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**Wetland entrepreneurs: diversity in diversification in
Zambian farming**

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Wetland entrepreneurs: diversity in diversification in Zambian farming

Purpose

This paper explores enterprise diversification amongst wetland farmers in Zambia as a way of reducing poverty and improving sustainability. It identifies ways in which such entrepreneurial activities can be supported and applied more widely.

Method

A qualitative study of Zambian farmers, based on a series of workshops and interviews held in Zambia with farmers and farm business advisers.

Findings

Despite adopting new technologies most farmers are restricted to the local market where their increased production holds down prices. However, a very small number of farmers are able to progress to production and marketing for markets in major urban centres hundreds of kilometres away, and considerably more are able to use the capital accumulated from wetland farming to diversify their household enterprises to reduce poverty and improve the sustainability and resilience of their livelihoods.

Prior work

No work has been undertaken in diversification strategies of Small scale farmers in

Zambia

Introduction

In Zambia, the political economy of farm management has been influenced by a range of factors, including state policies which go back for many decades – notably varying maize subsidies, domestic circumstances – especially shortage of labour, and locational and environmental consideration such as distance to market and soil fertility (Wood, et al, 1990; Thurlow and Wobst, 2004). These factors affect the opportunities for farm development leaving the country with restricted agricultural exports and reliance on imported food. In this situation, the transition from subsistence to market-oriented production is difficult for many small-scale farmers (Chitundu et al; 2009), especially in remote rural areas of the country (GRZ, 2014). A key challenge has been for farmers to develop both the technological skills for increased and sustainable production of crops for sale and also those skills which enable them to reach new markets (Reardon, et al; 2009). Moving away from a dependency on state support, to develop their own innovation and entrepreneurial capability is required. This paper provides one example of such development by looking at the experience of enterprising wetland farmers in Mpika in northern Zambia, a location relatively remote from the major markets.

Entrepreneurial development is seen as the way to diversify rural incomes and so help address issues of rural poverty and help create a dynamic rural sector (Bigsten and Tengstam, 2008). This is particularly important for Zambia, as recent studies show that 78% of the rural population live below the poverty line (CSO, 2010). This situation contrasts with the underuse of rural resources, with only 14% of the arable land cultivated and only 9% of the irrigation potential developed (de Boer, 2010). However, while there is some evidence of rural dynamism in terms of resource use,

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3 technology adoption and market orientation in the more accessible areas, the situation
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5 in remote rural locations, such as in the northern parts of the country, remain
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7 challenging with many bottlenecks faced (de Boer, 2010). This suggests that there is
8
9 a need to understand the situation of farmers in these areas and explore cases where
10
11 there has been successful diversification (Smale and Mason, 2014).
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16 Relevant in this context is the work of Humphries (1990) who discusses the thesis of
17
18 agricultural development initiated by peasant 'embourgeoisement' through petty
19
20 entrepreneurship. Indeed, peasant entrepreneurship is recognised in many parts of the
21
22 world to play a key, dynamic role in the development of the agricultural sector and
23
24 the achievement of diverse, sustainable and resilient farming (van der Ploeg, 2009). In
25
26 the Zambian context, the concept of the 'Entrepreneurial Farmer' (McElwee, 2006:
27
28 McElwee and Smith, 2014) has yet to take root outside a few especially favoured
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30 areas, such as those close to the traditional line of rail (Livingstone to the Copperbelt)
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32 with productive natural resources and access to markets (such as Mumbwa and
33
34 Copperbelt rural) (Wood and Vokes, 1990). To spread this concept is a major
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36 challenge for Zambian rural policy makers, and a particularly urgent one with
37
38 growing urban food demands, the challenges of climate change, and difficult rural
39
40 socio-economic conditions. Zambia cannot continue to underutilise its rural space
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42 and fail to optimise its use of natural resources given the rural poverty it faces and
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44 export diversification or import substitution it needs (Brulhart et al, 2015).
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52 Policies associated with market liberalisation have impacted on Africa's farming
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54 sector in several ways (Heidhues and Obare, 2011). One key area of relevance for this
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56 study is the reduction of input subsidies, especially seed and fertilisers for maize, in
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3 the early 1990s and the associated withdrawal of support for marketing of agricultural
4 produce. These changes impacted very heavily in the northern part of Zambia where
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the early 1990s and the associated withdrawal of support for marketing of agricultural produce. These changes impacted very heavily in the northern part of Zambia where fertiliser input is critical for maize production on acid soils and where maize had become the main cash crop, despite this area being far away from the major urban markets (Saasa, 1996). Although a level of subsidies has now returned, the need to reduce such expenditure remains widely recognised and is likely to occur in the foreseeable future forcing farmers to again adapt to less state support. The question of the role of subsidies and their impact on maize production remains an important issue as a study of planting improved maize varieties by Khonje et al (2015) shows that these varieties have had significant poverty-reducing impacts in eastern Zambia.

At present, rural communities in Zambia face unprecedented social, economic and environmental challenges, with rural poverty stubbornly high and the negative impacts of climate change expected to grow (DFID, 2012). However, there are opportunities developing, especially new markets both in the country's growing urban centres and in the neighbouring Katangan mining belt in the Democratic Republic of Congo. Technological advances and use, such as mobile phones, is also impacting on farmers' communications and ability to explore markets, while the introduction of climate smart agriculture and popularising of crops, such as potatoes, squashes and onions, are also changing the opportunities for farmers wishing to develop their production.

