



# Sustainable tree-crop-livestock intensification as a pillar for the Ethiopian climate resilient green economy initiative

## Report from an 'early win' project

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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 will create 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.



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## Purpose, objectives, planned outputs

The objective of this project was to underpin the Ethiopian Climate Resilient Green Economy (CRGE) Initiative by providing early win candidate technologies for integrating fruit, fodder, fuelwood, fertilizer and timber trees in fields, farms and landscapes. This will enable sustainable intensification of farming systems by expanding the scope of options promoted by the initiative, and by targeting species and management options appropriately to sites and farmer circumstances. In the process, to build a durable partnership amongst national and international institutions to further refine the options available and their targeting for further engagement with the Feed the Future Initiative.

The planned outputs were:

- Local knowledge about integrating trees in fields, farms and landscapes documented,
- Best bet tree species and management options identified,
- Needs for development of the tree seed and seedling supply sector assessed, and
- Effective partnerships for promoting tree-crop-livestock integration to underpin the climate resilient green economy initiative at national level established.

## Partners

As a lead, ICRAF was responsible for the overall coordination of the project, managing funds, sub-contracting partners to complete the proposed activities and compiling progress, and final reports for submission to USAID/ILRI.

ILRI: a CGIAR partner was responsible to organize the national dialogue and submitting the report from Southern Ethiopia, Areka site on existing sustainable intensification practices.

Mekelle University was responsible to organize the local Agro-ecological knowledge acquisition (ATK5 toolkit software) training in Mekelle University.

EIAR, Forestry Research Centre (FRC) was responsible for the analysis of seed and seedling supplying system.

## Achievements

### **Training/capacity development**

As part of the project's output 1, the ICRAF-led early win project organized a training workshop on local agro-ecological knowledge acquisition, with a trainer brought in from Bangor University, UK.

The training was carried out from 11-22 June, 2012 at Mekelle University, with trainees from national partner institutions (including Areka Research Centre, Ambo University, ILRI, Arsi-Sinona Research Centre, Wondogenet College of Forestry, Addis Ababa University and Mekelle University) as well as, Vietnam ICRAF, and an MSC student from Zambia. The training combined classroom lectures with exercises at the field site of Abreha We Atsbeha in a semi-arid area of the Tigray Regional State. The focus was on tree-crop-livestock interactions on farms, assessed drivers

influencing incorporation of trees on farms and constraints and opportunities for increasing tree cover through agroforestry interventions. The team of eight researchers was split into four groups to conduct interviews with farmers, each with a different topic and with similar areas to cover; this enabled us to get a quick glimpse into the farming systems present in the field site within a short time frame. Visit <http://cgspace.cgiar.org/handle/10568/21198> for the full report.

A female student finalized her MSC in the frame of the project's output 1.

## **Local knowledge about integrating trees on farms in selected locations documented**

Sustainable intensification of agriculture, especially where tree-crop-livestock mixing is involved, is a knowledge intensive process. This is mainly because, managing a mixture of trees, crops and livestock involves both trade-offs and synergies. Approaches to match the right components and management practices to production systems and ecosystems are required. Beginning with local people's understandings of how trees can improve productivity of farming systems and soil conservation become a good starting point to build on and to identify knowledge gaps and demand driven entry points. Following the local knowledge training, three sites (Tigray (Abraha we atsbaha and Adigudom), Wolita (Areka) and Arsi (Bekoji woreda) were selected considering a range of factors such as degree of intensification, ecology and climate, successful and unsuccessful sites and farming practices to document local knowledge on mixed farming systems.

A field report and an MSc thesis on local knowledge about integrating trees on farms in those selected locations together with a durable record of local knowledge in the form of accessible electronic knowledge bases is being finalized by female MSc student.

## **Needs for development of tree seed and seedling supply sector assessed**

Secondary data on tree seed and seedling supply in selected sites assessed and existing documents reviewed. An assessment of what tree seed and seedlings used in planting campaigns in June/July 2012 was made. Key stakeholders in the tree seed and seedling sub-sector in selected sites were identified and interviewed. Moreover, a stakeholder workshop was conducted for developing recommendations for improving the sub-sector and enabling efficient delivery of high quality tree and fodder planting material suitable for intensification of tree-crop-livestock systems. As a deliverable a report comprising needs assessment for developing the tree seed and seedling supply sub-sector to support intensification of tree-crop-livestock systems, by taking Wolayta and Arsi as case studies, was developed.

## **National dialogue**

As part of the project's output 4, a national dialogue workshop was organized under the theme "sustainable agricultural intensification and its role on the climate resilient green economy initiative in Ethiopia" held on 23-24 July, 2012 at ILRI campus in Addis Ababa, Ethiopia. About seventy participants from 42 institutes attended the dialogue workshop. The aim of the national dialogue was to discuss the general research agenda of the tree-crop livestock intensification project, in line with the broad agenda of the national platform on land and water management and its role on CRGE. As a deliverable a joint policy brief is in preparation.

## Technical note on best bet tree species and management options, including integration with livestock, for selected agroecologies in Ethiopia

To support the growing interest in integrated sustainable intensification in Ethiopia, we assessed and reviewed the past agroforestry experiences and achievements both within and outside the country, reviewed the existing state of knowledge, and identified success stories for scaling up. We also identified the constraints and opportunities that affect the adoption and promotion of agroforestry technologies. We provided technical information on the potential agroforestry practices and technologies suitable for sustainable agricultural intensification, and set the biophysical framework for agroforestry development interventions at agro-ecological and local levels. Identification of priority development, research and policy gaps and existing opportunities and key actors in agroforestry development and the need for coordination and communication mechanisms were also presented.

## Locations/sites where activities took place

- Abreha Wa Atsbeha in northern Tigray (13° 50'N 39° 29') : very successful site in integrating trees into farms and controlled grazing systems
- Adigudom in southern Tigray: not successful in integrating trees into farms
- Arsi in Oromia (7°35'N 39°10'E): highland less tree-crop-livestock intensification
- Areka, Wolaita zone (7°4'N 37°42'E), in Southern Ethiopia: highland high tree-crop-livestock intensification

## Support of Africa RISING

The document on local knowledge about integrating trees on farms would be useful to scale up successful technologies and community initiatives and to address knowledge gaps.

We have consulted widely with stakeholders to identify challenges and opportunities for tree establishment initiatives as a basis for the CRGE initiative and identified relevant critical information to bridge development gaps, as well as to identify possible incentives and opportunities for further engagement with the Feed the Future Initiative.

We have revised, identified and documented successful technologies, seed and seedling supply systems as a basis for the AfricaRISING project.

We have trained national and local partners on participatory local agro-ecological knowledge acquisition methodologies that can be used in AfricaRISING further activities.

Key actors were identified and relationships with a wide range of partners established.

## Scalability

- Start by analyzing current practices and situations.
- Use participatory and flexible approach to address local needs.
- Promote existing successful practices from the early win sites.
- Fit options to sites and farmer circumstances
- Awareness creation and community mobilization is critical for success

## Lessons learned

Effective tree-crop-livestock integration requires collaboration across sectors, amongst government and non-governmental organisations and integration amongst levels of government. Most of all involvement of relevant of national partners, development agents and farmers at all levels is important for the success of the project. We need to work to establish and strengthen collaboration among the CGIAR centers.