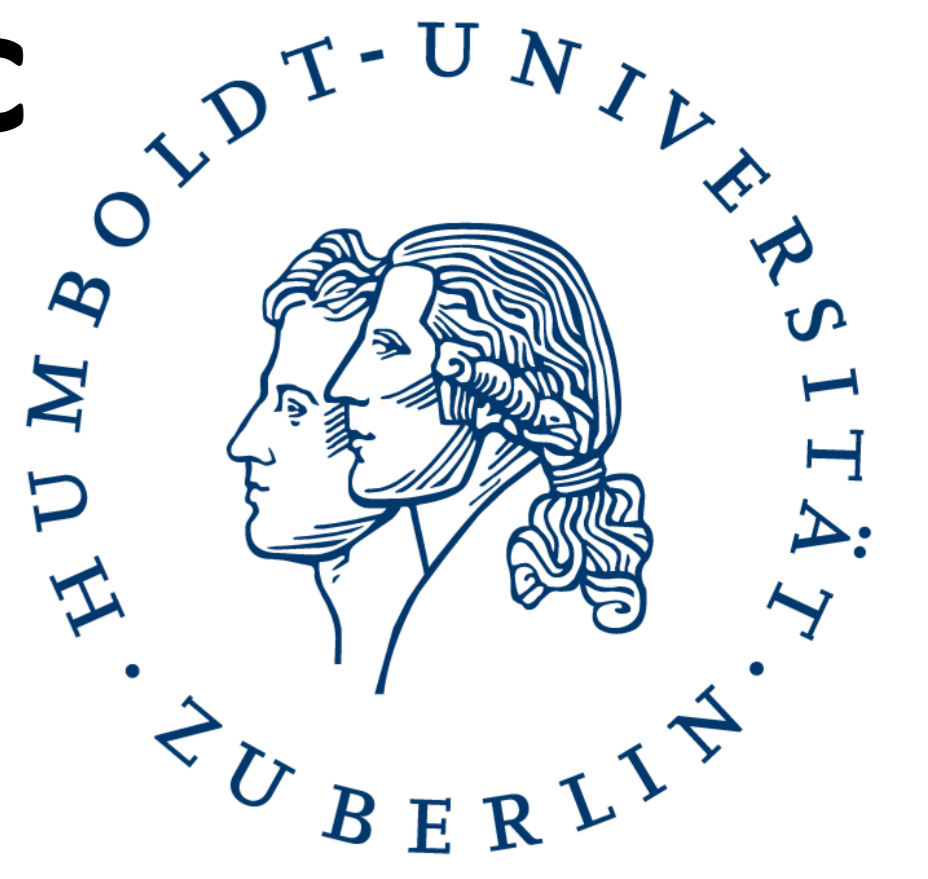


Increasing Resilience to Climate Change and Economic Shocks in Small Scale Agriculture