Understanding which factors influence farm diversification in order to reduce poverty and increase sustainability and resilience is often rooted in 'hard' and ostensibly quantitative performance indicators. National, regional or sub-regional measures of

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2
3 performance are used to indicate the socio-economic health and prosperity of a region
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5 or sub-region. Less work has been undertaken to explore the diversity of responses of
6
7 farmers to new opportunities, what makes some farmers more enterprising than others
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9 and indeed what barriers are faced by farmers when they choose to diversify. In an
10
11 earlier work diversification is defined as ‘a strategically systemic planned movement
12
13 away from core activities of the business in an effort to remain in and grow the
14
15 business’ (McElwee et al, 2006.26). In Zambia the key challenge is to explore how
16
17 farmers may achieve such diversification and to learn lessons for policy and
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19 programmes in government and amongst other agencies which can support such
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21 developments.
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27 **Aims and Objectives**

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29 This paper explores farmers’ experience of diversification by providing a case study
30
31 of the medium-term results from an appraisal undertaken in 2015/2016 of one
32
33 particular farm support project in Zambia which encouraged farmers to diversify into
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35 wetland farming (Striking a Balance (SAB) Project, 2008-2008; Ndiyoi et al, 2009.
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37 www.wetlandaction.org/projects).
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43 The paper explores how an innovative, multi-season technique for wetland cultivation
44
45 has been adopted by small-scale farmers (semi-subsistence producers) in the Mpika
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47 area and how there has been a range of experiences in terms of enterprise
48
49 development, access to new marketing opportunities and the development of some
50
51 chains of diversification. From this we draw conclusions concerning the importance
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53 of rural households generating a small amount of capital and how policies towards
54
55 small-scale producers can be developed to recognise their skills and dynamism, as
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3 well as address the constraints they face illustrating the critical role of an animator
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5 (see McElwee et al, forthcoming, 2018).
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10 In particular, the paper seeks to understand the range of experience of small-scale
11 farmers who have diversified into off-season wetland farming and the different levels
12 of progress they have been able to make.
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18 The importance of wetlands is much greater now than in William's (1991) discussion
19 of the importance of conservation of wetlands in Zambia and the consequences of
20 over exploitation. Wetlands are a becoming new agricultural frontier in the country
21 due to degradation of rain-fed, upland fields in some areas, increasing costs of
22 chemical fertilisers and the increasingly unreliable rainfall associated with climate
23 change (Wood et al 2013). Thus farmers seeks new opportunities where soils are
24 fertile and water is available; seasonal wetlands provide one such opportunity. In
25 addition we consider how farmers have developed new perspectives on their natural
26 resources and have tried to ensure they use their wetlands sustainably through
27 collaborative arrangements to ensure minimal degradation and environmental impact.
28 Overall, this analysis explore the gap in the understanding of the relationship between
29 entrepreneurship and local food producers' skills, and indicates the need for a
30 refocusing of practical and policy intervention for government and other agencies
31 working with small-scale, emerging, producers.
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51 The remainder of the paper is structured as follows. A broad introduction to rural
52 Zambia is provided and then a discussion of the problems facing the Zambian farmers
53 who participated in the SAB Project. The concepts of animateur and rural
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3 entrepreneurship are introduced. We then define our terms, followed by a discussion
4 of the methodological approach. The major part of this paper is a presentation of the
5 key findings from individual and community level data gathering. We conclude with a
6 discussion of what our findings mean for the Zambian small-scale farmers and
7 measures to support them, as well as the implications for Zambia's wetlands policy.
8 We also consider the wider lessons of how a focus on entrepreneurial skills can
9 stimulate innovation and enterprise diversification in rural places which will reduce
10 rural poverty. This then is our contribution.

21 22 23 **Rural Zambia**

24 Rural Zambia is changing. Today the composition of the rural economy in the more
25 accessible areas increasingly mirrors that of urban fringe locations with service
26 sectors providing most of the new jobs (de Boer, 2010). After decades of stagnation,
27 the number of rural businesses is growing, rural employment is increasing and a rising
28 proportion of Gross Value Added (GVA) derives from rural activities.

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38 Agriculture, forestry and fishing accounts for around 15% of Zambian Gross
39 Domestic Product (GDP), a figure which is comparatively small compared with other
40 land-rich developing economies due to the importance of mining (FAO, 2009).
41 Croplands and forests dominate the rural space (Aongola et al., 2009) but still only a
42 small proportion of arable land is cultivated. Consequently, it is clear that there is a
43 considerable unfulfilled potential from rural enterprises which could contribute more
44 to the GDP, import substitution and exports (OECD, 2011). While the small number
45 of commercial farms contribute to these goals, much of rural Zambia suffers from
46 poverty, social exclusion, lack of access to public services, and an imbalanced
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3 population (GRZ, 2010). Zambia has strong rural and urban interactions through
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5 labour migration and this has created a gender imbalance in many rural settlements
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7 which typified by villages of less than 200 people (OECD, 2011). The few
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9 commercial farms, which are near to or along the line of rail, are highly productive
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11 but play a minor role in the rural economy in terms of the number of people they
12
13 employ (OECD, 2011).
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18 In Zambia, forests provide edible products (e.g. caterpillars, mushrooms, honey), fuel
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20 in the form of firewood or charcoal and medicinal plants. Charcoal markets and
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22 agricultural expansion are driving deforestation (FAO, 2011). The rate of
23
24 deforestation is estimated to be the second highest per capita in Africa and the fifth
25
26 highest in the world (estimated at 4,000 km² of forests lost every year from 1990 to
27
28 2005), This has the potential to cause serious land degradation and even
29
30 desertification. Further, within some of the long-standing farming areas, such as
31
32 Southern and Eastern Provinces, there is serious degradation within the arable
33
34 farming areas, with soil compaction and loss of organic matter contributing to
35
36 erosion. This will increase the negative impact of the growing rainfall variability
37
38 associated with climate change. In this situation wetlands are being seen as a critical
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40 resource which can help farmers maintain their food security but also develop
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42 production for urban markets and so reduce poverty. Use of wetlands can thus be
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44 stimulus to innovation in farming as well as a catalyst for rural enterprise
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46 diversification and entrepreneurship.
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Figure 1: Zambia – Urban centres and communications

Rural Entrepreneurship and Zambian farmers

The notion of sustainable farm entrepreneurship is important because entrepreneurship, measured by indicators such as: new firm formation rates, the density of firms and Gross Value Added (GVA), has been correlated with economic prosperity and the growth of regions (McElwee et al, 2006). This is relevant at all scales, particularly with emerging, subsistence-oriented farmers.

