



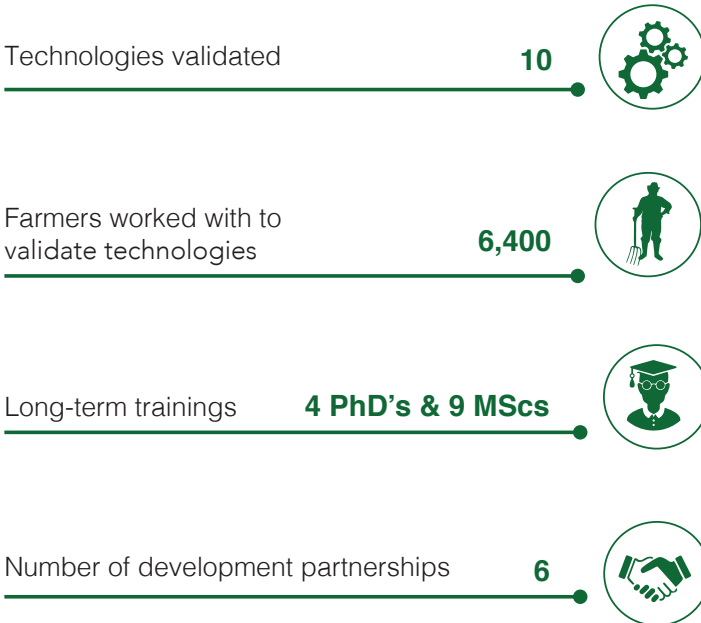
Africa RISING in Malawi

Creating Sustainable Systems for Agriculture



Country brief - March 2019

Outcomes



Research-in-development scope

1. Cropping systems

- Varieties
- Cropping systems management

2. Livestock systems

- Health

3. Natural resource management [NRM]

- Soil & water management

4. Human condition

- Nutrition

*Appropriate technologies are integrated within and across the components above.

Technology delivery

Sustainable intensification domains

- Productivity
- Environment
- Economic
- Human condition
- Social

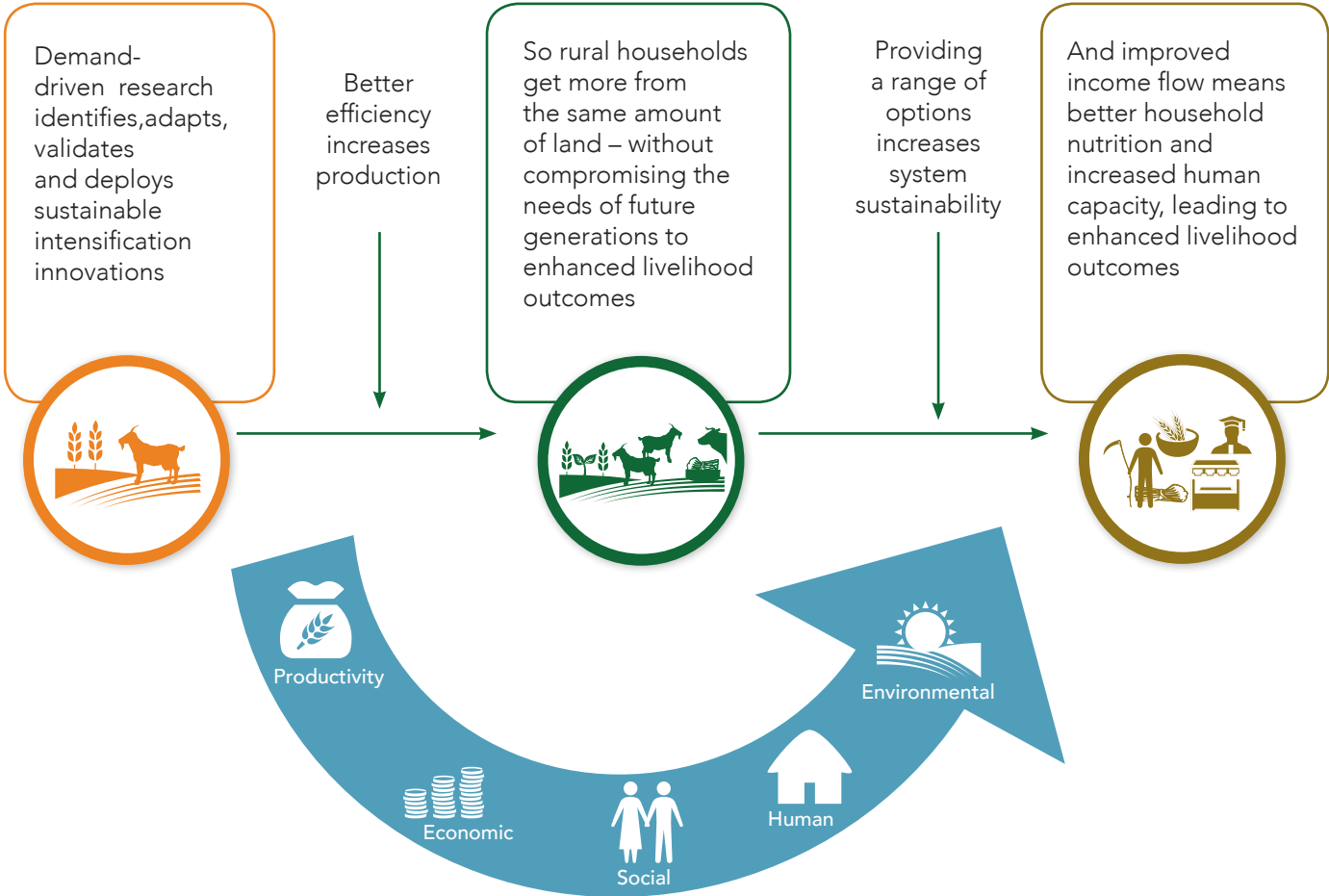
Collaboration

- CGIAR centers
- NARS
- Farmers
- Private sector
- Universities
- Extension services
- Government agencies

