

## Impact case study (REF3)

<b>Institution:</b> University of Worcester		
<b>Unit of Assessment:</b> 14 Geography and Environmental Studies		
<b>Title of case study:</b> Wetland management and sustainable livelihoods in sub-Saharan Africa: building social-ecological resilience through a Functional Landscape Approach		
<b>Period when the underpinning research was undertaken:</b> 2007 - 2020		
<b>Details of staff conducting the underpinning research from the submitting unit:</b>		
<b>Name(s):</b>	<b>Role(s) (e.g. job title):</b>	<b>Period(s) employed by submitting HEI:</b>
Dr Alan Dixon (AD) Dr Rachael Carrie (RC)	Principal Lecturer in Geography Postdoctoral Research Fellow	2007 – present 2014-2017
<b>Period when the claimed impact occurred:</b> 2014 - 2020		
<b>Is this case study continued from a case study submitted in 2014?</b> N		
<b>1. Summary of the impact</b>		
<p>Through collaborative action research the team has built capacity within Sub-Saharan African communities and NGOs to implement a social-ecological Functional Landscape Approach (FLA) to managing wetlands and catchments. Impacts include:</p> <ul style="list-style-type: none"> <li>• development of adaptive co-management arrangements among local communities that support sustainable development for vulnerable farmers;</li> <li>• outcomes associated with sustainable livelihoods including poverty reduction, food security, enhanced resilience and reduced vulnerability to climate change, across thousands of households in Malawi, Zambia and Ethiopia;</li> <li>• environmental sustainability through improved soil and water conservation, linked to sensitive development;</li> <li>• shaping the strategic direction of wetlands policy in Africa among state and NGO actors.</li> </ul>		
<b>2. Underpinning research</b>		
<b>Context</b>		
<p>Dixon's interdisciplinary research examines the social-ecological and institutional dynamics of community-based wetland management in sub-Saharan Africa, addressing how farmers can sustain livelihood benefits from wetlands, while enhancing the catchment-wetland ecosystem services that underpin these benefits. Understanding the relationship between people, wetlands and catchments is a critical pre-requisite to implementing strategies that address peoples' livelihood needs, increase food security, reduce vulnerability to climate change, and sustain ecosystem services. The research is informed by PhD and post-doctoral work (1996-2007) in Ethiopia that identified the role of indigenous knowledge in sustainable wetland management, and confirmed how community-based institutional arrangements emerge as adaptive responses to change within wetland social-ecological systems (<b>Reference 1</b>). This contested mainstream and hitherto simplistic conceptualisations of people-wetland relationships in Africa, influenced international wetlands policy, and prompted further research that field-tested sustainable wetland management strategies via collaboration between our own NGO, Wetland Action (WA) and:</p> <ul style="list-style-type: none"> <li>• The Ethio-Wetlands and Natural Resources Association (EWNRA) – in their 2009 Wichi Watershed project (Ethiopia);</li> <li>• Self Help Africa (SHA) – in their 'Striking a Balance' (SAB) projects in Zambia and Malawi (2005-2008).</li> </ul>		

From this research emerged the Functional Landscape Approach (FLA) concept: a menu of guidelines and practices for wetland stakeholders for delivering sustainable wetland-based livelihoods (**References 2, 3**) which have:

- considered wetlands through a social-ecological lens that links social and environmental processes within wetlands and catchments, and hence environmental, social and economic trade-offs;
- shared 'good field practice' in technical (agricultural, environmental) and social (knowledge, institutions) innovations from different places;
- built capacity for adaptive co-management through participatory action research within local communities.

### **Recent research insights**

#### *a) Evaluating the FLA (2014- )*

We investigated the social-ecological benefits to communities of implementing the FLA in Kankhulukulu catchment, Malawi. This drew on the experiences and 'top-down' critique of SAB (**Reference 4**) and explored a more participatory mode of implementation within one community over three years. Key insights (**Reference 2**) include:

- the need for short short-term development gains (food security and income diversification) to off-set long-term environmental management investments;
- the critical role of self-mobilised local institutional arrangements and enhanced social capital in facilitating knowledge exchange, conflict resolution, and ultimately the conditions for adaptive co-management that produces livelihood and environmental benefits;
- FLA adoption enhances social-ecological resilience.

#### *b) Conservation Agriculture and the FLA (2017- )*

Our research in northern Malawi explores the social-ecological sustainability of Tiyeni's (an NGO) deep-bed farming (DBF) system of conservation agriculture (CA) and its contribution to the FLA as a catchment innovation (**Reference 2, 3**). Key insights (**Reference 5**) include:

- widespread adoption associated with perceived (and real) soil and water conservation, and a significant increase in food security and climate resilience;
- significant livelihood benefits for some farmers but not all, highlighting the need to integrate adaptive practice and social-ecological thinking into the DBF and Tiyeni's extension methods.

