

Impact case study (REF3)

Institution: University of Huddersfield		
Unit of Assessment: UoA 17 – Business and Management Studies		
Title of case study: Building Resilience in Wetland Farming Communities in East and Central Africa		
Period when the underpinning research was undertaken: 2000–2020		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s):	Role(s) (e.g. job title):	Period(s) employed by submitting HEI:
Prof. Adrian Wood	Professor of Sustainability	1986–present
Prof. Gerard McElwee	Lecturer - Professor of Geography	November 2014–July 2020
Matthew Snell	Professor of Entrepreneurship Research Projects Manager	October 2015–present
Period when the claimed impact occurred: 2013–2020		
Is this case study continued from a case study submitted in 2014? No		
<p>1. Summary of the impact</p> <p>Research by University of Huddersfield (UoH) in three African countries, Ethiopia, Zambia and Malawi, has shown how seasonal wetlands can be managed sustainably to improve food security, increase resilience and mitigate the impacts of climate change. Codified as the Functional Landscape Approach (FLA), this approach has provided institutional and practical innovations for sustainable wetland farming.</p> <p>The FLA provided opportunities for entrepreneurial innovation and enabled households to accumulate capital, diversify their livelihoods and develop new enterprises. Individuals in 37 village communities interacted directly with the action research and international and national NGOs have applied the concept to over 148,000 households, one million people, in Ethiopia, Zambia, Malawi, Uganda and Tanzania.</p> <p>The research findings had policy influence in Ethiopia and Zambia</p>		
<p>2. Underpinning research</p> <p>Wetlands were recognised as an internationally endangered resource by The Convention on Wetlands (known as Ramsar) which became effective in 1971. Today 90% of UN members have signed the convention. Seasonal wetlands (which retain wet season rainfall and runoff) cover 2% of Africa and sustain many communities via the crops that can be grown on them in the dry season. Because of this food supplementing role, they have become a new “agricultural frontier” – a trend driven by population growth, degradation of traditional agricultural land and climate change. Research by University of Huddersfield (UoH) helped identify, justify and spread the use of practices that create a sustainable balance between the requirements of populations and the natural environment.</p> <p>The impacts described in this case study arose from UoH research by Dr Adrian Wood (Professor of Sustainability, at UoH since 1986) who identified these trends and the need to achieve sustainable use, Dr Gerard McElwee (Professor of Entrepreneurship from 2014 to 2020) who explored how to make these seasonal wetlands contribute to farm diversification and Matthew Snell (Research Projects manager since 2015) who worked with local partners to develop ex-poste evaluations, case studies and policy contributions. Dr Alan Dixon (doctoral student and post-doc at UOH 1997-2004, now at University of Worcester) collaborated on community institutions for the management of the wetlands. The UK team were supported in-country by universities and international and local NGOs.</p>		
Ethiopian origins		

UoH research into the use of seasonal wetlands began in the late 1990s in south-west Ethiopia in collaboration with Addis Ababa University. The Ethiopian Wetlands Research Programme (EWRP) (1997–2000), funded by an EU grant (G1) (led by Wood), undertook social surveys and environmental monitoring in eight villages. It found that communities had considerable local knowledge about how to manage the wetlands to supplement upland harvests and generate income, but often faced political and management co-ordination challenges (3.1). The work also identified the links between wetland management and associated catchments in terms of water supply and control of erosion and flooding (3.2).

The research led to the formation of a local NGO, Ethio-Wetlands and Natural Resources Association (EWNRA), to apply the research findings in Ethiopia. An international NGO Wetland Action (WA), which included UoH as one of three constituent members, was established to apply the lessons more widely. These organisations were needed because until that point international policy had focused predominantly on the conservation of wetlands for their biodiversity, and government initiatives ignored their use by small-scale farmers, which is often critical for food security and livelihood diversification and resilience. Technical training had not been provided to the farmers and valuable seasonal wetlands were lost to agriculture due to poor practices, including erosion.

Southern African-based research

The research (G2) widened to Zambia (2005/06) and explored the importance of seasonal wetlands for food security following several drought years. Its findings led to a three-year project (Striking the Balance (SAB) (2006–2008)) (G3) to investigate sustainable use of these areas in Zambia and Malawi. Wood was Principal Investigator (PI) and three local researchers undertook action research at three sites in each country (c.750 households) in collaboration with the international NGOs Self Help Africa (SHA) and Wetlands International and other local NGOs. The team interviewed farmers from the six villages, exploring the problems they faced in land management, cropping practices, marketing and institutions. They also investigated how communities solved the problems and augmented “local” knowledge with “scientific” input. A co-creation approach was then used to share and develop “best-practices” between the farming communities (3.3).