Capacity building

- Short term training
- Post-graduate training [MSc, PhD]
- Exchange visits
- Farmer field days

Africa RISING's theory of change



Multiple sustainable intensification domains in an enabling policy environment result in long-term equity and viability



1 Cropping systems

> Varieties

- o Two improved, nutrient dense and drought tolerant common bean varieties have been introduced to farmers. Compared with the local varieties, SER83 produces at least 30% more yield under farmer management and NUA45 at least 50% more under improved nutrient management.
- o In collaboration with farmers, the project has validated the pathways for achieving improved soybean productivity under optimal NP fertilization and rhizobia inoculation across varying environments in Malawi. Through this intervention, the productivity of Makwacha (one of the already-released varieties evaluated) was consistently >1800 kg/ha when rainfall was not limiting. The variety is now being used for scaling soybean-based technologies (including rotational systems).
- o The project has increased farmer access to quality groundnut and soybean seeds through community seed production approaches. Farmers that partnered with Africa RISING produced about 55,000 kg of 'certified seeds' between 2016 and 2018 that was distributed to hundreds more farmers within the communities.
- o Muthwajuni, a short duration and pest resistant pigeon pea variety, has been introduced to farmers as an extra legume for integration within the intercropping technologies they currently apply.
- **Cropping systems management**
 - o Intercropping two legumes as part of the doubled-up legume cropping system has enabled farmers to almost double their yields and improve soil fertility. Groundnut–pigeon pea intercropping proved to be the most successful doubled-up system owing to the contrasting structures and maturity dates of the two crops. The doubled-up technology offers farmers the opportunity to get 48% more profit from their land compared with growing sole legume stands of either groundnut or pigeon pea. In early 2016, the doubled-up legume technology was officially released by Malawi's Agricultural Technology Clearing Committee for countrywide use by farmers.
 - o Consistent grain legume rotations of soybean or groundnut with maize over 5 years resulted in increased yield stability. Rotating maize with legumes increased nitrogen use efficiency by 56% and protein contributions by 65%.
 - o The project has worked with farmers to validate the improved maize/pigeon pea intercropping system that yields 30% more than the traditional practice. The innovative system uses only a modest application of mineral fertilizer and appropriate variety selection for improved compatibility.
 - o Farmers' validation of modified double row planting of soybean and groundnut has increased productivity by at least 60%, resulting in improved rotational benefits to maize grown in sequence.



2 Livestock systems

> Feeding

- o The intervention of Africa RISING on the supplementary feeding of goats with either Faidherbia pods, Gliricidia leaves, or both, has led to healthier animals with a weight gain of 105 g/day compared with 65 g/day from ordinary grazing only. Over a 60-day period, the net profit rose to \$11/ goat with improved feeding versus \$6/goat with ordinary grazing.
- **Housing**
 - o Model goat housing structures were constructed in three communities with the active participation of farmers. Thereafter, at least 85 farmers have built variants of the housing structures using local building materials.



3 Natural resource management (NRM)

> Nutrient cycling

- o Building soil organic matter (SOM) through appropriately designed cropping sequences that integrate grain legumes has resulted in 50% reduction in the use of N fertilizer from 70 to 35 kg/ha N while comparable yields of between 3.5 and 4.0 Mg/ha are achieved.
- o Implementing a rainfall-responsive nitrogen fertilization strategy with the farmers has helped to cut down losses in N fertilizer investment. For example, during the 2017/2018 cropping season (when there was a rainfall failure), the rainfall responsive strategy for N fertilization had applied a maximum of 46 kg/ha N and obtained maize yields similar to those after the recommended 69 kg/ha N was applied.



4 Human condition

> Nutrition

- o Processing soybean and other grain legumes produced locally by farmers into nutritious products has contributed to an increase in the dietary diversity scores of households that were regarded as having only 5% dietary diversity to about 12% after one year of training sessions.
- o The project has integrated nutrient dense common bean varieties to improve on nutritional outcomes. The nutrient dense common bean variety NUA45 has micronutrient contents of up to 90 mg Zn/kg compared to locally available varieties with about 40 mg Zn/kg.



Partners:



The Africa Research In Sustainable Intensification for the Next Generation (Africa RISING) program comprises three research-for-development projects supported by the United States Agency for International Development as part of the U.S. government's Feed the Future initiative. Through action research and development partnerships, Africa RISING is creating opportunities for smallholder farm households to move out of hunger and poverty through sustainably intensified farming systems that improve food, nutrition, and income security, particularly for women and children, and conserve or enhance the natural resource base. The three projects are led by the International Institute of Tropical Agriculture (in West Africa and East and Southern Africa) and the International Livestock Research Institute (in the Ethiopian Highlands). The International Food Policy Research Institute leads an associated project on monitoring, evaluation and impact assessment.

For more info, please contact:

Dr I. Hoeschle-Zeledon
Manager, Africa RISING West Africa and East/Southern
Africa Projects
Email: i.zeledon@cgiar.org

Dr M. Bekunda
Chief Scientist, Africa RISING East and Southern Africa
Project
Email: M.Bekunda@cgiar.org

Dr R. Chikowo
Africa RISING Malawi Activities Coordinator
Email: regischikowo@yahoo.co.uk



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