Globally there is increasing recognition of the need for rural communities to be innovative in order to find locally relevant solutions to the challenges of rural poverty, ones they can apply themselves. At the same time, there is interest amongst policy makers to understand the power and knowledge of local communities and harness this

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2
3 to deliver their own tailored solutions for service delivery (Cox et al, 2010).
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5 Entrepreneurs are the ones who can lead this process and many local farmers are
6
7 already innovating, often working in partnership, to address issues of common
8
9 concern (Spedding, 2010), rather than relying on government and public services.
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14 Rural economies in Zambia are undergoing such changes and these need to increase
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16 and become a cultural change in order to effectively address rural poverty (DFID,
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18 2012; de Boer, 2010). In their everyday lives, in their homes, in their
19
20 neighbourhoods, in their workplace, people do not always turn to officials, local
21
22 authorities or central government for answers to the problems they face but instead
23
24 feel empowered to help themselves and their own communities. Thus the informal
25
26 and self-generated economy is developing not just in towns but also in rural areas
27
28 (Bigsten and Tengstam, 2008). Farmers, often without formal management training,
29
30 realise that if they want their businesses to be both successful and sustainable, need to
31
32 become more entrepreneurial, especially in their diversification strategies.
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39 A number of specific endogenous and exogenous factors influence the potential
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41 strategic capability and entrepreneurial activities within the rural village community.
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43 Endogenous factors comprise personal characteristics, 'soft' elements such as
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45 qualities and skills of enterprising individuals, entrepreneurs and 'animateurs'.
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47 Exogenous factors, outside of the control of the individual village community, include
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49 'hard' elements, or characteristics of the village itself, i.e. spatial organisation and
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51 environmental factors such as topography, land types available, access to labour
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53 markets, transport infrastructure etc.
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3 Work by McElwee (2006; 2008) discusses how the responsibility for farm enterprise
4 must be with the individual - not the state. However, the state or other actors from
5 outside the rural communities often needs to 'kick start' the process by introducing an
6 innovation or stimulating an entrepreneurial culture amongst farmers. In Zambia, at a
7 policy level, there is a growing recognition that entrepreneurs generate economic
8 growth and vitality and are fundamental to coping with and responding to broader
9 changes in the organisation and dynamics of economic activity and interaction (de
10 Boer, 2010).

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23 Work of this nature can be framed by similar studies from around the world. For
24 instance in an EU-funded research project involving ten cases drawn from five
25 countries, North and Smallbone (2006: 41-59) consider the kinds of new policies
26 needed to stimulate rural entrepreneurship.

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34 This diverse experience from many countries has been used as a starting point to
35 explore the way in which the diversification of small-scale producers in Zambia into
36 more entrepreneurial activities is possible. Other starting points are the findings of
37 recent analyses of the enabling environment for farmer entrepreneurship, value chain
38 development and marketing in Zambia (de Boer, 2010; DFID 2012). These show that
39 while there are market opportunities developing for small-scale, emergent farmers,
40 the market remains badly distorted by state subsidies on inputs and marketing policies.
41 Further, poor infrastructure, especially in remote locations, and limited information
42 both for production and markets beyond the state controlled maize market, make it
43 difficult and risky for farmers to diversify in order to achieve a higher and more
44 secure income. Critically farmers and food producers need access to agricultural
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3 market places in order to increase productivity (DFID, 2012). This is particularly the
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5 case in rural Zambia where access to national markets for example is difficult for
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7 many farmers due to location, poor infrastructure and scale of production, but most of
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9 all due to lack of entrepreneurial skills and traditionally little access to information
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11 and business support services (de Boer, 2010).
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16 To create a more dynamic rural economy amongst the small-scale farmers in Zambia
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18 and to encourage diversification which will help improve incomes and increase
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20 resilience many changes are needed in terms of government policy which has to open
21
22 up the agricultural marketing and reduce subsidies, and support learning to move into
23
24 market-oriented production and undertake business diversification (Bigsten and
25
26 Tengstam, 2008). The experience reported in this paper is one such contribution.
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32 **Methodology**

