

# SOILED:

## Degradation in the mother of all parliaments



*Erosion in the Lesotho, southern Africa.*

How is environmental research translated into policy? Are parliamentarians interested in earth surface processes? Such were the questions I had as I approached my first day at the Houses of Parliament. I was joining the Parliamentary Office of Science and Technology (POST) for three months as part of a joint NERC/POST Fellowship scheme. POST is part of the House of Commons and House of Lords and is charged with providing independent and balanced analysis of public policy issues that have a basis in science and technology. One of my jobs was to produce a briefing note on the challenges of soil degradation in the UK. My three months in Westminster were to prove an engaging and challenging time away from PhD research, and provided a useful insight into how the research community, government departments and land users work together to make policies relevant to the earth sciences.

Soil degradation – the physical, chemical and biological decline of soil – is a big problem in many parts of the world, including southern Africa where I am doing my PhD on how the

landscape erodes over tens of thousands of years. One doesn't normally think of the UK being particularly prone to soil degradation – it has nothing like the scale of erosion in southern Africa, where huge eroded gullies are a common sight. Nor does the UK suffer dust storms like those experienced in the American south west or salt incursion into soil like in the Middle East. Nonetheless, the UK faces challenges of soil erosion as well as nutrient decline and contamination, with attendant problems for flooding, pollution, agriculture and the urban environment – the very things that concern parliamentarians.

Around 2.2 million tonnes of topsoil are eroded annually in the UK and over 17 percent of arable land shows signs of erosion by wind and

water. Experts estimate that on-site costs of soil degradation from loss of productive soil and nutrients, as well as off-site costs of flooding from muddy runoff, cost the UK economy £264 million a year while the costs of treating water contaminated with agricultural pollutants are £203 million a year. Add to that the challenges of climate change which may bring wetter,

“Soil degradation costs the UK economy £264 million a year.”

## Are MPs really that interested in soil erosion and degradation? PhD student Jonathan Butler says most emphatically yes.

stormier winters and drier summers and possible feedbacks as carbon dioxide is released from drier soils, then soil degradation is a significant problem now and in the future. Soil degradation is not just a rural problem: urban soils can be degraded by pollution, removal, burial or sealing of the surface which can exacerbate flooding.

Much of my work at POST involved working closely with the scientific community in drawing together existing and forthcoming research on soil degradation in the UK. With the policy and land-user communities (farmers, environmentalists and businesses), I researched which policies and initiatives are used to address soil issues and where these may still be lacking. In a policy sense, soil degradation is becoming a hot issue, with the Environment Agency, Defra and the European Union (EU) all working on policies to protect rural soils. The Single Payment Scheme, an initiative that replaced the old Common Agricultural Policy, provides subsidies on the basis that land is maintained in good agricultural and environmental condition, and includes a review of soil protection measures. Under voluntary agreements such as Environmental Stewardship, an incentive-based initiative that goes further than the Single Payment scheme in protecting the environment, around 40 percent of the 20,000 participants to date have chosen to complete a soil management plan which protects soil from physical erosion. Part of the EU Water Framework Directive involves controlling pollution from soil, including nitrate and phosphate from agricultural sources, on an individual river basin scale. Urban soil protection generally lags behind, but policy makers are now developing policies to address urban soil degradation, for instance in the planning system, where sustainability appraisal and environmental impact assessment explicitly require consideration of impacts on soils.

One of the key insights from my time in Westminster was that while policies, backed by economic incentives, are beginning to address degradation, our lack of knowledge of the interactions between soil, water, air, and climate change makes it difficult to assess their success. These interactions are currently the focus of large NERC research projects, for instance the QUEST programme (see *Planet Earth* winter 2006). There is growing consensus among land users, government departments and researchers that protection of soil needs to be part of a holistic approach that includes protecting other parts of the environment from the effects of soil degradation. The UK government and the EU are beginning to do this.

So how is environmental research translated into policy? By some very good hard work that goes on behind the scenes between scientists, government departments, local authorities and land users. Are parliamentarians interested in earth surface processes? Overwhelmingly so, especially where those earth



*Another day at the office.*

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surface processes have a real-world impact on resources, infrastructure, the environment, and quality of life. Should environmental scientists get involved in policy making? Of course, since good science is at the heart of effective policies. An excellent place for young environmental scientists to start is with schemes such as the NERC/POST Fellowship initiative.