The Functional Landscape Approach (FLA) was developed from the combined outcomes of the above research (2000–2008). It identified both institutional / community organisation and practical / land management methods that can support the sustainable cultivation of seasonal wetlands (3.3). The FLA was applied in the six SAB communities and used in projects developed by SHA, with training by Wood to SHA field staff in both Malawi (2012) and Zambia (2014). Follow-up economic impact assessment work by Wood, Snell and McElwee (3.4) (2016) (G4) used field surveys and focus group discussions to explore the long-term livelihood impacts of the projects in Zambia. An environmental impact assessment at sites in Zambia and Malawi was undertaken in 2019 (5.3). These two studies showed that small seasonal wetlands could be used in a sustainable manner and play a significant role in the livelihoods of most farmers, providing both food and income from produce sales. For some households, the latter became “wetland derived capital” which could be used to finance other livelihood initiatives and facilitate enterprise diversification (3.4). The finding that the wetlands could be economically sustainable was a distinctive aspect of this research and led to the idea of “plac(ing) people at the centre of thinking about wetlands in Africa” (3.5) research.hud.ac.uk/institutes-centres/surge/src/forestsandwetlands/wetlands/.

Global research and network

The SAB Project (3.3) led to Wetland Action (WA), a network of practitioners and academics, with UoH as a member, being engaged by the UN’s Food and Agriculture Organisation (FAO) and the Ramsar (Wetlands) Convention, to lead a two-year global research programme with 30 collaborators (including Dixon in the UK). The study used the Drivers, Pressures, State-changes, Impacts, Responses (DPSIR) methodology to draw lessons from almost 100 cases across the world and create Guidelines on Agriculture and Wetland Interactions (GAWI), which includes some aspects of FLA (3.6) (G5).

Subsequent to the GAWI guidelines a global network was established amongst wetland researchers. Their combined experiences, from across eight African countries were published in 2013 (3.5). The book explored how to apply new management approaches (such as the FLA) to achieve sustainable wetland use. It also used the case material and meta-analysis of trends in wetland thinking to further argue for a less narrowly conservationist approach to wetlands, a position originally developed from the Ethiopia specific study of EWRP (3.1, 3.2).

3. References to the research

This research crosses the 2* threshold as it features in highly rated peer-reviewed academic journals, or has been produced for respected international agencies.

- 3.1 Maconachie, R., Dixon, A. & Wood, A.P. (2008) Decentralisation and local institutional arrangements for wetlands management in Ethiopia and Sierra Leone." *Applied Geography* 29, 269-279. doi.org/10.1016/j.apgeog.2008.08.003
- 3.2 Dixon, A. B. and Wood, A.P. (2003) "Wetland cultivation and hydrological management in eastern Africa: matching community and hydrological needs through sustainable wetland use." *Natural Resources Forum*, 27, (2), pp. 117-129. doi.org/[10.1111/1477-8947.00047](https://doi.org/10.1111/1477-8947.00047)
- 3.3 Wood, A.P. & Thawe, P. (2013) "Catchments and wetlands: a functional landscape approach to sustainable use of seasonal wetlands in central Malawi." In Wood, A.P., Dixon, A.B. & McCartney, (eds.) *Wetland management and sustainable livelihoods in Africa*. London, Earthscan, pp. 63–84. doi.org/[10.4324/9780203128695](https://doi.org/10.4324/9780203128695) [can be supplied on request]
- 3.4 McElwee, G. and Wood, A. (2017) 'Wetland entrepreneurs: diversity in diversification in Zambian farming' *Journal of Small Business and Enterprise Development*. <https://doi.org/10.1108/JSBED-03-2017-0089>
- 3.5 Wood, A.P., Dixon, A. & McCartney, M. (2013) "Conclusions: transforming wetland livelihoods." In Wood, A.P., Dixon, A.B. & McCartney, (eds.) *Wetland management and sustainable livelihoods in Africa*. London, Earthscan, pp. 258–270. doi.org/[10.4324/9780203128695](https://doi.org/10.4324/9780203128695) [can be supplied on request]
- 3.6 Wood, A.P. & van Halsema, G. (eds.) (2008) *Scoping agriculture-wetland interactions: towards a sustainable multiple response strategy*. Rome: FAO. (Water Resources Report 33). Available at: <http://www.fao.org/3/i0314e/i0314e.pdf>

Research funding

G1 EU 1997-2000 €550k; G2 Leverhulme Fellowship 2005–07 £25k; G3 Dutch govt 2006-08 €400k. G4 UOH and Self Help Africa 2016, £40k; G5 UN FAO 2006-8, £200k.

