

### **Objectives of the project**

To identify, develop and adapt legume-based agroecological intensification technologies/practices as well as innovations for rural energy and labour efficiency for smallholders, especially women.

To identify, develop, adapt and scale innovations for transformative shifts in rural bioeconomies by generating new enterprises and rural employment (especially for youth and women) from legume-derived products and co-products.



*Women inspect pigeon pea at flowering time in East Africa (ICRISAT, 2008)*

### **Background**

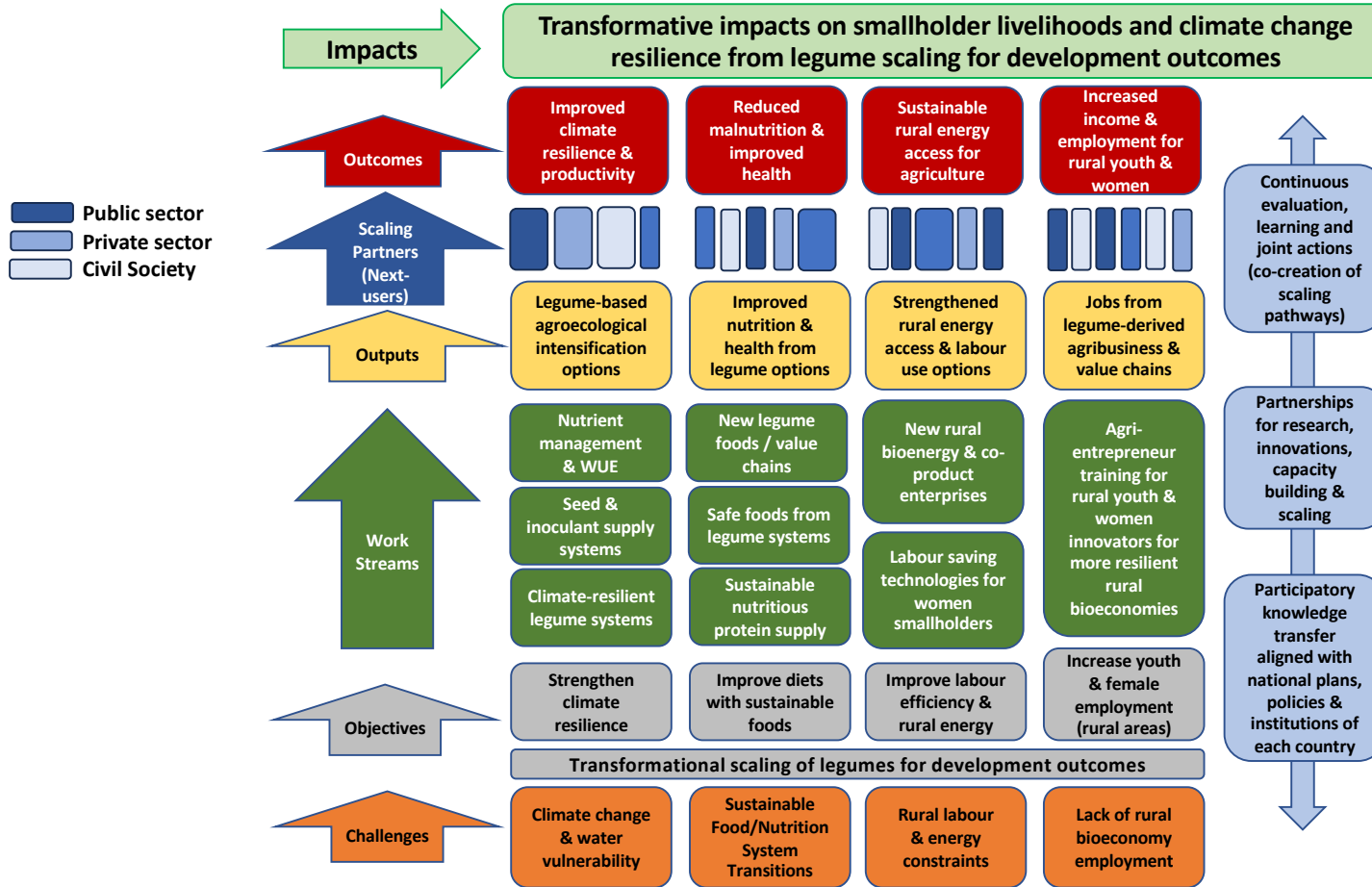
Grain and agroforestry legume crops have major unrealised potential for climate-smart transformation of nutritional, income and sustainability outcomes from smallholder systems in Sub-Saharan Africa (SSA). In addition to nutritional benefits, legumes play a key agroecological role in soil fertility. Yet, the food security and sustainability merits of legumes are currently unrealised at scale. Both yields and adoption rates of legume crops remain low in SSA despite their potential. There are multiple barriers to the scaling out of multipurpose legume integration into maize and cassava systems, including productivity, seed supply systems, labour/mechanisation and energy constraints, consumption and cultural preferences, food safety and marketability challenges. Ensuring greater access for poorer smallholders to legume-based innovations is essential, to ensure that the furthest behind can transition to more economically and sustainable farming systems. Indeed, legumes represent a strategic entry point for gender-transformative agroecological intensification.

