Institution:
University of Leeds

Unit of Assessment:
7, Earth and Environmental Sciences

Title of case study:
Case study 2: Research informing sustainable dryland management, policy and practice

1. Summary of the impact (indicative maximum 100 words)

Science has guided national dryland policy in Africa through approaches that have omitted local knowledge, and has informed international policy through implementation of the United Nations Convention to Combat Desertification (UNCCD), previously developed by a Roster of Experts. Our national and district-level research in Botswana has identified routes to increase community involvement in degradation monitoring, and our strategies have been rolled out nationally via agricultural extension workers, allowing knowledge to inform farming practices and land policy. Our analysis of the wider international context has led us to propose new science-to-policy pathways that have allowed the UNCCD to draw more effectively upon both local and scientific evidence.

2. Underpinning research (indicative maximum 500 words)

Research informing national policy and practice

Our research in southern Africa has involved primary environmental and social science fieldwork, integrating assessments of environmental degradation with participatory approached. The work was led by Leeds researchers **Andrew Dougill** and Mark Reed (PhD student, Researcher, and Lecturer, 2000-2009) in Botswana **[1]** and by **Lindsay Stringer** in Swaziland **[2]**, and identified locally-relevant degradation indicators and sustainable land management practices. The outcomes are documented in environmental assessment manuals that are now supplied to agricultural extension workers working with pastoralists to guide their rangeland management practices. These manuals highlight sustainable land management options for communal rangeland areas, and have helped to shift the implementation of national agricultural policy away from focusing solely on private ranches. The manuals were translated into Afrikaans and Setswana using University EKT funds and an ESRC Michael Young Prize (awarded to Reed in 2008) and rolled-out in Botswana by **Dougill** (from 2010). Discussions with national policymakers and communities have taken place throughout, allowing the research outputs to meet clear user demands and enable impact.

Research informing international policy

Work in Botswana and Swaziland led by **Dougill**, Reed, and **Stringer** has informed international policy through the EU FP6-DESIRE project. The work developed and tested a new integrated multi-stakeholder approach to sharing and managing knowledge on land degradation assessment and remediation across a variety of scales **[3]**. The DESIRE project covered 26 countries, and worked alongside global initiatives on land degradation including the FAO Land Degradation Assessment in Drylands programme and the World Overview of Conservation Approaches and Technologies network. The Leeds research led to the production of White Paper 3 **[4],** recognised in UNCCD Conference of the Parties (COP) Decision 19.COP.9, and leading to **Stringer's** invitation to provide scientific input to the First UNCCD Scientific Conference (2009). These contributions resulted in the introduction of new topics to the UNCCD policy agenda (see Section 4 and **[5]**).

Further research underpinning international impact included analyses of institutional structures, and of knowledge flows into the UNCCD process and their effectiveness **[6]**. This research by **Stringer** found that scientific input into the UNCCD needed to be restructured and broadened through the development of new platforms and structures to provide integrated assessments that include local knowledge. **Stringer's** analyses of international agreements on land issues stressed that the UNCCD needs to be founded on both scientific evidence and local knowledge and monitoring systems to persuade national agencies, businesses and farmers to manage land more sustainably **[5]**. Publication of **[5]** led **Stringer being invited** to write a high-level roundtable document for discussion by ministers at the UNCCD's 9th COP in 2009 (ICCD/COP(9)/INF.7).

New platforms for science-into-policy communications were identified and established, and these are now being developed by UNCCD working groups. The research has identified key problems with current pathways of science to international policy, and has prompted debates leading to the establishment of new platforms for enhancing science-policy exchanges (e.g. UNCCD scientific conferences). It also developed alternative institutional structures and processes currently being considered by a new ad hoc Working Group with a view to their adoption by the UNCCD Conference of the Parties.

Key researchers:

Lindsay Stringer, Lecturer (2007-2009) and Senior Lecturer (2009-2011) in Environmental Social Sciences; Reader in Environment and Development (2011-2013); Professor of Environment and Development (2013-present); and Director of the Sustainability Research Institute (2011-present) in the School of Earth and Environment, University of Leeds.

Andrew Dougill, Lecturer (1998-2006) and Senior Lecturer (2006-2010) in Environment and Development; Professor of Environmental Sustainability (2010-present); Head of School (2008-2013).n the School of Earth and Environment and Dean, Faculty of Environment (2013-present), University of Leeds.

3. References to the research (indicative maximum of six references)

1. Reed, M.S. and **Dougill, A.J.** (2010) Linking degradation assessment to sustainable land management: a decision support system for Kalahari pastoralists, *Journal of Arid Environments*, **74**, 149-155. DOI: 10.1016/j.jaridenv.2009.06.016.

