Research assesses impact of soil erosion on land and communities in East Africa

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The impact of soil erosion on both the environmental and social wellbeing of communities in East Africa is to be explored in new research led by the University of Plymouth.

The study, which is focused on the East African Rift System, will examine the degree of damage being caused to the local environment by a range of agricultural land management practices.

It will aim to identify means by which that damage can be lessened, but also explore the knock-on effects of such actions from economic, health and societal perspectives.

The project has been funded by the Natural Environment Research Council, the Arts and Humanities Research Council and the Economic & Social Research Council, as part of the Global Challenge Research Fund, a £1·5bn fund announced by the UK government in 2015 to support cutting-edge research that addresses the challenges faced by developing countries.

The Principal Investigator on the project is Will Blake, Professor of Catchment Science, who has previously worked in this area as part of joint United Nations Food and Agriculture Organisation and International Atomic Energy Agency research programmes and within European Commission funded research. It also involves Neil Roberts, Professor of Physical Geography, David Gilvear, Professor of River Science, and Geoff Wilson, Professor of Human Geography, all at the

University of Plymouth, as well as Dr Anna Rabinovich, Senior Lecturer in Social Psychology at the University of Exeter, and Patrick Ndakidemi, Professor of Agricultural Sciences at The Nelson Mandela African Institution of Science and Technology (NM-AIST), in Tanzania.

Professor Blake said: "In countries for which agriculture is the mainstay of the economy, there are always going to be tensions between growers, pastoralists and conservationists. With growing populations and increased demand for food, the landscape is approaching a tipping point so finding a means by which to augment food production while preserving the quality of the land for future generations, is essential."

Even under normal climatic conditions, soil erosion by water reduces water and nutrient retention, biodiversity and plant primary productivity on agricultural land putting stress on food production, and causing ecosystem and water resource damage downstream.

This undermines the resilience of communities that depend on soil and water resources, and shocks are often amplified by physical and socio-cultural positive feedback mechanisms. Restoration of the landscape can, however, lead to greater-than-previous levels of resilience (sometimes termed 'bounce back') if a holistic view of environmental and community needs is considered.

For this project, researchers will use sediment drilling techniques to assess the current and historical impacts of soil erosion alongside systematic surveys of soil degradation. They will also speak directly to those within local communities, establishing how soil erosion is perceived and how those perceptions might be influenced in future.

The ultimate aim is to create a model with three strands - defining the problem, identifying pathways to change and facilitating action - which can be applied in this region and, subsequently, across the developing

world.

Professor Blake added: "A lot of our previous work has developed a deep understanding of soil erosion, how it takes place and where, but it has not focused on ways to take the knowledge forward and bring about real change in practice. By creating an evidence base around the environmental, social and cultural impacts of soil erosion, we hope to devise a system which can have positive affects in this region and others across the world."

Provided by University of Plymouth