA and is due to report back early in 2010. It will describe what causes changes in the UK's ecosystems and the services we obtain from them – such as land use change, infrastructure development, pollution and climate change. It sets out to answer 12 questions that range from 'What is the status and trends of the UK's ecosystems/broad habitats and the services they provide to society?' to 'Who and where are the beneficiaries of current ecosystem services in the UK?' To support high-level policy-making, the project includes plausible futures (scenarios) of the UK's ecosystems and the services they provide, and outlines policy options to secure their continued delivery for all of society.

Significantly, one of the 12 key questions relates to the public's understanding and knowledge of ecosystem services. The idea is to raise awareness of the importance of the natural environment to human wellbeing and economic prosperity, and encourage different stakeholders and communities to participate and interact. This is a particular objective of the project.

Value of engagement

Some tools (described as 'economic' tools) that focus on valuations in terms of money, can be useful: the data produced is easily incorporated into existing decision-making structures. Policymakers are used to dealing with pounds and pence. In other instances, where 'value' is not best expressed solely in monetary terms, it is useful to involve people to help explain their ideas of value and to deliberate the issues.

The true wealth of a nation would also take into account natural capital, as well as human and social capital

For example, Defra recently commissioned a series of case studies that looked at how an ecosystems service approach could work in practice. One of them looked at the development of the Kent Green Grid strategic plan, which mapped out land use and biodiversity in the area. It found that, while there were lots of databases and geographic information system services available showing the uses designated to different pieces of land, public engagement was valuable in revealing how a space is actually used, how it could be used and what is important to local people about the space – all essential in developing sensible environmental and planning policies.

Jargon

Involving the public in this process isn't without its difficulties, however. In particular, as an ecosystems approach is not yet well known, even amongst policymakers, it raises some significant cultural issues.

Understanding and knowledge of the concept and terms associated with an ecosystems approach appears to be a barrier. For instance, a further case study looked at decision making in the Parett Catchment area in the South West of England, including a look at how stakeholder engagement was involved. The researchers concluded that, while local authorities, government agencies and voluntary bodies have a well regarded tradition of using a variety of stakeholder engagement, introducing the concept of an ecosystems approach was a difficult undertaking.

With a few notable exceptions, stakeholders found it very hard to get to grips with. Its terminology and language appeared to be alien to how most stakeholders think about the environment. Many considered it jargon, and some of the elected members found it unintelligible.

Individuals across every category of stakeholder consulted, strongly advised that everyday language would be essential to make an ecosystems approach meaningful and relevant. This is an important lesson that we are trying to enact, with projects like the Act-On CO_2 campaign,[3] which aims to empower citizens with information they need to reduce their own impacts on the environment.

Scope of engagement

At the moment, public engagement is often limited to the choice of scheme and achieving approval. Within an ecosystems approach, the public should be involved throughout the process, including in identifying future management options.

We also need to broaden the scope to consider ecosystem goods and services and how communities value them. This raises further questions about which communities and citizens should be involved in deliberation. How do you balance local preferences against national needs? Local people are bound to put greater value on a landscape they enjoy every day, but whose valuation counts?

Convincing policymakers

Some policy colleagues, who are more used to dealing with hard figures and pound signs, may still need to be convinced of the added value of deliberative data. We need to be able to show that evidence gathered in this way is as valid as more quantitative data, that community involvement does not have to be labour-intensive and that there are real benefits from community participation and deliberative decision making.

There is no doubt in my mind that we are spending the Earth's natural capital, putting such a strain on the natural functions of the planet that we can no longer assume that our ecosystems will be able to sustain future generations. But the future is in our hands. We can reverse the degradation of many ecosystem services over the next 50 years. But if we're to do that, we need to involve the public in valuing our natural environment, so that we don't have to learn the price of its loss.

1 See **http://issues.abertay.ac.uk/documents/ISSUESseminarRobertBradburne.pdf**

2 See **http://uknea.unep-wcmc.org/**

3 See **http://actonco2.direct.gov.uk/actonco2/home.html**

Professor Bob Watson is Defra's Chief Scientific Adviser
helpline@defra.gsi.gov.uk