   *This paper presents the assessment manuals developed to enable more participatory land degradation assessments in three sub-Districts of Botswana (developed through a research process outlined previously in Reed and **Dougill**, 2002; Reed et al., 2006, 2007, 2008). It also reflects on the processes that were required to ensure their uptake and national dissemination.*

2. **Stringer, L.C.**, Reed, M.S., **Dougill, A.J.**, Seely, M.K., Rokitzki, M. (2007) Implementing the UNCCD: Participatory challenges, *Natural Resources Forum*, **31**, 198-211. DOI: 10.1111/j.1477-8947.2007.00154.x.

   This paper evaluates the policy challenges of taking integrated participatory approaches to land degradation monitoring and assessment across 3 countries in southern Africa (Swaziland, Botswana and Namibia).

3. Reed, M.S., Buenemann, M., Atlhopheng, J., Akhtar-Schuster, M., Bachmann, F., Bastin, G., Bigas, H., Chanda, R., **Dougill, A.J.**, Essahli, W., Evely, A.C., Geeson, N., Fleskens, L., Glass, J.H., Hessel, R., Holden, J., Ioris, A.A.R., Kruger, B., Liniger, H.P., Mphinyane, W., Nainggolan, D., Perkins, J., Raymond, C.M., Ritsema, C.J., Schwilch, G., Sebego, R., Seely, M., **Stringer, L.C.**, Thomas, R., Twomlow, S., Verzandvoort, S. (2011) Cross-scale monitoring and assessment of land degradation and sustainable land management: A methodological framework for knowledge management, *Land Degradation & Development*, **22**, 261-271. DOI: 10.1002/ldr.1087.

   This paper builds on work in Botswana and Swaziland, and identifies how the multi-stakeholder participatory approach developed in these two countries was then applied across 26 dryland countries in the DESIRE project. It outlines how these findings can inform knowledge management from the local to the international level within the UNCCD process.

4. Akhtar-Schuster, M., Bigas, H., Thomas R. (Eds.) (2010) *Monitoring and assessment of desertification and land degradation: Knowledge management, institutions and economics*. White Paper of the DSD Working Group 3. Association of DesertNet International, United Nations University Institute for Water, Environment and Health and the Dryland Science for Development Consortium. ISBN 92-808-6014-3. 126pp. http://dsd-consortium.jrc.ec.europa.eu/documents/WG3_WP_Final_20100222.pdf

   *This reference is White Paper 3, as presented at the First UNCCD Scientific Conference, Buenos Aires, Argentina (2009). **Stringer** and Reed were lead authors and **Dougill** was a contributing author. The paper draws extensively on their research in southern Africa, outlining routes to improve the science-policy interface and improve engagement with local stakeholders in land degradation monitoring and assessment.*

5. **Stringer, L.C.** (2008) Can the UN Convention to Combat Desertification guide sustainable use of the world's soils? *Frontiers in Ecology and the Environment,* **6**, 138-144. DOI: 10.1890/070060.

This paper was enthusiastically received by the UNCCD community as it notes that there are other international agreements on land and soil and that if the UNCCD is to be the leading global authority on such matters, it needs to have a more solid scientific basis to its policy actions. It also formed the basis of a high-level round table discussion paper considered by ministers at the UNCCD's 9th Conference of the Parties, Buenos Aires, Argentina 2009.

6. Bauer, S., **Stringer**, L.C. (2009) The role of science in the global governance of desertification, *Journal of Environment and Development*, 18, 248-267. DOI: 10.1177/1070496509338405.

This paper assesses the ways in which scientific knowledge has fed into policy to reduce desertification and outlines important ways forward that have been taken on board by the UNCCD. It is widely cited in White Paper 3 and has been used as a basis to develop alternative models for ensuring more wide ranging knowledge inputs into the UNCCD process.

4. Details of the impact (indicative maximum 750 words)

Our research has had impact at national and international levels, stemming from our long-standing engagement with policymakers, agricultural extension workers and land managers.

National level impacts

The research led to the development of new integrated land degradation monitoring and assessment methods **[1]**, which were adopted at the national level in Botswana **[A]**. Environmental assessment manuals based on field research undertaken by Reed and Dougill (based on socio-ecological research led from Leeds, 1998 to present) resulted in new local monitoring systems linked to management decision support tools. These have been distributed by Dougill since 2010 through agricultural extension services in 3 sub-districts of Botswana (SW Kgalagadi, S Kgalagadi and mid-Boteti). Our methods prompted a shift away from solely scientific evaluation of land quality towards integration of scientific knowledge with local knowledge. This research was a contributing factor that altered the emphasis of Botswana's land degradation priorities to include ecological change including bush encroachment of grazing lands (e.g. Fire Suppression Programme 2011), rather than solely wind erosion, which previously dominated national policy statements (e.g. UNCCD National Action Programme, 2006).

