

Why and how to implement a R4D framework for Africa RISING?

a fast-track project

Introduction

In Sub-Saharan Africa, smallholder farmers' productivity is generally low due to limited access to improved technologies, input and output markets, a lack of pro-poor policies and effective institutions, and agro-ecological limitations. This has increased food insecurity, risks, and vulnerability of households to make a living, particularly of disadvantaged groups in rural areas.

Agricultural research and development interventions seeking to overcome this low productivity in Sub-Saharan Africa have often generated a lower impact than expected. There are multiple reasons for this including:

- *limited appreciation of farmers' knowledge, production orientations, and livelihood strategies;*
- *weak exchange mechanisms for knowledge sharing among stakeholders (farmers, extension, researchers, market actors, etc.)*
- *(single) technology-focused interventions that disregard the various sub-systems (farm, household, village) and their interactions in which they need to function;*
- *lack of integration of bio-physical and socio-economic understandings of farming systems;*
- *disregard of the diversity among smallholder farmers, of their farming systems and of related institutions;*

To tackle this low agricultural productivity, the Africa RISING program of the USAID proposes to combine both research and development objectives in order to identify and evaluate demand-driven options for sustainable intensification (SI). In addition, it seeks to facilitate partner-led dissemination of integrated innovations and develop an integrated scaling initiative that aligns with policy and larger scale programmes. The purpose of this program is to:

"Provide pathways out of hunger and poverty for small holder families through sustainably intensified farming systems that sufficiently improve food, nutrition, and income security, particularly for women and children, and conserve or enhance the natural resource base".

To achieve the goals of the Africa RISING program, this fast-track project proposes a generic but flexible approach to ensure a better integration and adaption of innovations by rural household (e.g. practices and technologies). Building on a research for development (R4D) cycle, this approach is based on three major and interacting concepts and approaches: system approaches, diversity of livelihoods and participatory processes. This document explains the rationale for using these concepts and approaches and describes how this overall approach can be implemented in the Africa RISING program. This should not be seen as prescriptive approach, but more as general principles and examples aiming at a better adaptation and integration of innovations to intensify agricultural production in more sustainable ways.

Conceptual principles

This project explicitly includes diversity of livelihoods and system approaches to overcome simplistic views that silver bullets can solve the problems of smallholder agriculture in Sub-Saharan Africa (Tarawali et al., 2011; Giller et al., 2011), facilitating a better identification, integration and adaptation of innovations for SI. The combination of these two approaches can also ensure a better understanding of farming systems, while considering major biophysical, socio-economic and institutional opportunities and constraints for SI. The implementation of these two approaches requires participatory processes with stakeholders not only to increase the impact of research and development, but also to create better communication among stakeholders and empower households, particularly disadvantaged groups in rural areas (Johnson et al., 2003; Rusike et al., 2006).

System approaches

Adopting a system perspective shifts the attention to the contexts in which (technological) innovations are to be taken up. This implies not only considering different agro-ecological and socio-economic dimensions of smallholder farming practices, but also developing an interdisciplinary, multi-scale perspective on heterogeneous smallholder farming systems and rural livelihoods. In fact, existing farm practices and options for SI need to be understood in the context of specific farming systems, gender divisions of labour, and livelihood strategies. Additionally, a system approach can account for the potential impact of SI practices at a farm scale on processes at higher scales such as: water availability and quality among other potential ecosystem services. Finally, a system perspective includes the dynamics of households and agro-ecosystems, allowing the analysis and exploration of past and potential future trajectories of SI.

Diversity of livelihoods

The understanding of diversity in farming systems and livelihoods allows for a better identification of potential innovations for SI in smallholder agriculture (Knowler and Bradshaw, 2007; Baudron et al., 2012). The characterisation of this diversity should go beyond assets because similarly endowed farming households may be very different in terms of their development trajectories, orientation and potential for sustainable development (Tittonell et al., 2005). Rural households follow many different strategies, of which agricultural intensification is only one (Figure 1). The portfolio of livelihood activities is also likely to structure feasible options for SI. And their adoption To better understand livelihood strategies and how these shape the potential for SI innovations, a focus on assets may a be useful entry point—i.e. focus on natural, economic, human, social and physical capitals (Table 1). Yet, both assets and the strategies they make possible, are both dynamic and interacting, generating synergies and trade-offs in household assets and sustainability of the whole agro-ecosystem. Therefore, diversity of livelihoods needs to be explicitly addressed, both in terms of assets and strategies, but in view of the African Risings focus on gender and food security, also on intra-household distributions of resource access.