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34 The primary methodology of this paper is the case study approach (Yin, 2002; Smith
35
36 and Author, 2013). This approach is used in the spirit of being a serious research
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38 strategy or empirical inquiry investigating a phenomenon within a real-life context
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40 (Yin, 2002). The case study is based upon information-oriented sampling using direct
41
42 ethnographic observation, conversation, anecdote and stories. Naturalistic
43
44 observation is a technique used to collect behavioural data in real-life situations and
45
46 works best when little is known of the matter under consideration. It is of note that
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48 although we have chosen to use case studies we could have constructed other
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50 methodological approaches, but less qualitatively rich, by administering
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52 questionnaires for example.
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3 The entrepreneurs participating in the study were determined through discussions
4 with local NGOs and government officers about their views of food producers who
5 would be able to provide “typical” experiences of success and failure, and of
6 animateurs who provide the entrepreneurial energy to create localised change often
7 with limited or no formal management skill or training.
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16 Gathering data for this research project involved a two - stage approach over a
17 considerable time, from 2006 to 2016.
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23 a) Research Stage 1.
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25 This stage involved the development of a farmer support programme for communities
26 in three sites in Mpika district to explore with them the potential for increased, but
27 sustainable, use of wetlands in order to address domestic food shortages and to
28 generate surpluses for sale. This was part of a two-country project funded by the
29 Netherlands government and implemented by Wetland Action in collaboration with
30 Harvest Help, later GORTA Self Help Africa, and local NGOs (Ndiyoi et al, 2009). In
31 Mpika, the work with the North Luangwa Wildlife Conservation and Community
32 Development Programme (NLWCCDP) focused on the introduction of a wetland
33 farming method developed by a government extension block supervisor, Jonas, in
34 collaboration with communities in Serenje and Mpika Districts. When Jonas moved to
35 Mpika town, in the neighbouring district, and joined NLWCCDP, which Harvest Help
36 supported, this provided an opportunity for him to act as an animateur in the villages
37 in that District. Farm case studies informed the second stage of the work.
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56 b) Research Stage 2
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3 The purpose of this stage in 2015 and 2016, was to gather a “narrative” of the stories
4 and experiences of individuals over the seven years since the formal project stopped.

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7 The approach sought to ensure that the responses were as free and open as possible.
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11 A series of six workshops/meetings were held in April 2015 and in more details in
12 June 2016 with groups of interested stakeholders in the three SAB villages to review
13 village histories from before the SAB project to the present. In September 2015, 12
14 in-depth farmer case studies were compiled through in-depth discussion. The purpose
15 was to understand the key issues deemed important to these stakeholders in their
16 experience during the project and in the subsequent years. In many ways, this is an
17 example of how the ‘context’ of research can be an important opportunity for
18 entrepreneurial learning (Welter, 2011). By context, we mean the economic, cultural
19 and social environment.
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34 The overall research questions for the workshops/meetings were simple, relating to
35 the SAB project and its impact. The questioning revolved around ideas relating to:
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- 38 • What **is** working well?
- 39
- 40 • What is **not** working well?
- 41
- 42 • What **could/should** be done to improve both in the short and long term?
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48 For the village histories and case studies checklists were used, with opportunities
49 taken for exploratory follow-up as needed. These focused on the farming situations
50 before the SAB project, at its conclusions in 2008, and the current situation today.
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3 Analysis of the data involved the identification of common experiences and use of
4 this to group the individual case studies and categorise farmer experience. Processes
5 which lead to different experience have been identified where possible and further
6 analysis of the underlying processes and driving forces is on-going.
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14 While the case experience articulated in this paper focuses primarily on participants
15 from the project, and consequently, the results are not generalizable to all rural farm
16 businesses in Zambia, there is a potential for comparative analysis and discussion.
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20 21 22 23 **Wetland Farming Progression**

24 Traditional Farming Methods

25
26 The development of market-oriented farming for smallholders in northern Zambia,
27 bringing them out of subsistence farming, has been difficult. The soils in most of the
28 region are acidic and the traditional farming system has focused on a shifting
29 cultivation method called *chitemene*. This involves a 25-year rotation with tree
30 pollarding, burning of the branches removed to create a concentration of ash which
31 allows two years of cultivation of finger millet before a new field is created. At
32 independence in 1964, government policy tried to create a level playing field for
33 village farmers across the large and diverse countryside of Zambia by providing
34 subsidies on hybrid maize seed and its inputs, as well as a rural collection service for
35 maize (AuthorB et al 1990). In the north this initiative sought to move farmers from
36 the *chitemene* production of finger millet, with shifting fields, to maize and more
37 permanent cultivation. This was not completely successful and there were discussions
38 about how farmers themselves were subsidising maize production just to get a
39 guaranteed marketable crop (Sharpe, 1990), a trend which seems to continue today.
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3 In 1991, following the multi-party elections, government policy changed with most
4 subsidies removed and rural support services reduced. At the same time there were a
5 number of years of poor rainfall and some farmers reverted to traditional methods
6 both of upland *chitemene* cultivation and use of the edges of the often extensive
7 seasonal wetlands, or *dambos*, in this part of the country, the latter being a traditional
8 famine relief strategy.
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19 Traditional wetland cultivation is limited to small patches with an estimated 5% of the
20 population regularly engaged in this before 2006. These are either termite mounds
21 within the wetlands where bucket irrigation is carried out, or sites where seepage
22 water is available. In the latter, partial turf burning has been carried out during the
23 early dry season after poor upland harvests. This creates less acid soil conditions
24 where cereal crops, such as maize or sorghum, can be grown on residual moisture to
25 produce a supplement to the failed, or reduced, upland crop in years of poor rainfall.
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36 *Innovations in Wetland Management*

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38 One critical observer of this situation was an extension block supervisor working in
39 rural areas of Serenje and Mpika Districts. He has since become a key animateur in
40 the whole process of wetland diversification and entrepreneurial development in this
41 area through his engagement with various communities and projects in these districts.
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50 Analysis of this partial turf burning method led to several innovations by the block
51 supervisor to try to make the method applicable for a wider range of crops and
52 wetland situations. Briefly, he developed a more thorough method of controlled turf
53 burning, identified large areas where this could be applied with cultivation over the
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3 whole year – relying on seepage water and mounding to overcome the dry and wet
4 season challenges respectively. He explored a number of new crops suited to
5 different seasonal market opportunities in the villages and local and distant towns and
6 developed linkages with urban markets several hundred kilometres away (Sampa,
7 2008). He also identified the need for careful management of the catchments around
8 the wetlands in order to ensure the all-year-round supply of seepage water into the
9 zones identified for cultivation. Through discussions with village headmen and
10 wetland farmers, a method of coordinated wetland and upland management was
11 introduced with the formation of Village Natural Resource Management Committees
12 (VNRMC) to undertake farmer training on the controlled burning method and to
13 develop byelaws with the communities to ensure sustainable use of the wetlands and
14 their immediate catchment areas.
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32 Dissemination, Adoption and Continuity