The LEG4DEV project is identifying, developing, testing, adapting and improving a portfolio of innovations for diversifying maize or cassava dominated cropping systems by legume-based agroecological intensification, and conducting legume-based participatory research and innovation activities to enable improved scaling of legumes for development outcomes, such as sustainability, resilience, health and decent livelihoods.

### **The theory of change to achieve the objectives**

LEG4DEV's Theory of Change is to focus on research and innovation activities that are prioritised by scaling partners and stakeholders, which can generate evidence and outputs that enable scaling of legume-based agroecological intensification for multiple development outcomes. The project aims to strengthen the sustainability, resilience, health and livelihood outcomes that can be realised from legume-based agrifood systems and value chains of smallholder farmers and rural communities in east and southern Africa. The LEG4DEV project works with scaling partners to improve the livelihoods of smallholder farmers and poorer rural communities in Zambia, Malawi, Tanzania and Ethiopia.

The main outcomes of LEG4DEV are (1) Legume-based agroecological intensification scaling for climate-resilient productivity, (2) Legume-based agroecological intensification scaling for food & nutrition security, (3) Legume-based agroecological intensification scaling for water use efficiency, (4) Rural energy and labour-efficiency transformation pathways for legume-based agroecological intensification, (5) Legume-derived enterprises and employment for more resilient rural bioeconomies, and (6) Identification of policy & institutional options for transformative scaling of legume-based agroecological intensification for enhanced livelihoods and resilience.



**LEG4DEV's Theory of Change => its research into use and innovation activities enable scaling out of legume-based agroecological intensification to generate transformative impacts on smallholder livelihoods while strengthening the sustainability and climate resilience of agrifood systems of smallholder farmers and rural communities in east and southern Africa**

LEG4DEV focuses its research and innovation activities on overcoming the range of barriers to scaling of legume-based agroecological intensification. This is done through working with scaling partners who are “agents/engines of change” that can translate research outputs and innovations into tangible outcomes and impacts on smallholder livelihoods and climate change resilience. Through participatory multi-stakeholder workshops in each of the four countries, LEG4DEV is identifying and ranking key barriers to legume scaling, prioritising research and innovation activities, and leveraging existing and new research/innovations towards overcoming scaling barriers, by working with scaling partners. LEG4DEV’s scaling partners span the entire value chain from producers to consumers, with particular focus on partners who have capabilities for enabling the scaling of innovations (e.g. farmers organisations, youth and women groups/entrepreneurs, private sector, investors, extension services, agrodealers, research organisations, ministries, policymakers and opinion leaders).

The LEG4DEV project adopts a participatory approach throughout its activities to ensure that all LEG4DEV and innovation activities are needs-driven. Strategies for scaling of legume-based innovations at the farm and landscape level by LEG4DEV include focus on peer-to-peer approaches and participatory technology development, where possible aiming to facilitate empowerment and user-driven innovation approaches. LEG4DEV’s entrepreneurship and rural bioeconomy activities focus on enabling profitable and sustainable enterprises that can deliver social and environmental dividends (using social and ethical business model frameworks). Research outputs arising from the Work Packages and Activity Areas in the LEG4DEV project are disseminated to next-user scaling partners to enable more effective scaling of legume-based agroecological intensification in smallholder farming systems and poorer rural communities.

### **Main activities**

Research and innovation activities on legume-based agroecological intensification within the LEG4DEV include, inter alia:

participatory needs-assessment and research prioritisation (technical and policy); climate, crop & farm systems modelling; farmer participatory field & technology trials; demo and extension approaches for farmers; large-scale surveys; life-cycle assessment of legume systems and products; legume-based nutrition & health; legume-based food products; water resource efficient legume systems; labour-saving tools & technologies; legume-based rural bioeconomy models; legume-based enterprises; policy & institutional innovations for scaling legume-based agroecological intensification; education, training and capacity development.

