

Sentinel

Social and Environmental Trade-Offs in African Agriculture

2017–2021

An interdisciplinary research project seeking to address the challenge of achieving food security in sub-Saharan Africa whilst conserving ecosystems and reducing inequalities

www.sentinel-gcrf.org



Ethiopian Development
Research Institute

Imperial College
London



UNIVERSITY of
GREENWICH

NRI | Natural Resources Institute



University of
Reading

In brief

Increasing agricultural production to meet rapidly growing demand for food – expected to more than double in sub-Saharan Africa by 2050 – while safeguarding vital ecosystem services and promoting social equality, lies at the heart of sustainable development.

Over four years, Sentinel aims to understand the challenges, trade-offs and synergies inherent in working towards these development goals in sub-Saharan Africa. That knowledge will help governments and policy makers to make better-informed decisions about land use and agricultural practices, so that food security can be improved without losing vital ecosystem functions and without worsening social inequality.

Why now?

Research has shown that conflicts between Sustainable Development Goals on improving food security (SDG 2), reducing inequalities (SDG 10) and ecosystem conservation (SDG 15) are intensifying in sub-Saharan Africa because of rapid progress in economic development and population growth. Decision makers in government and the private sector continue to act on an insufficient understanding of the socio-economic and environmental impacts of different agricultural development pathways.

Current agricultural development strategies are often based on unrealistic assumptions about productivity gains and likely future expansion of agriculture into forests – particularly considering projected regional changes in climate. Therefore, in some areas, they are on a collision course with forest conservation and restoration policies. This is contributing to increasing inequalities and further marginalises people and communities who depend on agriculture or forests for a living.



Our objectives

Sentinel research focuses on three African countries – Ethiopia, Ghana and Zambia – while working with a wider network of stakeholders and universities across Africa to share lessons and build capacity. The project aims to enhance:

Knowledge

Through co-production of novel research by UK and African researchers and research users, Sentinel will generate new knowledge on the impacts, risks and trade-offs within and between social, economic and environmental dimensions of different agricultural development pathways.

Relationships

The project will enhance relationships between UK and African research organisations by creating and strengthening collaborative research partnerships, to maximise responsiveness to development challenges and foster a deeper understanding of sustainable development in sub-Saharan Africa.

Research capacity

Using a participatory process that combines state-of-the-art research with effective engagement with research users, Sentinel will enhance capacity of researchers in the UK and Africa to investigate sustainable development challenges using a transdisciplinary approach.

Building capacity of teams and individuals to co-develop cutting edge, applicable research is a key goal of Sentinel. It is also important to identify and address capacity gaps in **institutions and organisational systems** in the UK and Africa. This will ensure that research is relevant and builds on existing knowledge, and that researchers are well connected, motivated and rewarded. Sentinel will tackle these goals through a **programme of collaborative research and learning**, training and mentoring of junior staff, and direct engagement with senior university managers.

Timeline

Objective	Year 1	Year 2	Year 3	Year 4
Enhanced knowledge on: <ul style="list-style-type: none">• Agricultural expansion• Socio-economic and environmental impacts• Trade-offs	Phase 1 <ul style="list-style-type: none">• Conceptual framework• Context analysis - agricultural development and its drivers• Compilation of datasets, review availability of data• Research question refinement and site selection criteria	Phase 2 <ul style="list-style-type: none">• Analysis of key drivers of agricultural expansion; past and likely future expansion and biodiversity / ecosystem functions• National scale impact assessment; Initial site socio-economic surveys in 'hotspots'• Policy analysis• Land tenure and land use planning study; Political economy study• Trade-offs analysis• Environmental and social field research in 'hotspots'		Phase 3 <ul style="list-style-type: none">• Documentation and communication of results and lessons learnt• Refinement of national scale models of impact• Co-development of country-specific actions / recommendations
Enhanced relationships	<ul style="list-style-type: none">• Stakeholder analysis and mobilisation of stakeholders via national learning alliances• Initial participatory scenario development	<ul style="list-style-type: none">• Refinement of scenarios (environmental and social impacts)• Ongoing stakeholder engagement - implementation of communication and research uptake strategy		<ul style="list-style-type: none">• Review of scenarios and their use by stakeholders
Enhanced research capacity	<ul style="list-style-type: none">• Development of capacity framework• Assessment of research capacity (UK and African partners)• First round of RUFORUM PhDs	<ul style="list-style-type: none">• Capacity development plan to address identified gaps• Targeted capacity development activities in UK and Africa		<ul style="list-style-type: none">• Write-shops for proposal development
Monitoring & evaluation, communications & stakeholder engagement throughout				

Who we are

Sentinel is implemented by a partnership of 10 organisations in the UK and Africa:

IIED, UK

The International Institute for Environment and Development promotes sustainable development, linking local priorities to global challenges. It supports some of the world's most vulnerable people to strengthen their voice in decision making. IIED is leading Sentinel with overall responsibility for delivery and project management.