The new methodology for explicitly including local knowledge has ensured that assessment tools are easy to understand, do not require expensive equipment and that indicators are suited to the environmental, social and economic context, allowing sustained monitoring to take place. The assessment manuals provide information on appropriate indicators and new decision-support tools, which have guided sustainable land management practices by outlining practical and cost-effective management alternatives to new Village Rangeland Management Committees established in 12 Botswana villages. The manuals are also used in national training programmes for agricultural extension staff provided by the Botswana College of Agriculture and Government Department of Agricultural Research **[A]**. Enhanced community involvement in rangeland degradation monitoring targets policy gaps noted in the UNCCD National Action Programme (Republic of Botswana, 2006). Similar approaches are being replicated globally and are being advanced through major international programmes in which Stringer and Dougill have a role. These international projects include EUFP6 DESIRE, EUFP7 CASCADE, the Food and Agriculture Organisation's LADA (LAnd Degradation Assessment) programme and the World Overview of Conservation Approaches and Technologies (WOCAT).

International level impacts

Our research **[2-6]** has also informed international policy by changing the ways in which scientific input feeds into international policy on land degradation **[B, G]**. In doing so, it has introduced new topics to the UNCCD policy agenda, including knowledge management, the economics of land degradation and the need to strengthen the science-policy interface **[C]**. Recognition of the value of our input in informing international policy has led to a formal Memorandum of Understanding between the University and the UNCCD Secretariat **[B]**. The letter from the UNCCD Executive Secretary accompanying the MoU signed in Jan 2013 **[B]** states: "I take this opportunity to express

my deep gratitude to the University of Leeds for its support to the work of the UNCCD secretariat and the implementation of the Convention".

Recommendations building on proposals by **Stringer** in 2008 **[5]** drew attention to the lack of suitable channels for research to feed into the UNCCD – an issue that was relatively low on the international policy agenda prior to its use to develop a COP Briefing paper **[F]**. The initial impact of this was a shift away from dependence upon a Roster of Experts (membership of which was politically determined by governments) towards wider scientific input through UNCCD Scientific Conferences (drawing on peer-reviewed science that also integrates local knowledge). Routes to enhance the science-policy interface over the longer term featured in White Paper 3 **[D]**, which was developed for the First UNCCD Scientific Conference (Buenos Aires, 2009) **[E]**. An e-survey consultation was commissioned by the UNCCD in July 2011, building on recommendations in **[C]** and **[D]**. **Stringer**'s key involvement in the research that informed these actions led to an invitation to undertake a series of scientific reviews, presented to COP10 (Changwon, 2011). She peer-reviewed the e-survey analysis and results were adopted in CST/L.9/COP.10 **[C]**, calling for the establishment of an *ad hoc* Working Group on Scientific Advice to the UNCCD, to determine the optimal structure of the science-policy interface for land degradation issues. The first meeting of the *ad hoc* Working Group took place in July 2012, which began the evaluation of possible science-policy interface options proposed. The international impact of the research is thus twofold: i) a change to public policy and ii) development of new institutional structures **[G]**.

5. Sources to corroborate the impact (indicative maximum of 10 references)

A. Letter to corroborate national policy impact from the Chair of the Botswana National Climate Change and Sustainable Development Advisory Committee (Dated 26/2/2013). Available on request.

B. Letter from UNCCD Executive Secretary accompanying signed MoU noting the extent of Leeds support for the work of the UNCCD Secretariat in the period 2008-2012 (Dated 16/1/2013). Available on request.

C. CST/L.9/COP.10 (2011) – this is decision 20/COP 10 (page 100) which decides on further steps to strengthen scientific input into the UNCCD process and outlines establishment of the *ad hoc* Working Group on Scientific Advice: http://www.unccd.int/en/about-the-convention/official-documents/Pages/SymbolDetail.aspx?k=ICCD/COP%2810%29/31/Add.1&ctx=COP%2810%29

D. White Papers presented at the First UNCCD Scientific Conference: http://dsd-consortium.jrc.ec.europa.eu/php/index.php?action=view&id=79. White Paper 3 was later published as Akhtar-Schuster M, Bigas H, Thomas R. (Eds.) (2010) Monitoring and assessment of desertification and land degradation: Knowledge management, institutions and economics. White Paper of the DSD Working Group 3. *UNU Desertification Series No. 9.* Association of DesertNet International, United Nations University Institute for Water, Environment and Health and the Dryland Science for Development Consortium. ISBN 92-808-6014-3. 126pp.

E. ICCD/COP(10)/CST/INF.3 pages 20-21 detail the external evaluation of the work of Working Group 3 (which developed White Paper 3). This highlights the impact of the research feeding into the UNCCD process: http://www.unccd.int/en/about-the-convention/official-documents/Pages/SymbolDetail.aspx?k=ICCD/COP%2810%29/CST/INF.3&ctx=COP%2810%29/CST

F. ICCD/COP(9)/INF.7 – this is the repackaged **Stringer** (2008) document as a background paper for the high-level segment discussions in COP9 (roundtable 1; page 3 onwards): http://www.unccd.int/en/about-the-convention/official-documents/Pages/SymbolDetail.aspx?k=ICCD/COP%289%29/INF.7&ctx=COP%289%29

G. Letter to corroborate international policy impact from the UNCCD Chef de Cabinet (Dated 12/9/2012). Available on request.