4. Details of the impact

The impacts of this research were seen at the household and community level. Individuals in more than 37 village communities interacted directly with the action research while government and NGOs have applied the concept to over 148,000 households in Ethiopia, Zambia, Malawi, Tanzania and Uganda. The aggregate impacts are reported in a summary table (5.1). National wetland policies were influenced in Ethiopia and Zambia.

The impacts can be summarised under three headings: Improving livelihoods of small-scale farmers; Inspiring change and creating long-term solutions; Policy support.

Improving livelihoods of small-scale farmers (food security, diet, diversification)

An impact assessment of the Functional Landscape Approach (FLA) (3.3) was undertaken by the research team at the Striking a Balance (SAB) project sites in Zambia (2016) (3.4).

It showed that 68% of the 849 households living in the three study villages were wetland farmers in 2016, up from 13% in 2005 (before the project). Improvements in the economic conditions in the villages were mostly through improved food security, which increased their ability to withstand droughts associated with climate change (5.2). Further, 16% of the population had diversified their livelihoods through the investment of "wetland derived capital" outside village life – notably in trade and urban enterprises. The majority of the community (75%) had adopted new cropping and production activities – such as goat keeping, and village trading. At a minimum,

wetland farming now supplemented the main rainfed harvest for these families, and the income from crop sales had stimulated the local economy (5.2).

In these and other project sites, Self Help Africa (SHA), a €20m/yr turnover NGO, reported “that the FLA has had considerable benefits in terms of livelihood security and improved nutrition” with “final evaluations [that] showed that 35,000 people benefitted from increased dietary diversity” (5.2). Increased food availability during the dry season, and early rains, helped address seasonal food shortages in villages and local towns, while the improved availability and increased range of vegetables from the wetlands for much of the year helped reduce severe stunting in children, and improved the condition of people with long-term health challenges, such as HIV/AIDS (5.2, 5.3).

Excess wetland produce that could be transported with little damage – such as squashes and onions – were traded over 500–700km to the Zambian and Congo Copperbelt. The income generated helped households meet schooling costs and was invested in other enterprises e.g. keeping poultry or pigs. In one seasonal wetland, 300 households were estimated to have traded more than 200 tons of onions in one year (2018) (5.4).

Inspiring change and creating long-term solutions

Using the FLA lessons (3.3) Wood and Dixon provided training programmes for 90 project and government staff in Malawi (2012) and Zambia (2014). Wood supported the design of five development projects for SHA (2014–23) funded by the EU, Britain, Ireland and Norway, valued at over €17m, that impacted more than 800,000 people in Zambia, Malawi and Uganda (5.1, 5.2). The sustainability of the FLA approach was assessed by an independent consultant on behalf of SHA in Zambia and Malawi in 2019. He stated that “the prospects for continued generation of economic benefits for the communities is good for the next decade at least” (5.3). Use of the FLA for wetland and catchment management has helped build resilience in communities suffering from weather extremes caused by climate change, with examples seen in many countries, including Uganda where communities “were protected from the worst of the landslides and flooding [which] affected the region as a result of the exceptionally heavy rainfall across East Africa at the start of the 2020 rainy season” (5.2).

FLA-inspired lessons were shared through radio (an important way to reach widely dispersed rural communities) with programmes produced by former SAB project staff in Zambia. A report by independent consultants (2018) estimated that, directly and indirectly, the Striking a Balance project led to a 60-fold increase in wetland farming in three districts of northern Zambia in the last two decades, impacting more than 28,000 households (5.4).

Publication of the research on Guidelines on Agriculture and Wetlands Interactions (GAWI) (3.6) led to more requests for training. With FAO support, Wood covered GAWI and FLA research lessons with 14 senior staff in the Malawian government (Directors and Deputy Directors across 10 government departments and the Directors of four NGOs) (2010). This directly impacted the design of an FAO-supported government famine relief project in Malawi in 2016. As a result, 16,000 households started to use wetlands to supplement a reduced main harvest caused by Army Worm infestation. The “FLA requirement (in the project) was imposed by FAO... to ensure that winter farming did not negatively affect the wetlands” (5.5).

