

# Structural and organizational barriers to the adoption of technology in country case studies of InnovAfrica project

## Introduction

The objective of the study was to assess the main organizational and structural barriers to adoption and propose strategies for enhancing productivity in six case countries in Africa (Ethiopia, Kenya, Malawi, Rwanda, South Africa and Tanzania). The approach was based upon literature review, focus group discussions, and a questionnaire survey carried out in six case countries involving 3,814 respondents. The survey data was analysed using Statistical Package for the Social Sciences (SPSS). The below tables illustrate the organizational and structural barriers to adoption of four Sustainable Agriculture intensification (SAI) technologies (i.e. *improved seeds, crop rotation, intercropping* and *Brachairia forage*) at country level and suggest pathways for how to overcome these barriers.

## Sustainable Agriculture intensification (SAI) technologies

### i) Improved seeds

Country ( <i>cropping systems</i> )	Organizational barrier	Pathways	Structural barriers	Pathways
<b>Ethiopia</b> (Maize - Legume)	<ul style="list-style-type: none"> <li>Access to extension</li> <li>Access to credit</li> <li>Group membership</li> </ul>	<ul style="list-style-type: none"> <li>Increase capacity/quality</li> <li>Cooperatives</li> <li>Micro credit/groups</li> </ul>	<ul style="list-style-type: none"> <li>Locality</li> </ul>	<ul style="list-style-type: none"> <li>Transport/roads</li> <li>Better services</li> </ul>
<b>Malawi</b> (Maize/Millet - Legume)	<ul style="list-style-type: none"> <li>Group membership</li> </ul>	<ul style="list-style-type: none"> <li>More &amp; better groups</li> </ul>	<ul style="list-style-type: none"> <li>Sex of household head</li> </ul>	<ul style="list-style-type: none"> <li>Gender awareness</li> </ul>
<b>South-Africa</b> (Maize - Legume)	<ul style="list-style-type: none"> <li>Extension services</li> </ul>	<ul style="list-style-type: none"> <li>Increase capacity/quality</li> </ul>	<ul style="list-style-type: none"> <li>Education</li> </ul>	<ul style="list-style-type: none"> <li>Access education</li> </ul>

## Main Messages

- The most important barriers to SAI adoption are *poor markets, limited access to extension services, credit opportunities, small land size, gender inequality and lack of labour*.
- The case countries have policies in place to overcome the barriers, but *implementation capability is a challenge*.
- The pathways to address the challenges include, *land reforms, better transport, extension, cooperatives, depot/storage, micro credit, seed access, and gender awareness*.



Showcase of agricultural produce of farmers: Photo by Ruth Haug (A. from Pwani, Tanzania) and (B: from Ufulu, Malawi).

## ii) Crop rotation

Country (cropping systems)	Organizational barriers	Pathways	Structural barriers	Pathways
<b>Malawi</b> (Maize/Millet - Legume)	<ul style="list-style-type: none"> <li>Access to credit</li> <li>Access to extension</li> <li>Group membership</li> <li>Distance to the market</li> </ul>	<ul style="list-style-type: none"> <li>Cooperatives</li> <li>Micro credit/groups</li> <li>Better transport</li> <li>Depot/storage</li> </ul>	<ul style="list-style-type: none"> <li>Education</li> <li>Decision making</li> <li>Land size</li> </ul>	<ul style="list-style-type: none"> <li>Access education</li> <li>Gender awareness</li> <li>Land reforms where possible</li> </ul>
<b>S-Africa</b> (Maize - Legume)	<ul style="list-style-type: none"> <li>Distance to the market</li> </ul>	<ul style="list-style-type: none"> <li>Better transport</li> <li>Depot/storage</li> </ul>	<ul style="list-style-type: none"> <li>Education</li> <li>Age of household head</li> </ul>	<ul style="list-style-type: none"> <li>Gender awareness</li> <li>Youth incentives</li> </ul>

## iii) Intercropping

Country (cropping systems)	Organizational barriers	Pathways	Structural barriers	Pathways
<b>Ethiopia</b> (Maize - Legume)	<ul style="list-style-type: none"> <li>Access to credit</li> </ul>	<ul style="list-style-type: none"> <li>Cooperatives</li> <li>Micro credit</li> <li>Saving groups</li> </ul>	<ul style="list-style-type: none"> <li>Land size</li> <li>Decision making</li> </ul>	<ul style="list-style-type: none"> <li>Land reforms</li> <li>Clustering</li> <li>Intensification</li> </ul>
<b>South-Africa</b> (Maize - Legume)	<ul style="list-style-type: none"> <li>Distance to the market</li> </ul>	<ul style="list-style-type: none"> <li>Better transport</li> <li>Depot/storage</li> </ul>	<ul style="list-style-type: none"> <li>Sex of household head</li> <li>Land size</li> <li>Household size</li> </ul>	<ul style="list-style-type: none"> <li>Gender awareness</li> <li>Land reforms</li> <li>Intensification.</li> </ul>
<b>Malawi</b> (Maize - Legume)	<ul style="list-style-type: none"> <li>Access to extension services</li> <li>Distance to the market</li> <li>Group membership</li> </ul>	<ul style="list-style-type: none"> <li>Increase capacity/quality</li> <li>Better transport</li> <li>Depot/storage</li> <li>More/better groups</li> </ul>	<ul style="list-style-type: none"> <li>Education</li> <li>Household size</li> <li>Sex of household head</li> <li>Decision-making</li> </ul>	<ul style="list-style-type: none"> <li>Access education</li> <li>Gender awareness</li> <li></li> </ul>

## iv) Brachiaria forage systems

Country (Forage systems)	Organizational barriers	Pathways	Structural barriers	Pathways
<b>Kenya</b> (Brachiaria)	<ul style="list-style-type: none"> <li>Lack of access to seeds</li> <li>Lack of awareness</li> <li>High seed price</li> </ul>	<ul style="list-style-type: none"> <li>Seed production</li> <li>Extension services</li> <li>Subsidized seeds</li> </ul>	<ul style="list-style-type: none"> <li>Small land size</li> </ul>	<ul style="list-style-type: none"> <li>Intensification</li> </ul>
<b>Rwanda</b> (Brachiaria)	<ul style="list-style-type: none"> <li>Lack of seeds</li> <li>Lack of awareness</li> </ul>	<ul style="list-style-type: none"> <li>Seed production, delivery, access</li> <li>Brachiaria extension</li> </ul>	<ul style="list-style-type: none"> <li>Land size</li> </ul>	<ul style="list-style-type: none"> <li>Land reforms</li> <li>Intensification</li> </ul>
<b>Tanzania</b> (Brachiaria)	<ul style="list-style-type: none"> <li>Lack of seed access</li> <li>Lack of awareness</li> <li>High prices of seed</li> </ul>	<ul style="list-style-type: none"> <li>Seed production, delivery, access, subsidies</li> <li>Brachiaria extension</li> </ul>	<ul style="list-style-type: none"> <li>Small land size</li> </ul>	<ul style="list-style-type: none"> <li>Land reforms</li> <li>Intensification.</li> </ul>

## Conclusion

The suggested pathways call for political will and commitment in relation to prioritize agriculture as promised in the Malabo declaration and Sustainable Development Goal 2. It might appear easy to list what to do, but less easy to explain how it should be done. Strengthening the capacity and quality of the extension and advisory services and improving the access to credit and markets will demand resources and capabilities that might be hard to come up with. In similar ways, structural barriers such as small land size and gender inequality are demanding challenges that need to be addressed both at national policy level and local levels.