

# Carbon measuring system to help mitigate climate change

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The \$9.16m Carbon Benefits Project, which involves the Overseas Development Group at the University of East Anglia (UEA), hopes to encourage sustainable development schemes in developing countries that generate climate adaptation, mitigation and conservation benefits, as well as improve quality of life.

Over the next two years an innovative web-based system will be developed for measuring, monitoring and modelling the amount of carbon, and other greenhouse gas emissions, produced and stored in soil and vegetation by activities in a range of landscapes. Schemes involving agriculture, land use, forestry and rangeland improvement will be studied, using the huge carbon-storing potential provided by soil and vegetation and addressing issues of sustainable development for poverty alleviation.

The Carbon Benefits Project is being led and funded by the Global Environment Facility (GEF) and United Nations Environment Programme (UNEP). As well as the Overseas Development Group, organisations involved include Colorado State University, the World Wildlife Foundation (WWF), Michigan State University and national partners in a number of countries.

By providing a way to document and compare contributions to climate change mitigation, and how appropriate land use and management can also improve livelihoods, it is hoped to make projects that address carbon impacts more attractive. The system will also provide a tool box

of 'best practice' land management options and could produce estimates that are suitable for use in carbon trading markets. This could enable farmers, conservationists, landowners and local communities to be paid, for example by developed nations wanting to offset their own emissions, for the amount of pollution their activities remove from the atmosphere.

The Overseas Development Group, based in the School of International Development at UEA, is the only UK-based partner involved in the project. Its role will be to incorporate social and economic circumstances of land users into the modelling to ensure the sustainability of carbon benefits, and that the system is user-friendly. Prof Michael Stocking from the group said the system would enable organisations funding and running rural development and natural resource management schemes to demonstrate and verify the carbon benefits of their activities.

"We need to be able to track the change in carbon levels above and below ground, but at the moment there is no standardised, cost-effective and simple method to do this," said Prof Stocking. "A system is needed that can be applied to and measure the carbon impact of all types of projects, whether they are encouraging small scale enterprises, such as furniture making and carving, or planting forests and crops. Natural resource management projects claim to have carbon benefits and organisations need to be able to demonstrate how their investments achieve global environment benefits.

"This research will develop a tool to help us understand what the carbon impacts of our activities are, on [greenhouse gas emissions](#) and on sequestration by vegetation and the soil. Agriculture has the biggest potential for capturing and storing carbon, thus reducing climate change. It will also enable organisations to establish whether carbon offsetting schemes are a success, which would hopefully then act as an incentive to do more."

Focusing on cropland, grazing lands, agro-forestry and forestry, the system will enable forest managers, farmers and other land users to look at the present carbon situation above and below ground and at alternative land management scenarios. It will help them select agricultural and agro-forestry options to lower carbon emissions, increase the removal of carbon from the atmosphere and its storage in vegetation and soil, and improve related environmental, social, and economic benefits. It would also allow managers of new projects to look at the carbon impact their activities would have and the best way to manage that.

The Carbon Benefits Project combines an existing soil organic carbon model with the latest remote sensing technology and ground-based measurement. It will study activities supported by the GEF, for example in Africa and China, which will act as pilot projects. The system will also be available to projects implemented by the 10 GEF agencies, which include the World Bank, UNEP and the International Fund for Agricultural Development.

Other partners involved in the [Carbon](#) Benefits Project include the World Agroforestry Centre, the Centre for International Forestry Research and the International Crops Research Institute for the Semi-Arid Tropics.

Source: University of East Anglia

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