The FLA research (3.1, 3.2, 3.3) impacted several NGOs. In Ethiopia EWNRA grew from two people in 2000 to 70 in 2014 and 180 staff in 2020, with an annual turnover of \$3m+ (5.6). Wetland Action (WA) from 2005 to 2015 had an average annual turnover of c.Euro100k and shared knowledge with several other NGOs in Africa through training and its website (5.7). In Malawi, a village-focused NGO, Functional Landscape Action Movement (FLAM), was established by WA. It has tested the FLA with 60 families in six villages since 2017 (5.7). The founder of FLAM left his post with an international agri-business focused project because he realised a focus on production alone was environmentally unsustainable (5.7).

Other field testing of the FLA was undertaken in northern Malawi by Dixon (2015–18) (5.8) and by the global NGO World Vision in both Zambia and Malawi (5.4, 5.5).

Self Help Africa (SHA) involved Wood in the development of a position paper on the relevance of the FLA for the organisation, confirming how it will guide its approach to improving livelihoods and resilience in the face of climate change in the six African countries where it operates (5.2).

Policy Support

A national dialogue on Ethiopian wetlands (2008/09) was influenced by the EWRP action research findings (1997-2000). In this dialogue, EWNRA used the research findings of its work with UoH to argue for better policies for the management of wetlands (5.6). Since 2017 this dialogue has re-emerged. EWNRA has collaborated again with government agencies and NGOs, and reported “that building on our joint research and advocacy efforts, Ethiopia is now in the process of getting a Wetland Policy approved by Parliament” (5.6). A government official (Commissioner for Environment) stated that he “appreciates the valuable and relevant comments (from Wood and Dixon)...on the draft Wetland Proclamation” (5.9).

SHA was asked by the Zambian government to support them in the development of a wetland policy. The SAB survey (2016) (3.4) provided evidence that SHA used in its contributions to the new policy published in 2018 (5.10). The policy “focus on the livelihood contribution of wetlands” (5.10) was underpinned by the survey results and reflected the view, stressed by Wetland Action (of which UoH is one of three members), that small inland wetlands should be recognised as areas for sustainable multiple use, not simply for conservation and protection, as earlier policy drafts had stated.

5. Sources to corroborate the impact

5.1 **Data summary table** of aggregate impact of research findings as evidenced in 5.2–5.10

5.2 **Orla Kilcullen**, Programmes Director, Self Help Africa, Global HQ, Dublin. (*Wetland research links with Self Help Africa. With supporting document - Position Paper of SHA on the Functional Landscape Approach written in part by Wood.*)

5.3 **Dr Donovan Kotze**, Research Fellow, Centre for Water Resources Research, University of Kwazulu-Natal, South Africa. (*Sustainability of wetland use in SAB wetlands in Zambia and Malawi, 2019 assessment.*)

5.4 **Mbewe, A. and Sampa, J.** (2018) *Report on the Wider impacts of the SAB Project (Consultants Report. Annex 3 on onion production and trading. See p. 22 for Overall Impacts on growth of wetland farming of all types, and p. 19 for reference to World Vision.)*

5.5 **Patrick Thawe**, Climate Resilience Coordinator, Practical Action and formerly FAO Programme Officer. (*Use of the FLA in FAO Army Worm Recovery Programme in central Malawi in 2016.*)

5.6 **Afework Hailu**, Executive Director, Ethio-Wetlands & Natural Resources Association, Addis Ababa. (*Impact on communities in south-west Ethiopia, government wetland policy, & growth of EWNRA as an influential local NGO.*)

5.7 **James Ellison**, Product Development Lead, One Acre Fund, Rwanda. **Albert Msuku**, Senior Steward, FLAM, Malawi. (*Use of FLA and Wetland Action website by local NGOs in Malawi & Tanzania, www.wetlandaction.org*.)

5.8 **Dr Alan Dixon**, Worcester University. (*Report on use of FLA for Research in Malawi.*)

5.9 **Prof. Fakadu Beyene**, Commissioner, Environment, Forests and Climate Change Commission, Federal Government of Ethiopia. (*Appreciation of comments on draft Wetland Proclamation based on research of Ethiopian Wetlands Research Programme of UoH.*)

5.10 **Elia Manda**, Country Director for Zambia, Self Help Africa. (*Member of Technical Working Group for 2018 Zambian Wetland Policy - UOH research contribution to new policy.*)