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34 Originally the use of these methods was disseminated through the work of the block
35 supervisor and his camp staff, but between 2006 and 2008 he worked for the local
36 NGO, NLWCCDP, which was implementing the SAB project. This project sought to
37 explore ways in which wetlands could be used sustainably and a balance struck in
38 maintaining all ecosystem services, especially provisioning and regulating ones, i.e.
39 food supply and hydrological flows (Wood and van Halsema, 2008). As well as the
40 work undertaken by the project officer, there were selected in each community two
41 lead farmers who acted as local advisers to farmers and had their wetland plots used
42 for demonstration purposes.
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For the project, three communities were chosen as the focus or ‘test bed’, each with somewhat different physical conditions, locations and size of community. Within these wetlands over 500 farmers, around 60% of the village households took up the new wetland farming methods over the three year project period, this adding to the 100 or so who were already using these areas periodically, mostly in traditional ways (Table 1).

Table 1: Involvement of all households (male and female headed) in wetland farming, 2005 to 2016

<i>Wetland Farming Households</i>	<i>Mushishe**</i>		<i>Mwansabambw a</i>		<i>Chikakala *</i>		<i>Overall</i>	
2005	18	11.5%	12	6.3%	80	15.9%	110	13.0%
2008	140	89.2%	180	94.7%	320	63.7%	640	75.4%
2016	123	78.3%	131	68.9%	328	65.3%	582	68.5%
<i>Households - 2016</i>	157		190		502		849	

* Location of the extension block supervisor for period 2003-5 and already working on wetland cultivation

** Priority site for work by NLWCCDP since 2003 with some wetland cultivation guidance provided

*** Population reported in 2016 and used by community as base for reflection on situation in 2005 and 2008

Most of the wetland farmers produced for local markets in their village or in other villages nearby or in the main urban centre, Mpika town, some 10 to 50 km away from the three sites. With advice from the project officer the farmers focused on addressing particular gaps both in their own domestic household food needs and in the supply of produce to the urban centres at a time when prices are high – January and February. In this way wetland farmers developed the ability to not only meet their own food needs but also generate income at this time of year when they have little cash and need money, this being when school fees are paid. The key crops grown at for harvesting in these months are squashes, gourds and pumpkins which are used to supplement the limited remaining starch supplies, maize, sorghum or finger millet. their demand in different markets. Overall the number of crops cultivated in the wetland has increased three fold, from five to 15 (Table 2).

Table 2: Wetland-grown crops pre and post SAB Project

<i>Pre 2005 Wetland-grown Crops</i>	<i>Additional Post 2006 Wetland-grown Crops</i>
Pumpkins	Gourds
Tomatoes	Maize
Cabbage	Rape
Sugar cane	Onions
Bananas	Carrots
	Squashes
	Irish Potato
	Pineapples
	Water melon
	Egg plant
	Okra
	Chillies
	Rice
	Haricot beans
	Chinese cabbage

In 2015, seven years after the project ended in 2008, with only limited voluntary advice from the retired project officer / animateur, there were still more than 550 farmers in these three pilot villages using the wetlands for farming, 90% of the peak number of original wetland cultivators in 2008. Of these just under 10% were women, this being another example of how men tend to appropriate income generating opportunities.

Entrepreneurial Skill Development and Diversification

The positive picture at the macro scale hides a range of experiences with wetland farming and the progression, and sometimes decline, in terms of enterprise diversification and entrepreneurial skills.

Reasons for non-adoption related to shortages of suitable wetland sites, difficulties in gaining permission from the village headman to use areas of wetland where no prior traditional rights existed for a household, as well as distance from homestead for growing crops which need protection from wild animals, such as bush pigs. Shortages of labour within the household and of funds to hire additional labour were also

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3 limiting factors amongst those who did not take up this method. Cutting the turfs is a
4 major effort and farmers often engage youths to assist them.
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10 While remaining focused on local markets at the peak harvest time may not seem to
11 create much by way of a change in their circumstances nor a major contribution to
12 poverty reduction, having this small additional amount of cash from the sale of
13 wetland crops at critical times of the year can have major impacts at the household
14 level.
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21 Relying on the local markets does not only support domestic consumption and
22 schooling. It can provide a critical step on a chain of actions which lead to investment
23 in further development of existing activities or in a range of new enterprises. The
24 critical point here is whether the household can manage to save some of their wetland
25 farming income, or whether they need to use it for supplementing their current
26 consumption, whether that be food, clothing or household items.
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38 Where “wetland derived capital” can be accumulated, its use can be categorised under
39 four headings of declining numerical importance, wetland farm development, upland
40 farm expansion, farm enterprise diversification and non-farm enterprise
41 diversification. These investments can also generate additional income from which
42 savings can be made and so facilitate further enterprise development by the more
43 entrepreneurial farmers.
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Table 3: Wetland derived capital and its potential impacts

Wetland Farm Development and Marketing with WDC	Est'd % Engagement	Illustrative / Sample Economic Impacts
Mobile Phone	100%	Buyer / trader contacts
Bicycle	75%	Marketing produce
Reinvest in wetland through seeds and hired labour	65%	Expand area cultivated, reduce domestic labour needs
Farm Equipment – sprayers, etc	42%	Pest control, yield and quality improvement
Chemical Fertiliser	47%	Yield increase
Upland Farm Development		
Hired Labour		Expand area cultivated
Chemical Fertiliser	47%	Yield increase
Farm Enterprise Diversification		
Broiler Chickens	18%	Regular income
Goats	30%	Increased income,
Pigs	6%	Increased income, labour needs as stall fed
Cattle	8%	Asset for storing wealth, some production input service
Non-Farm Enterprise Diversification		
Maize trading	16%	Secure price but delays in payment
Groundnuts, sorghum and bean trading	16%	Trading margins
Hammer mill	5%	Profits on trade, investment / store of wealth
Tavern / Restaurant / Store	4%	Profits on service, investment / store of wealth
Housing construction	3%	Source of rental income, investment / store of wealth

Priority areas for investment amongst wetland farmers are mobile phones and bicycles.

