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### **Small-scale agriculture in Zambia: Developing resilience towards external shocks**

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*Zambia's agriculture will not develop unless specific packages of measures are implemented in combination with massive capacity development efforts. In order to impact on both, poverty and resilience, these measures must not only increase resilience towards climate change and economic shocks but also increase productivity and distributive justice. After complete failure of government policies in the past, this calls for increased engagement of the private sector, but also requires improved policy formulation and concerted efforts at different levels of the agricultural sector.*

#### **Introduction**

The majority of the Zambian population depends on agriculture and the country holds significant potential for sufficient production, food security, income and employment generation, as well as exports and macro-economic growth. However, for a number of reasons agricultural development is severely lagging behind and the country has yet to achieve food security. According to the Food Security Index (FSI) Zambia continues to belong to the 15 countries at highest risk worldwide (Maplecroft 2010).

The reasons for this severe underperformance of the agricultural sector are manifold and caused by the politico-historical as well as the politico-economic, social and cultural backgrounds of the country. The most influential endogenous problems are a lack of production assets, inputs, labour force, as well as poor management practices and extension services. Moreover, road and irrigation infrastructure are limited, while domestic and export markets remain underdeveloped. These factors lead to poor farm management and low productivity, which in turn lead to food insecurity and poverty among the rural population. Agricultural policies in the past have mostly failed to effectively address the needs of smallholders. Most prominently, the Farmer Input Support Programme (FISP) is a source of constant criticism due to poor targeting, late delivery and low quality of service mismatching high subsidy costs<sup>1</sup>.

In addition to these challenges that are inherent to the sector, the external drivers *economic shocks* and *climate change* pose increasing threats to agriculture. Already, Zambian farmers experience weather extremes like heat waves, droughts, floods and storms. Moreover, changes in overall growing conditions like rainfall distribution, degrading soils, and an increase in infestations result in poorer harvests (Nellemann et al. 2009). Escalating fertiliser prices and price

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<sup>1</sup> For further discussion of the program and its challenges, see for example ACF 2009; Muleba 2008; Kachingwe 2009).

fluctuations for cash crops make their use or cultivation unprofitable or precarious. Although it still seems possible to deal with these external disturbances at the moment, there is evidence that climate change and economic shocks will further destabilise development efforts within the sector in the future. In order to prevent further decline of agriculture, it is therefore necessary to increase resilience to these two external sources of disturbance, particularly among the most vulnerable of Zambian farmers: small-scale and emergent farmers. However, the article argues that increased resilience alone is not enough to effectively and sustainably improve the situation of farmers, but that productivity and income have to be raised, thus the serious endogenous problems of the sector need to be addressed simultaneously.

These manifold developments are being scrutinised in the study presented at the 2012 Tropentag in Göttingen<sup>2</sup>.

### **Conceptual framework and study methodology**

The study focuses on smallholders and emergent farmers<sup>3</sup>, because they make up for the most common farm types in Zambia and produce the bulk of staple food for the nation. At the same time, smallholders in Zambia are the most vulnerable, the poorest and hungriest and the least resilient in society. Their adaptation needs should be given the highest priority in order to improve their adaptive capacity and help overcome marginalisation. That is, policies at national and services at district and provincial level should be tailored to the needs of smallholders. Adger et al. (2006) labelled such addressing of the poor “the fairness dimensions” of adaptation to climate change. This also accounts for economic shocks.

The successful, effective implementation of policies and measures that aim at adaption to climate change and economic shocks cannot be accounted for by applying a vulnerability-based approach. It would imply a stronger focus on the *inability* of a system to cope with the adverse effects of external shocks. Therefore, a resilience approach is chosen that takes into account the chances and opportunities that arise from increased resilience (Ifejika-Speranza 2009). At the same time, however, increasing resilience alone does not automatically lead to better development of the agricultural sector. Instead, general development measures that address higher productivity and equal distribution are necessary to overcome the serious endogenous problems of the sector and to achieve poverty reduction.

The key indicators for improved resilience applied in this study are strengthened buffer capacity, a higher degree of organisation and more adaptive capacity<sup>4</sup>, whereas the key indicators for agricultural development are increased productivity and more equal distribution. In reality, these five indicators may influence one another and can partly overlap. That is, a policy or measure may lead to a higher degree of organisation, while also strengthening the buffer capacity of the individual or institution. Based on these indicators and a previous data collection, adaptation measures and policies were accordingly tailored to the Zambian context.

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<sup>2</sup> Neubert, S./Koemm, M./Krumstiek, A./Schulte, A./Tatge, N./Zeppenfeld, L. (2011): *Agricultural development in a changing climate in Zambia: Increasing resilience to climate change and economic shocks in crop production*. DIE Study 57, German Development Institute, Bonn.

<sup>3</sup> Due to the generally small landholding sizes of the majority of Zambian farmers and for reasons of brevity, the term ‘smallholders’ will be used for the group of both small-scale (0.1 – 5 ha) and emergent farmers (roughly 5 – 10 ha), thereby encompassing about 98% of all Zambian farmers.

<sup>4</sup> Adaptation is a two-fold concept in itself. It has a short-term dimension (coping capacity) and a longer-term dimension (adaptation). Coping capacity is a rather hazard-impact oriented response to an immediate threat, such as reducing the number of meals during a drought period. It therefore describes a reactive strategy to manage an emergency. Adaptation on the other hand, is a behaviour that is oriented towards longer-term changes, improvements, innovations and transformation as a response to an impending hazard. As the disturbance of this hazard does not have to be seen immediately, adaptation has a very anticipatory character.