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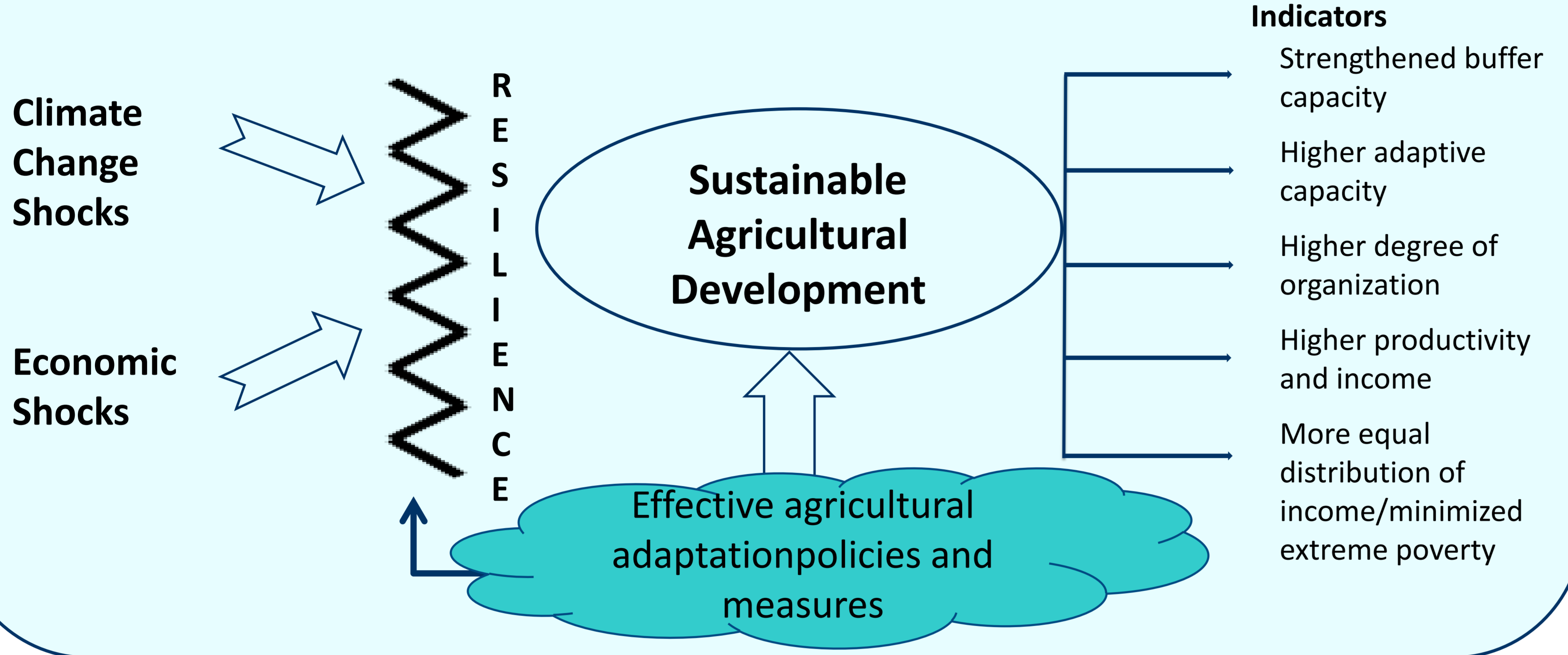
Research question: How can Zambian small scale agriculture develop and thereby increase its resilience to climate change and economic shocks?

Background

- Agricultural development in Zambia lags behind as a whole. Main reasons are political, i.e. subsidy oriented, one sided agriculture with an urban bias, but lie also in the missing outreach of the private sector, i.e. market failure. Climate change and economic shocks are problems on top.
- Accordingly, adaptation measures must comprise the general sector weaknesses in order to be successful.

Conceptual Framework - understanding resilience

Modified from Speranza, 2010



Data collection and analysis

- Empirical basis**
- 100 expert interviews
 - 9 FGD with 160 farmers (6 Districts /3 Provinces)
 - 18 interviews with individual farmers as cross checking data
- Data Analysis**
- According to the indicators
 - Computer based: Qualitative with Atlas.ti
 - Development of multi-level-charts
 - Feed back loop during two expert workshops (MoA, Donors, NGOs)
 - Revision of charts.

Results: Suggested adaptation strategies and measures

All these are “no regret measures”. It was outlined in multi-level-charts, how they can be implemented in the Zambian political context considering the relevant actors of the sector.

- 1. Conservation Agriculture (CA)** (minimum tillage, crop rotation, soil cover): Further extension of CA systems. Buffer wetter & drier conditions, buffers climatic and input price fluctuations, increases productivity & income, fosters learning loops, i.e. adaptive capacity. **But requires** more labor forces in the first years. **Synergies:** with measures 2 and 3.
- 2. Draught Animal Power (ADP) or/ tractors:** Lowers labor demand, enables management of larger areas, enables using the ripper for implementing CA, enhances the degree of organization when done commonly. **But 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.). **But requires** access to high quality seeds and labor forces. **Synergies** with CA/PI. **Positive side effect:** Improves nutrition.
- 4. E-voucher-system for farm inputs (e-VS):** Empowers poor farmer’s productivity and decision making with mobile-phone based subsidies, increases flexibility according to climatic and price fluctuations. **But requires** political agreements 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, enables cultivation during off-season. **But requires** financial investment and higher degree of organization. **Synergies** to CD, e-VS. **Positive side effect:** improves nutrition.
- 6. Communal warehouses (CW):** Revitalization of the food storage system by private means: Buffers product prices and climatic fluctuations as well as eases marketing problems. Requires investments and higher degrees of organization.