While these have social benefits, they can help with marketing by leading to more timely and effective sales of wetland produce beyond the village, because of improved knowledge and accessibility. In addition, bicycles can be a source of income when they are used to provide a taxi service.

Wetland farming often requires additional investment, especially through the purchase of seeds and labour to prepare the plots, as well as chemicals and sprayers for pest control. The further development of wetland farming is often limited by access to land and labour, as well as access to market, and social considerations. For

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3 those with the motivation and the confidence to be even more “different” in what are
4 often quite restrictive village social environments, there may be opportunities to
5 expand wetland production by getting permission from the village or area headman to
6 establish a homestead in a new location where plenty of *dambo* land with seepage
7 water is available. For the successful expansion of this enterprise, funds are needed to
8 hire labour for clearing fields, while the location needs good access to market, either
9 by bike or by gaining transport from trucks passing on a nearby road.
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21 It seems that once wetland farm income is secured by the above investments, farmers
22 then review what can be the next best area for investment given the expected returns
23 and their own skills, as well as the particularities of their family circumstances and
24 location. For some upland farming is the next priority, with chemical fertilisers
25 purchased and labour employed to prepare fields. In the sample of 12 successful
26 wetland farmers interviewed in late 2015, they had all increased their upland farming
27 through the purchase of fertiliser or labour for rain-fed cultivation of maize, their
28 upland farms increasing by between 12% and 200% from before their wetland
29 farming started. It appears that such a strategy is in part a response to rules concerning
30 access to subsidised inputs - which can be obtained from the Farm Input Supply
31 Programme only once upland fields exceed two hectares. This focus on upland maize
32 is also influenced by the guaranteed collection and fixed price for this crop delivered
33 to the Food Reserve Agency depots.
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51 An alternative “traditional farming” route for investment of wetland derived capital is
52 the purchase of livestock, hybrid chickens, goats, pigs and cattle. These are seen
53 mostly as a way to generate income, although cattle tend to be seen as more of a long
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3 term investment and a store of wealth. In one case, the regular rearing of hybrid
4 chickens in a specially constructed building has progressed into the selling of roasted
5 chickens to workers on a nearby road project, a good example of an entrepreneurial
6 response, adding value by processing and responding to a new opportunity.
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14 As would be expected the smallest grouping of enterprise diversification has been in
15 non-farm activities. These are new to most wetland farmers and hence carry greater
16 risk than working in farm related areas. The most common activities here, engaging
17 16% of wetland farmers, are trading in a variety of crops. The frequently long delays
18 in payment at the Food Reserve Agency Depots have created an opportunity for
19 wetland farmers who have accumulated considerable sums of money and have oxen
20 carts to buy maize at a discount from farmers desperate to obtain cash at harvest time.
21 These crops are then stored and delivered to the depots at a later time when they open.
22 Payment at the guaranteed price is received often many months after the initial
23 purchase of the maize. A similar number of farmers focus on buying other upland
24 crops, such as beans and groundnuts, which have unregulated markets and which are
25 sold as far away as Tanzania, the Zambian Copperbelt towns and the Democratic
26 Republic of Congo (DRC).
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45 Vignettes

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47 The way in which these opportunities develop, and can decline are shown in these
48 three brief summaries of village and farmer experience.
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50 i) Poachers become Farmers:

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52 In a relatively remote location, close to a national park, farmers have traditionally
53 engaged in poaching as a form of diversification into off-farm activities see (Bunei et
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3 al 2016). Wetland farming, when introduced here in 2006, initially provided a way of
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5 reducing poaching and the consequent conflicts with law enforcement which had led
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7 to several young men being imprisoned repeatedly and so neglecting their upland
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9 farming and their families. However, distance to market, and the poor road have seen
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11 farmers here change enterprise and take up goat rearing, rather than vegetable
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13 cultivation, in part because the animals can “walk to market”. One other factor has
14
15 been the impacts of the expanded grazing by untethered goats. This has meant that
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17 vegetable farming in the original wetland has become difficult for all farmers. As a
18
19 result some have given up such farming and either taken up goat rearing themselves
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21 or relocated to where they can farm in wetlands without goat disturbance. In a few
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23 cases farmers have moved to be nearer to the district town and its market, having
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25 gained access to wetlands in a different village.
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32 ii) Onions for international trade:
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34 The mining boom over the last two decades has also created new demands for farm
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36 produce, especially in the mining towns of the Democratic Republic of Congo. Traders
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38 are scouring northern Zambia and onions have become their “sought-after” crop in
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40 Mpika. As a result even in quite remote locations some distance from the tar road, there
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42 are farmers growing onions, in wetlands or by means of stream diversion irrigation, to
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44 meet contractual agreements with these traders.
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49 Building on advice from the retired project officer / animateur, a group of farmers
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51 developed from 2011 a series of fields in the extensive floodplain along a major river
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53 near Mpika town. Being an area with peat soil and a high water table they have avoided
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55 burning and have adjusted the wetland management and farming to cope with the
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3 seasonal river flooding. The farmers employ labourers to help prepare their main fields
4 and have developed a trade in onion seedlings as their site is near to the roadside and
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7 passers-by see their progress. For marketing mature onions the farmers sell in groups to
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10 increase their negotiating power and to make transport more economic – when they
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12 travel to the border with DRC.