The Copperbelt University, Zambia

The School of Natural Resources at Copperbelt University has a mission to produce well trained and equipped professionals working in wood science, forestry, wildlife, agro-forestry and fisheries, and to conduct research for sustainable development and natural resource management in Zambia and beyond.

ECRC/EDRI, Ethiopia

The Environment and Climate Research Center at the Ethiopian Development Research Institute supports green and climate-resilient development in Ethiopia as a knowledge backstop. It undertakes policy-oriented research on the economics of climate and environment in Ethiopia, and serves as an interactive hub for research and policy. ECRC also plays an important role in building domestic analytical capacity on climate-related issues.

University of Ghana, Ghana

The Department of Soil Science at the University of Ghana produces soil scientists who have cutting-edge scientific skills and expertise in both agricultural and non-agricultural concerns. It conducts basic and applied research to address issues in agriculture, soil and the environment to enhance the development of Ghana.

NRI, University of Greenwich, UK

The Natural Resources Institute at the University of Greenwich is a unique multi-disciplinary centre of excellence with an established reputation for delivering high quality research, advice, teaching and training in support of global food security, sustainable development and poverty reduction.

Imperial College London, UK

The Department of Life Sciences at Imperial

is home to one of the largest natural science research programmes in Europe, spanning from fundamental to application-oriented science, and across different levels of biological organisation from atoms to the biosphere. It has a particular focus on multidisciplinary collaborations geared to delivering world-class research for the wider benefit of society.

University of Oxford, UK

Two departments at Oxford are project partners:

The Environmental Change Institute organises and promotes interdisciplinary research on the nature, causes and impact of environmental change and contributes to the development of management strategies for coping with future change.

The Department of Zoology is the centre of biological research and teaching at Oxford. It hosts several major world-leading programmes of interdisciplinary pure and applied research aimed at tackling major 21st Century challenges, from health and welfare to climate change and biodiversity loss.

University of Reading, UK

The School of Agriculture, Policy and Development at Reading addresses the major challenges and opportunities in our sector for the 21st Century, including food production and security, sustainability of agro-ecosystems, adaptation and mitigation to climate change, poverty alleviation, and international development.

RUFORUM, Uganda

The Regional Universities Forum for Capacity Building in Agriculture is a consortium of 105 African universities operating within 37 countries spanning the continent. RUFORUM supports universities to contribute to the wellbeing of small-scale farmers and economic development of countries throughout the sub-Saharan Africa region, through innovative capacity development and engagement in development process and practice.

University College London, UK

The Department of Genetics, Evolution and Environment at UCL covers a broad range of research and teaching activity, including biodiversity and environmental biology, computational biology, evolution and development.

Our Theory of Change

Project objectives:

Objective 1: Enhanced knowledge

about impacts, risks & trade-offs among social, economic & environmental dimensions of different agricultural development pathways through high quality research that responds to stakeholder needs

Objective 2: Enhanced relationships

between UK research organisations and partners in sub-Saharan Africa

Objective 3: Enhanced research capacity

of UK and African researchers and their organisations

Project outcomes:

Government

policies & plans take more account of impacts, risks & trade-offs of different agricultural development pathways and request more relevant research to be conducted by research organisations

Civil society organisations

are shaping national discourse on agricultural development to take more account of impacts, risks & trade-offs of different agricultural development pathways and hold government accountable

Research organisations

have enhanced capacity and UK-Africa research relationships, enabling stronger formulation, execution & communication of relevant applied research

Private sector actors'

investment decisions and engagement in national policy processes take more account of impacts, risks & trade-offs of different agricultural development pathways

Impact beyond project:

Medium term impact:

Agricultural policies, strategies and investment decisions are informed by high quality research on the interrelationships between the social, economic and environmental effects of agricultural development

Long term impact on practice:

Government agencies effectively implement agricultural policies to better manage the impacts, risks and trade-offs among social, economic and environmental dimensions of agricultural development

Long term impact on people & planet:

Conflicts between food security, natural ecosystems and social justice arising from agricultural development are managed to maximise benefits for sustainable development

Contact us

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About our funders

The Global Challenges Research Fund (GCRF) is a £1.5 billion fund announced by the UK Government in late 2015 to support cutting-edge research that addresses the challenges faced by developing countries. It harnesses the expertise of the UK's world-leading researchers, focusing on: funding challenge-led disciplinary and interdisciplinary research; strengthening capability for research; and providing an agile response to emergencies where there is an urgent research or on-the-ground need. It forms part of UK Government's Official Development Assistance commitment and is overseen by the Department for Business, Energy and Industrial Strategy, and delivered through 17 delivery partners including UK Research and Innovation, the UK Academies, the UK Space Agency and funding bodies.

Funded by:



UK Research
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