environment

Nature's services

Environmental damage is threatening ecosystems' ability to provide the things we take for granted – from clean air and water to food, fuel and shelter – with major implications for human well-being and the world's economy. At the interface of science and policy, The University of Nottingham's Centre for Environmental Management gives government bodies the evidence they need to make tough decisions…

Some of the world's biggest challenges lie in the unsustainable demands we're making on the planet. With the move towards evidence-based policy, governments are looking to researchers to formulate arguments for change.

The Centre for Environmental Management (CEM), within the School of Geography, contributes to this through inter- and trans-disciplinary research in sustainable landscapes and ecosystems. It has an enviable reputation, regularly advising the UK Government, Department for Environment, Food and Rural Affairs (Defra), the Environment Agency and other UK and EU policy makers.

One of CEM's core strengths is knitting together commissioned projects into a coherent research programme. Its current cluster of projects centres around the ecosystems services concept – that people benefit from ecosystems' ability to produce fundamental services. These include provisioning services like food, fibre, fuel and water; regulating services like climate control, water purification and flood protection; cultural services like education, recreation and aesthetics; and supporting services, underpinning the rest through functions like nutrient cycling, oxygen production and soil formation.

Damage to the ecosystems that produce these services directly affects our well-being. It also has serious economic implications, due to the need for remedies or alternatives.

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Dr Marion Potschin

To combat these challenges, the international research and policy community has proposed what it calls the Ecosystem Approach (EA), an attempt to construct a decision-making framework recognising the value of the environment. CEM is a crucial partner in the concept, conducting several important projects assessing EA's feasibility and practicalities.

At an international level, the stimulus for research has come from the United Nations Millennium Ecosystem Assessment (MA), which found over 60% of the world's ecosystems services were declining or damaged. The statistic poses real problems for things like UN development goals. If the planet is unable to deliver basic services, how can we bring more people out of poverty?

Crucially, and similarly to the Ecosystem Approach, the MA asserts that if we can put a value on ecosystems services, nature's economic worth could be used in decision making. A classic example comes from the 2004 tsunami. Coastal areas where mangrove swamps were left intact suffered far less damage than those where they'd been cleared. Clearly a mangrove swamp is worth more than you'd think.

There's currently much debate surrounding the possibility of a second global assessment. One of the MA's recommendations was that regular international, national and regional assessments should be carried out, and many countries are considering this, with a possible Europe-wide assessment in 2012.

In the UK, Defra is weighing up its options, with CEM's help. 'They realise that if they could put a figure on biodiversity, or any of the services ecosystems deliver, they could exert more pressure on the Treasury for change,' says Professor Haines-Young.

People shaping policy

The professor has worked with UK government for over 20 years and his team's strong relationship with government bodies brings a continual stream of new projects. Each one involves field work and analysis of data, but CEM's research also looks at the social angle – what do people want and what price are they prepared to pay?

'You have to involve ordinary people in decision making,' he says. 'You engage with people to frame the problem and then to evaluate potential solutions. To us, that's what sustainable development's all about.'

'There's only so much the environment can give,' adds CEM's Dr Marion Potschin. 'Demands on environmental systems are growing and not all of society's needs can be met. We're starting to talk about trade-offs between the different things ecological systems can provide; explaining to people, if you want this service, another might be sacrificed.'

Professor Haines-Young says: 'Our goal is to help people understand their choices, then allow the democratic process to work through. It's what you're seeing with climate change and we hope people will engage with ecosystem services in the same way.'

Leading Europe into the future

CEM is powerfully placed to play its part as the UK and Europe attach greater importance to ecosystems sustainability. 2008 will see the launch of Research Councils UK's Living with Environmental Change programme, and for Defra, will be a year to step up and take the lead.

The centre's also just been awarded a European Environment Agency (EEA) project to develop European land and ecosystem accounting techniques, and as CEM becomes increasingly involved in European projects, the team will draw on experiences in England. One of the issues to be looked at is the costs of biodiversity and ecosystem loss to society.

Dr Potschin explains: 'Having worked in Canada, Germany and Switzerland, I was astonished at the amount of quality ecosystems data there is in England. It can be a fantastic fore-rider for European research, in part because Defra takes such an interest. Plus, with the work we're doing at Nottingham, we're already in a position to advise the EEA.

'At CEM we're also particularly strong because of the depth of Roy's expertise. He's one of the few people who really understand the potential of existing ecosystems data.'

By bringing this scientific data together with social and economic lines of research, CEM makes sure its work can effectively influence change. But being influential also means being accessible, and the team always translates its scientific data into engaging fodder for public debate. 'If you can't make people understand the issues, how can you wire them up to do something?' Professor Haines-Young points out.

One way they'll be doing that is through a two-year transdisciplinary seminar programme, Framing Ecosystem Services and Human Well-being (FRESH), launched in September 2007. Funded by the Economic and Social Research Council and Natural Environment Research Council, it will bring together international scientists, social scientists, policy makers and non-governmental organisations, fuelling debate and resulting in published findings.

Unsurprisingly, CEM is at the helm and anticipating exciting results. As Professor Haines-Young says: 'We really are in the right place at the right time, but other universities and research groups are catching up and we are currently expanding the Centre to stay ahead of the curve.'

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