The study combines a literature review with an empirical analysis on the national, provincial and farm level. In total 88 semi-structured individual interviews with partners from six relevant actor groups were conducted<sup>5</sup>. In parallel, nine focus group discussions were held with a total of more than 160 farmers, covering six districts in North-Western, Central and Southern Provinces<sup>6</sup>. The districts were selected according to most distinct and most typical conditions for these two groups of farmers. Based on this, seven adaptation measures were drafted considering the “*how and by whom*”. During a workshop with MACO staff, these results were cross-checked and further developed and/or revised. A second validation loop took place during a high-level workshop with the private sector, research institutes, donors and NGOs active in the agricultural sector.

## Results and Discussion

- 1. Conservation Agriculture (CA)** (minimum tillage, crop rotation, soil cover): Further extension of CA systems. Buffers wetter and drier conditions, buffers climatic and input price fluctuations, increases productivity and income, fosters learning loops, i.e. adaptive capacity. However, it requires more labour force in the first years due to shifting labour peaks. Synergies with ADP and CD measures.
- 2. Draught Animal Power (ADP) or mechanisation:** Lowers labour demand, enables management of larger areas, enables using the ripper for implementing CA and enhances the degree of organisation when done commonly. However, requires financial and veterinary resources. Synergies with CA, CD. Positive side effect: Eases the lack of transport means and thus the marketing of crops.
- 3. Crop Diversification (CD):** Buffers production risks, lowers climatic and price risks, enhances good & sustainable agricultural practices (crop rotation, mixed cropping etc.). However, requires access to high quality seeds and labour force. Synergies with CA/PI. Positive side effect: Improves nutrition.
- 4. E-voucher-system for farm inputs (e-VS):** Empowers poor farmers’ productivity and decision-making with mobile phone-based subsidies, increases flexibility according to climatic and price fluctuations, but requires political commitment on the national level. Positive side effect: Impacts anti-corruptive compared to the subsidy system in place.
- 5. Punctual Irrigation (PI)** (along river shores) Buffers dry spells, increases productivity and income, enables the cultivation of a wider crop range and cultivation during off-season. Requires financial investment and higher degree of organisation. Synergies with CD, e-VS. Positive side effect: improves nutrition.
- 6. Communal warehouses (CW):** Revitalisation of the food storage system by private means: Buffers product prices and climatic fluctuations, eases marketing problems. Requires investments and higher degrees of organisation.

## Conclusions and Outlook

Most of Zambia’s poor are small-scale farming households in the rural areas. Although they have access to large fertile lands and adequate water resources only about 50 per cent of these households are food secure. Small scale farmers do not suffer from hunger the whole year round, but only in the so-called hungry season, a result of anti-cyclical marketing behaviour:

Usually farmers urgently need cash right after the harvest when prices are low, in order to pay school fees or to pay back their loans. Hence, they tend to sell too much of their produce right after harvest at low prices and then run out of food quickly and have to buy it back at high prices at the end of the season when their own stocks are used up. Zambia’s low population density is

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<sup>5</sup> The actor groups were: Government institutions, extension officers, farmers’ representatives, research institutes, private sector representatives, NGOs as well as international cooperation representatives.

<sup>6</sup> Solwezi and Mwinilunga were chosen in North-Western Province, whereas Mumbwa and Chibombo hosted the interviews in Central Province. In Southern Province, Sinazongwe and Choma were visited. Thereby, three different agro-ecological zones with differing preconditions for agricultural production were covered.

another decisive and limiting factor, which - together with the negligence of rural infrastructure - results in a significant lack of agricultural labour force. Deteriorating soil fertility due to monoculture production of maize and misguided use of inputs means that today an increasingly large area must be cultivated in order to achieve the same yield. The shortage of manpower – still worsened by the high evidence of HIV/AIDS – makes this an insurmountable task for many households.

The suggested measures are not in fact new, but consider interlinkages between policies and measures newly combined against the backdrop of Zambia's agricultural context. They have already been advanced individually and sporadically by donors and civil society organisations. However, one proposition of the research study in question is that they will only be effective if they are implemented simultaneously and as a bundle. As stand-alones, they might not be strong enough to buffer shocks sufficiently and cannot develop synergies among each other. Agricultural development and measures for adaptation to climate change and economic shocks have to be interlinked and cannot be implemented independently if they want to foster both adaptation to shocks and agricultural development as such.

When looking at existing approaches it becomes clear that these have usually been geared towards either the policy level or the practical level. The study therefore proposes that in order for the measures to be fruitful, actors need to be identified and task-sharing between the national, sub-national and producer levels must be mapped. Thus, a detailed work plan is needed that specifies how each method could be implemented on every level. While government's task is to provide the legal environment, the infrastructure and extension services with support from international donors, the private sector, farmers' organisations as well as NGOs can operate much more effectively on the ground.

Capacity development for the Zambian agricultural sector needs to target all stakeholders, such as government institutions, civil society organisations, private sector enterprises, farmers groups, and finally farmers themselves. These target groups need to receive policy advice, assistance in institutional reform processes, support to networks, trainings and support in creating a framework that favours change processes and creates opportunities for sustainable development. The proposed measures need to be considered the "hardware" which, combined with the appropriate "software" can help ensure that agriculture is geared towards poverty reduction and resilience towards climate and economic shocks.

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