### **Results achieved to date (June 2023)**

The LEG4DEV project has onboarded a talented and dynamic team of researchers who have initially been conducting synthesis research across all of the LEG4DEV Activity Areas to determine what research and innovations already exist of relevance to legume-based agroecological intensification. On an ongoing basis, these are being published and disseminated to scaling partners and stakeholders as papers, technical reports and policy briefs. In each of the four countries, the LEG4DEV Project has taken a “systems approach” to identify and map all of the possible scaling partners and stakeholders of relevance to legume-based agroecological intensification, from production to consumption of legumes. This has been followed by over 175 bilateral meetings in 2022/2023 with Ministries and government agencies, donors, NGOs, farmers organisations and the private sector across the four countries, to (a) identify research priorities and (b) identify potential scaling partners who can reach large numbers of smallholders or poor rural households.

The evidence synthesis and bilateral meetings were complemented with four national-level multistakeholder workshops where multi-disciplinary national teams identified research priorities

(technical and policy/institutional) for enabling legume scaling in each of the four countries. The multi-stakeholder workshops provided the first opportunity for many of the national stakeholders to meet, discuss and work together with other stakeholders to forge consensus on research priorities for enabling scaling of legumes in their country. The LEG4DEV multi-stakeholder workshops in each country provide the opportunity also to consider what form of multi-stakeholder platform relating to legume scaling can be most effective and most sustainable in each of the four countries. The findings of the bilateral meetings and multistakeholder workshops are being synthesized into workshop reports with prioritized research and innovation topics, which on a rolling basis are being translated into LEG4DEV research projects with scaling partners in each country.

## LEG4DEV Multi-Stakeholder Research Prioritisation Workshops

**Zambia (30<sup>th</sup> Sept 2022)**



**Malawi (9<sup>th</sup> Dec 2022)**



**Ethiopia (10<sup>th</sup> Feb 2023)**



**Tanzania (31<sup>st</sup> Mar 2023)**



*Photos from bilateral meetings & multistakeholder workshops are archived on LEG4DEV Flickr account <https://www.flickr.com/people/196634730@N06/> [14,200 views to date]*

### Organization

The LEG4DEV project is organised around 6 work packages. A series of the LEG4DEV work packages contribute to increasing farm productivity and resilience to climate change, while improving water, food and nutrition security and water use efficiency. Additional work packages are focused on increasing rural energy and labour-use efficiency, and on increasing agribusiness and employment opportunities for rural youth and women from legume-based enterprises. A cross-cutting work package consists of ‘transformation scaling of legume-based agroecological intensification of smallholder farming systems’ through policy and institutional innovations. Each work package has an impact pathway (with research/innovations outputs, next-users, outcomes and impacts).

The LEG4DEV project is run by a Core Operations Team, supporting the Executive Committee with Principal Investigator representatives from each of the partner institutions. LEG4DEV researchers are organised around Activity Teams, where each Activity Team advances the range of research activities and projects relating to the Activity Area. At the national level, LEG4DEV National Stakeholder Advisory Committees are being established in each of the four countries to enable representation, engagement, coordination and alignment with scaling partners and stakeholders in each of the beneficiary countries.



### Implementing organization

Led by University of Galway (Ryan Institute)



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GAILLIMHÉ  
UNIVERSITY  
OF GALWAY

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Ryan Institute

### Partners of the project

- ✓ Wageningen University & Research (WUR),
- ✓ Swedish University of Agricultural Sciences (SLU),
- ✓ University of Hohenheim
- ✓ Three CGIAR partners: International Institute of Tropical Agriculture (IITA), International Livestock Research Institute (ILRI), International Maize and Wheat Improvement Center (CIMMYT)



**WAGENINGEN**  
UNIVERSITY & RESEARCH



Swedish University of  
Agricultural Sciences



**UNIVERSITY OF  
HOHENHEIM**



RESEARCH PROGRAM ON  
**Climate Change,  
Agriculture and  
Food Security**



**IITA** *Research to Nourish Africa*  
International Institute for  
Tropical Agriculture

**CIMMYT**  
International Maize and Wheat Improvement Center

### Other main stakeholders

- ✓ Scaling partners (public sector, private sector, NGOs, farmer and civil society organisations) within each of the four beneficiary countries;
- ✓ Multi-stakeholder platforms in each of the four beneficiary countries that are engaged in legume-based development activities;
- ✓ Smallholder farmer groups/organisations in each of the four countries, rural women and youth.

### Location

East Africa (Ethiopia, Tanzania) and southern Africa (Malawi, Zambia).

### Funding and co-funding

EU	€ 6,500,000
Total budget	€ 6,500,000

### Duration

5 years, (Nov 2020 – Oct 2025)

### Website

[leg4dev.org](http://leg4dev.org)

Updated on 07/07/2023