#### *c) Sustainable management of wetlands in Ethiopia (2017 - 2020)*

In 2017 we explored the long-term impacts of 20+ years of research collaboration with EWNRA. Key insights (**Reference 6**) include:

- significant advocacy, action and institutional capacity building by EWNRA, delivering sustainable wetland livelihood benefits in project areas countrywide;
- slow national wetlands policy development hindered by sectoral interests and scant social-ecological thinking;
- evidence of adaptive wetland management in previous field research sites.

### **3. References to the research**

1. Dixon, AB (2008) The resilience of local wetland management institutions in Ethiopia. *Singapore Journal of Tropical Geography* 29, 3, p341-357.  
<https://doi.org/10.1111/j.1467-9493.2008.00343.x>
2. Dixon AB, Mvula A and Carrie RC (2020) *A Functional Landscape Approach to managing wetland social-ecological systems: Experiences from the Kankhulukulu project in Malawi*. Working Paper, The University of Worcester and Wetland Action.  
<https://eprints.worc.ac.uk/id/eprint/10014>
3. Wood, AP, Dixon, AB and McCartney, M (2013) (eds.) *Wetland management and sustainable livelihoods in Africa*. Earthscan, London.

## Impact case study (REF3)

4. Dixon, AB and Carrie, R (2015) Creating local institutional arrangements for sustainable wetland socio-ecological systems: lessons from the 'Striking a Balance' project in Malawi. *International Journal of Sustainable Development and World Ecology* 23, 1, p40-52. <https://doi.org/10.1080/13504509.2015.1107861>
5. Mvula, A and Dixon, A (2020) Farmer experiences of Tiyeni's 'deep-bed farming' conservation agriculture system in Malawi. *Agroecology and Sustainable Food Systems* Published online 10<sup>th</sup> Sept 2020 <https://doi.org/10.1080/21683565.2020.1819513>
6. Dixon AB, Wood AP, and Hailu, A (2020) Wetlands in Ethiopia: lessons from 20 years of research, policy and practice. *Wetlands (Accepted Manuscript, 1<sup>st</sup> October 2020)*. <https://eprints.worc.ac.uk/id/eprint/9872>

Reference 4 is returned in the unit's output submission for REF2021. Reference 1 was returned in the unit's outputs submission for REF2014

#### 4. Details of the impact

Our research has involved close collaboration with a range of stakeholders including local and international NGOs and local communities themselves, delivering impacts across three mutually reinforcing areas (**Source A**):

- **Institutional impacts** - NGO adoption of the FLA and the integration of research findings into development policy and field interventions;
- **Livelihood impacts** - improvements in livelihood security and social-ecological resilience among project beneficiaries;
- **Policy shifts** - building legacy by informing the broader wetlands-livelihoods policy agenda at national and international levels.

Three examples demonstrate this.

##### a) Impacts of FLA adoption in Southern Africa

###### **Action research in northern Malawi**

Application of the FLA builds capacity within wetland communities for adaptive co-management, creating an environment for improved livelihoods, reduced vulnerability, and enhanced social and natural capital. Community-based action research in Kankhulukulu since 2017 (**Source B**) has delivered impacts in these areas for 30+ farmers via:

- development of six community-based institutional structures to oversee wetland and catchment issues (FLA committee, *dambo* (wetland) committee, Tiyeni club, social welfare committee, village bank, marketing committee);
- development of farmer-led low-tech environmental and livelihood monitoring systems (e.g. annual ecosystem service assessment and resilience ranking);
- four farmer-to-farmer extension visits that facilitated knowledge exchange and livelihood adaptations (e.g. committee formation, new crops, soil management) amongst 80+ farmers;
- informing the self-mobilisation of a community in Mzimba district (60+ families) who established their own NGO to implement and disseminate the FLA and its associated practices (**Source C**).

Subsequent impacts realised from these activities (**Sources B, C**) include:

- Formation of community-based institutional structures (as per above) that have enhanced resilience at the local level;
- Crop diversification and innovations (e.g. CA practices, garlic production, *dambo* cultivation) that enhance resilience among subsistence farmers and their families;
- Environmental sustainability (e.g. maintenance of streamflow, reduction in soil erosion, deforestation halted, active community-led monitoring);
- Increased income generation from improvements to farming and the environment.