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16 After only four years of onion growing, the leading farmer here has built a grocery and
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18 is planning to develop other enterprises as well as expand onion farming.

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23 iii) From Migrant piece worker to crop trader via wetland farming

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25 Young men often see little future in the village. With limited farming experience and
26
27 resources they regularly migrate in search of piece work to the district headquarters
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29 (Mpika town) in the rainy season when food at home is scarce. Wives and families are
30
31 left alone on the farm to try to manage the rain-fed crops and ensure a good harvest.
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34 The men often make charcoal and carry it with them to sell in town so as to buy food to
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36 send home.

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40 Since the introduction of wetland farming and the development of market links for the
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42 produce, migration from the SAB pilot villages has declined massively. Instead these
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44 young men have put their enterprise and enthusiasm into exploring wetland farming,
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46 developing a range of new crops for which there are strong markets. Through market
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48 visits, to initially sell their produce, some of these farmers have become well known
49
50 and now traders from the Zambian Copperbelt (600kms), Lusaka (800km) and Tanzania
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52 (300km) come to buy from their farms.
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3 With his wetland derived capital one of these farmers has bought 3 cattle, invested in a
4 small grocery in the village and has also bought fertiliser and employed labourers to
5 expand his upland farming which has doubled in size to 4 hectares. He also has another
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7 new enterprise, buying groundnuts and beans which he takes to Lusaka and the
8
9 Copperbelt for sale.
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13 14 15 16 **Analysis and Preliminary Typology** 17

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21 Analysing the experience reported in the focus group meetings and that from the 12
22 cases studies suggests that the responses to the wetland farming technology
23 dissemination can be grouped into four categories, creating a typology of
24 diversification. The typology developed here is partly empirical, but also based on
25 earlier conceptual development undertaken in work with farmers in a European Union
26 funded study of diversification, (McElwee and Smith, 2012). The four categories
27 proposed are outlined below and summarised in Table 4.
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- 38 a) **Scaled-up wetland cultivation for distant markets.** This involves major scaling-
39 up of production for local and long-distance markets, with or without collaborative
40 grouping. It often involves use of new wetland sites in order to obtain more land,
41 especially at roadside locations to access passing trucks and facilitate the use of
42 hired trucks to reach the Copperbelt and DRC markets, or to allow access for
43 distant buyers contacted by mobile phone. In these cases there is sometimes
44 collaboration amongst farmers to produce larger volumes of crops, predominantly
45 onions at present, in order to attract traders or to make truck hiring worthwhile.
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47 These farmers generally use some of their income from wetland farming to expand
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3 their upland, rain-fed maize fields and may also take up trading in other crops such
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5 as groundnuts and beans, which may also involve international trade into DRC or
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7 Tanzania, as well as to local markets and major urban centres.
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12 b) **Wetland-capital based diversification for local markets.** These farmers
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14 progressively accumulate capital from their wetland farming and invest it in new
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16 farm and off-farm enterprises for local markets. Careful allocation of the first
17
18 income from wetland farming is essential to create an “investment culture” which
19
20 requires limited consumption from the wetland generated capital. Further
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22 diversification beyond wetland farming may involve a range of activities from
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24 bicycle purchase for transport services, to establishing a small shop, rearing
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26 chickens, pigs or goats, or trading in maize and beans in the local area.
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32 c) **Limited diversification to wetland farming alone.** These wetland farmers have
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34 limited additional production from wetlands and use this for domestic consumption
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36 with some surpluses supplied to the local markets. The farmers generally fail to
37
38 accumulate major amounts of capital and their local markets suffer from problems
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40 of oversupply and low prices. Most wetland income is consumed rather than
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42 invested.
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47 d) **Non-adopters.** These farmers have a variety of reasons for not adopting wetland
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49 farming or do not maintain it after a trial period. Reasons may include limited
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51 access to wetlands, lack of labour (or funds for hiring labourers) for the heavy
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53 tasks in making wetland beds, or lack of interest in or ability to address the
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55 challenges of this type of farming and crop marketing.
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<p>Category A</p> <p>Scaled-up wetland cultivation for distant markets .</p> <p>Scaled-up wetland farming for local and long distance markets – sometimes with specific methods of collaboration in marketing. May involve accessing additional areas of land for production. Diversification into other enterprises for local and distant markets with wetland generated capital.</p>	<p>Category B</p> <p>Wetland-capital based diversification for local markets.</p> <p>Involves wetland use for capital accumulation which is used for wetland farm development and further farm and non-farm diversification – developing a range of additional enterprises for local markets.</p>
<p>Category C</p> <p>Limited diversification to wetland farming alone.</p> <p>Limited additional production from wetlands for domestic use and supply to the local markets, but often facing problems of oversupply and low prices</p>	<p>Category D</p> <p>Non-adopters.</p> <p>Non-adoption of wetland farming for a variety of personal, domestic and contextual circumstances, and locational reason for non-adoption</p>

Table 4: Typology of Zambian wetland farmers

The focus group meetings and a broader village level survey in 2016 has helped identify the relative importance of these four categories of farmers although the figures are not precise due to overlaps between activity combinations. It is clear that

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3 the smallest group is Category A, with 16% or less of farmers at this level. The other
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5 three groups are roughly of equal size, with just below or above 30% of the
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7 households in each of the villages.
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10 11 **Discussion**