General findings

- Lack of labor (not land) is a key constraint for Zambian smallholders, almost no use of draught animals (ADP)/tractors.
- The identified measures mostly raise “buffer capacity, productivity and income” and they complement each other. The indicators “better adaptive and organizational capacity” are rather improved indirectly by the way **how** the measures are trained/ implemented. Therefore, capacity development activities (funds, training, extension services) are necessary for all measures (see figure 2).
- Strategies and measures which strengthen climatic buffer capacity mostly also buffer economic shocks and vice versa, thus they complement each other and have positive spill over and side effects.
- The suggested adaptation measures should be put in place as a bundle. As stand alones, they might be not strong enough to buffer shocks sufficiently and cannot develop synergies among each other. Only in a bundle, synergy effects can be achieved.

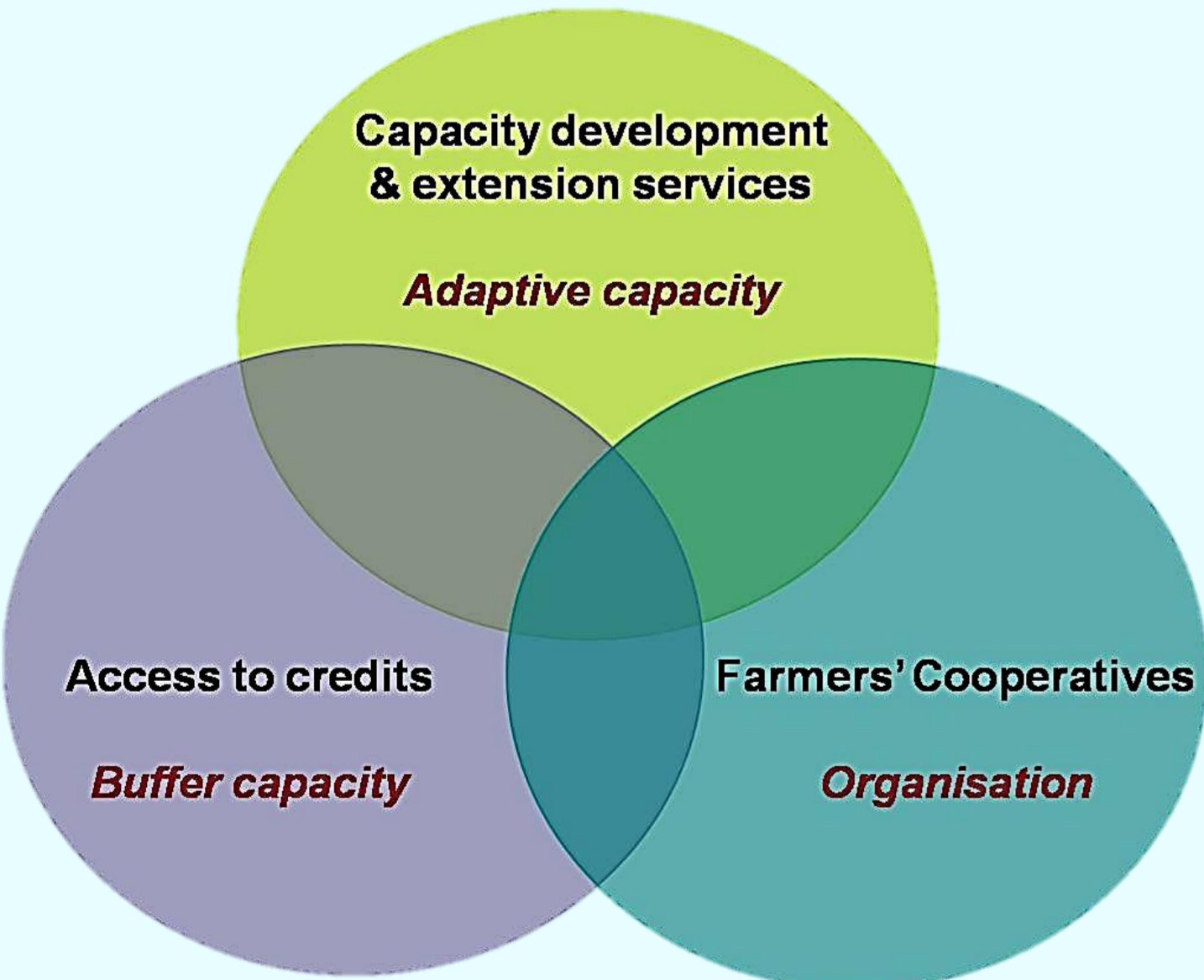


Figure 1: Capacity development measures

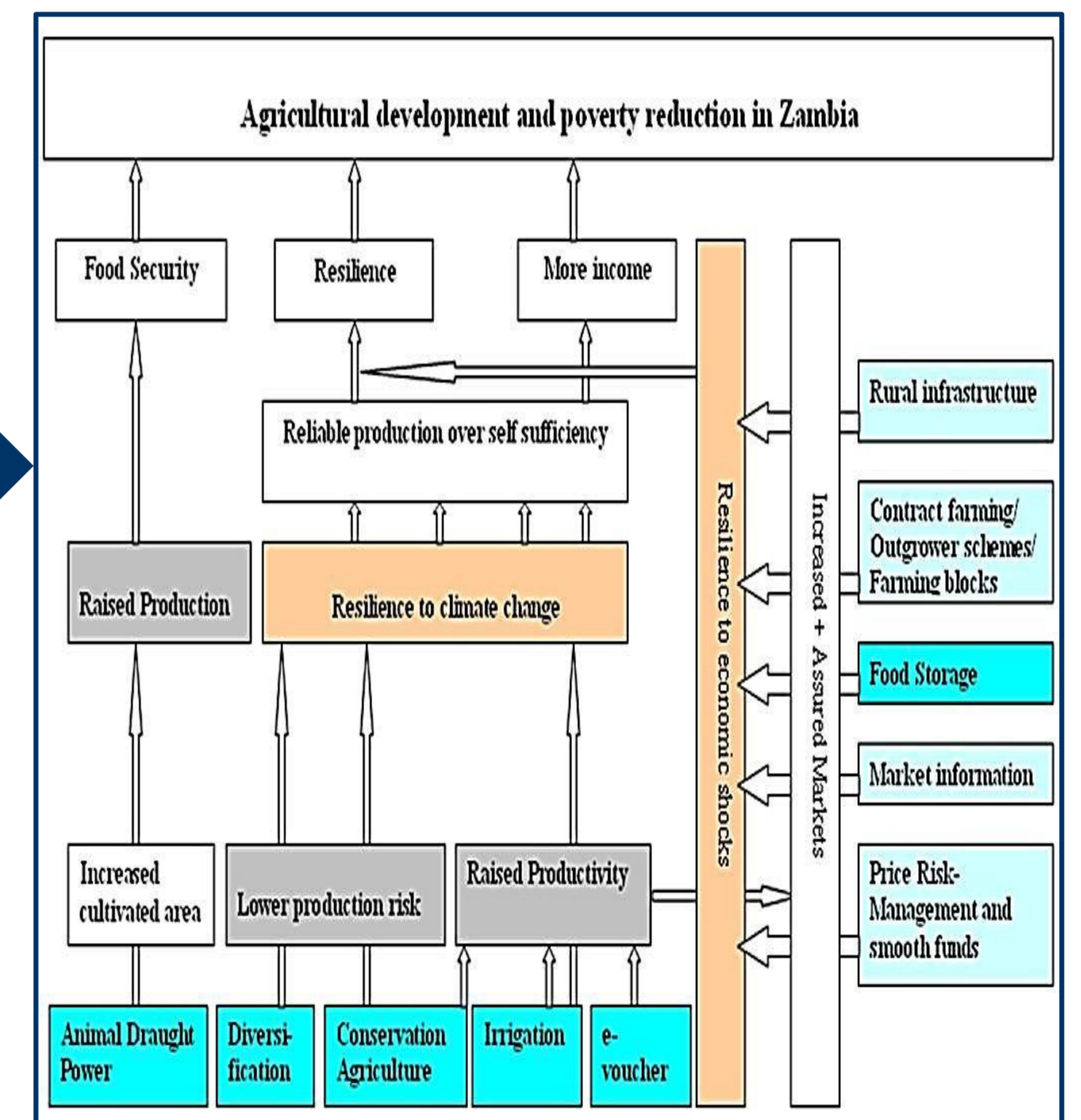


Figure 2: Adaptation measures in the context of agricultural development in Zambia