**Self Help Africa FLA adoption**

NGO Self Help Africa has integrated the FLA into its development of community-based 'climate-smart' livelihood adaptations throughout the region. This has been informed by a continuing process of research collaboration and implementation (**Sources D-G**) characterised by institutional impact:

- Dixon and colleagues delivering a week-long training workshop for SHA and 30+ government and NGO stakeholders participating in the Irish Aid Livelihood Development Programme (IALDP) in Zambia in 2014;
- SHA acquired EU funding of €500k in 2017 for the project '*Striking a Balance – Developing a Green Economy around Lake Bunyoni [Uganda]*' which integrates the FLA and its lessons for developing institutional arrangements;
- FLA integrated into SHA's 'DISCOVER' Project (2012-2017, EUR1.7m) which enhanced resilience among 15,593 households across Malawi;
- FLA integrated into SHA's 'BETTER' programme's farmer field schools in Malawi (2018-2023, EUR16m);
- Integration of the FLA into SHA's work programme for the 'PRESERVE Kafue' project in Zambia (2018 - 2022).

Livelihood impacts realised from these activities include (**Sources D-G**):

- Lifting 16,000 vulnerable households out of poverty over the course of the IALDP;
- Enhanced knowledge and awareness amongst 30+ NGO trainee staff relating to the FLA to improve catchment-wetland management for 1000+ beneficiaries across Zambia;
- Over 14,000 households adopting FLA practices with 35,000 people benefitting from increased dietary diversity (DISCOVER Project Malawi);
- Training and capacity building of 2300 government extension staff and FLA applied among 100,000 families in Malawi benefitting from improved livelihood security and resilience to climate change resilience ('BETTER' Project Malawi);
- 3,000 farmers benefitting from the 'PRESERVE Kafue' project in Zambia, with indirect benefits for 15,000 relating to improved food security, enhanced nutrition and resilience.

**b) Conservation agriculture and Tiyeni Malawi**

Our research and consultancy work has developed strategy and built operational capacity within Tiyeni as well as having direct impacts on farmers' livelihoods (**Reference 6; Source J**):

- DBF integrated and promoted widely as a catchment measure within FLA, with subsequent benefits for crop diversification, innovation, new networking potential, sustainability and resilience through self-mobilisation of farming communities;
- Contribution to improved food security, nutrition and livelihood resilience for 15,000+ farmers;
- Facilitating improved networking, collaboration and funding streams for Tiyeni thereby increasing the number of beneficiaries.

**c) Impacts of wetlands research in Ethiopia**

Our research has directly informed the strategic direction and implementation activities of EWNRA (**Reference 5, Source H**):

- EWNRA has implemented 50+ development projects delivering food and water security for 500,000+ beneficiaries. By 2019 EWNRA had an annual turnover of more than \$1 million, and has successfully driven change in conservation, development and wetland policies at the national level;
- Dixon, EWNRA and WA contributed to the Ethiopian Government's Wetlands Proclamation (**Source I**) designed to shape wetlands policy for the coming decades, and ensuring Ethiopia attains accession to the Ramsar Convention on Wetlands of International Importance.

**5. Sources to corroborate the impact**

- A. Testimonial from Director of Wetland Africa outlining the contribution to and impact of AD's 20+ years of work with NGO Wetland Action.
- B. Wetland Action Working Paper outlining the social-ecological impacts of the Kankhulukulu project in Malawi: <http://www.wetlandaction.org/wp-content/uploads/Dixon-et-al-2020-Experiences-from-the-Kankhulukulu-project-in-Malawi.pdf>
- C. Testimonial from Co-ordinator of FLA Mzimba project, Malawi.
- D. Testimonial from Programmes Director of Self Help Africa.
- E. Self Help Africa – Position Paper on the FLA (published July 2020). <https://selfhelpafrica.org/ie/technical-policy-and-data-resources/>
- F. Self Help Africa – Irish Aid Local Development Project (2013-2017) Impact Paper: [http://twovillages.org/wp-content/uploads/2017/09/IALDP\\_Impact\\_2017\\_4pager\\_ip5.pdf](http://twovillages.org/wp-content/uploads/2017/09/IALDP_Impact_2017_4pager_ip5.pdf)
- G. Self Help Africa – Zambia Impact (Kafue). [https://selfhelpafrica.org/uk/wp-content/uploads/sites/6/2019/07/CP\\_Zambia\\_2019.pdf](https://selfhelpafrica.org/uk/wp-content/uploads/sites/6/2019/07/CP_Zambia_2019.pdf)
- H. Testimonial from Director of EWNRA outlining our contribution to their operations and associated impact on beneficiaries throughout Ethiopia.
- I. Testimonial from the Ethiopian Government's Environment, Forest and Climate Change Commission acknowledging our contribution to the Ethiopian Government's draft Wetlands Proclamation (2020).
- J. Testimonial from Chair of Tiyeni, outlining our research contribution to field operations and impact.