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14 The predominance of categories B and C amongst wetland farmers and their focus on
15
16 local markets, might suggest that there are relatively limited entrepreneurial skills
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18 amongst the Mpika wetland farmers, and that their horizons are limited. While the
19
20 later might be true in some cases, it should be recognised that both these categories of
21
22 farmers have adopted new wetland farming methods.. In addition, amongst some of
23
24 these two categories of farmers and certainly amongst the category A farmers, there
25
26 are signs of second level diversification beyond wetlands with a range of other
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28 farming and commercial activities being explored.
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34 The study shows that in response to a short, three year, programme technical advice
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36 with respect to wetland farming a range of entrepreneurial activities have been
37
38 stimulated, with around 75% of the households in the three pilot communities at least
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40 starting some new production and marketing activities. The responses have varied
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42 across the communities reflecting local context and the socio-economic conditions of
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44 households. However, overall they show that for most households some enterprise
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46 diversification has been possible and that progression is possible to multiple forms of
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48 diversification for the more entrepreneurial ones.
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54 This experience of wetland farmers in Mpika also shows that some farmers can
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56 accumulate– wetland derived capital, and use that for further development of that
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3 farming, to expand their upland cultivation, and to diversify into other farm and non-
4 farm enterprises. In some cases there is evidence of a chain of capital accumulation
5 and investment generating more funds for other new enterprises, this often starting
6 from a very small amount of wetland farming and limited profits. This has led to
7 farmers to see wetlands not just as a new agricultural frontier but also as a “pot of
8 gold” from which capital for farm and non-farm enterprises can be obtained. The
9 capital generated from wetland is in part the reason why free-standing entrepreneurial
10 action has been maintained in these sites seven years after the end of project support.
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23 The study also shows that wetland farmers will cooperate in order to progress their
24 farm enterprises sustainably and successfully. This is seen in the way communities
25 have recognised the need for VNRMCs to help ensure sound wetland and catchment
26 management, and in the grouping of farmers to arrange transport to distant markets. In
27 contrast collaboration in one site forming has grown in response to market
28 opportunities with wetland farmers forming a cooperative to facilitate input supply.
29 This is an important indication of changing attitudes given that cooperation is
30 reported to be limited in rural Zambia and there are reports of how small-scale
31 farmers in difficult circumstances do not cooperate easily, seeing this a more risky
32 than helpful (Schüring ,2014).
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48 While there is evidence of several positive developments resulting from the SAB
49 project, there is a major concern that for many people wetland farming appears to be a
50 “cul de sac”. They are not able to progress beyond very small scale production for
51 mostly domestic use, with only occasional sales. Barriers include poverty; shortage of
52 household labour; limited interest in learning from fellow farmers and resistance to
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3 change and risk taking. Major challenges widely recognised include distance to
4 market, especially to the major urban centres, poor rural roads, lack of timely access
5 to information on new developments, markets, technologies and experiences of other
6 farmers, as well as lack of business skills, finance and resources.
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14 The key question in this situation is how to facilitate the progression of some of the
15 category C farmers to higher levels of wetland enterprise development and
16 diversification, and also how to start some progression by those in category D. At the
17 same time there are questions to explore concerning how Category B farmers could
18 progress to category A.
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27 **Conclusions**

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32 The historical tendency in Zambia has been for farmers to look to the government to
33 solve the challenges they face. This may still be relevant in terms of macro policies,
34 but the state's role in service provision is increasingly questioned and it is doubtful if
35 it will be developing new services for farmers in the more remote and high costs areas
36 for production and marketing, like Mpika. Rather it seems essential today for farmers
37 themselves to explore how they can individually or collaboratively overcome the
38 various challenges which they face in trying to become more entrepreneurial by
39 learning lessons from each other and building trust and confidence to develop forms
40 of collaboration (de Boer, 2010). They also need to realise that they have a
41 considerable wealth of knowledge and experience which they need to use and build
42 on. This is also relevant to the situation of local animateurs who can help farmers
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3 develop new forms of production and gain access to new markets, as well as provide a
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5 community friendly and relevant learning environment.
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10 The experience in Mpika shows the potential for this sort of self-help approach.
11 However, it would benefit from some form of Entrepreneurship Training Programme,
12 that should facilitate and stimulate, but not become a support programme on which
13 farmers become dependent. In particular, any such programme needs to encourage
14 farmers themselves to network much more effectively amongst themselves to share
15 experience, and develop links with transport organisations and commercial businesses
16 which can share expertise, market knowledge and act as potential financial partners.
17 Thus the farmers need to recognise, that being commercially successful, means taking
18 the initiative and not relying on traditional government-based support mechanisms.
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31 Such entrepreneurship training must focus on farmers themselves and involve locally
32 based animateurs (McElwee et al 2018 (forthcoming)). It can involve local NGOs and
33 or government support, but must include private sector business and organisations.
34 However, for this programme to be effective it needs to be sensitive to the economic
35 and social geography underpinning the places where communities live and understand
36 the diverse circumstances of individuals which are behind the typology analysis
37 which our work to date has exposed.
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49 Dana examines some of the factors which new entrepreneurs consider before making
50 decisions and notes that 'where entrepreneurship is culturally desirable, people's
51 values encourage venture creation' (1997:62). Thus following Dana, the cultural
52 values of farmers need to be fully understood.
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This paper has argued that there is a lack of explicit consideration in Zambia about the role of entrepreneurship in developing a sustainable rural strategy. The importance of local context, in this case for the food producer, to stimulate the emergence of specific values and norms in turn generates a particular, often normative, perspective on enterprise.

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