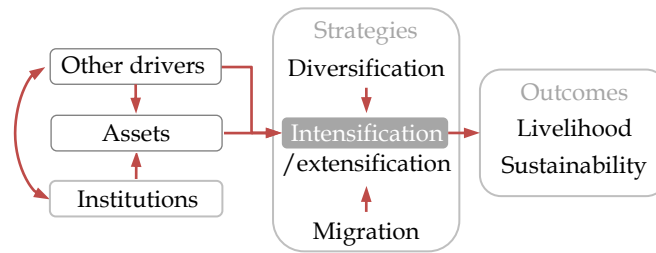


Figure 1. Conceptual framework (after Scoones, 1998)

Strategies, assets, diversity and SI potential are largely regulated by institutions (e.g. community regulations and market arrangements) and other drivers (e.g. climate, policies, and market demand). The interaction and development of livelihoods assets, strategies and innovations generate outcomes, influencing the overall sustainability of the agro-ecosystem.

Table 1. Potential areas of innovation for each capital – livelihood assets (after Scoones, 1998).

Capitals			
Natural ¹	Economic	Human	Social ²
Soil fertility	Microfinance	Information	Cooperatives
Water quality/quantity	Banking	Education	Innovation platforms
Crop/livestock/tree spp.	Insurance	Nutrition & health	Value chains
Agro-biodiversity	Income	Gender	
Feed resources	Machinery	Labour	

Notes: ¹ related to ecosystem services; ² related to institutions.

Participatory processes

Demand- and partner-led processes need to ensure the engagement of farmers and other stakeholders to guarantee relevance of any R4D process, as well as to stimulate cooperation among stakeholders. In R4D, we need to consider participation as a capacity building process for farmers and other stakeholders, allowing them to make their own decisions i.e. a process to share and generate knowledge; where stakeholders learn by action (Brydon-Miller et al., 2003). Participation is a multi-level process with different levels of organisation, acknowledging that the adaptation and integration of promising innovations also depends on institutions (e.g. social rules, markets). Finally, participation can also be a political process (Cooke and Kothari, 2001), where power, inequity and negotiation need to be considered (Giller et al., 2008).

Implementing and testing concepts

To implement these major conceptual principles in R4D, different experts on livelihood, system and participatory approaches developed a R4D cycle based on the work of Ellis-Jones et al. (2005). This fast-track project cannot test the whole R4D cycle, which might require more than one growing season. Nevertheless, by combining expert knowledge and a field visit, part of the R4D cycle was largely revised and improved. Additionally, a final

workshop with different experts will take place, offering the possibility to further discuss and improve this approach with a larger community.

The field visit took place in Bekoji, Arsi (Ethiopia), where 30 farmers were invited to discuss and identify major livelihood strategies in the area. The main objective of this visit was to document, discuss and redefine the first steps of the R4D approach. Identification of livelihood types was based on stakeholders discussions led by experts and local translators. Given gender differences in participation, this discussion was done in two groups: a female and a male group. Time limitations did not allow the complete characterisation and validation of the identified types. However, this simple exercise generated a common understanding of diversity among stakeholders, as well as relevant lessons and recommendations related to the feasibility of this R4D approach within the Africa RISING program:

- Pre-R4D activities are necessary to better understand and include household diversity.
- A participatory R4D is a time consuming process, requiring commitment by all involved partners.
- Champions, good facilitators and documentation are essential elements of the process.
- Collaboration between local and international partners is fundamental.
- Although very useful, livelihood is a difficult concept to explain to other stakeholders.
- For the Ethiopian Highlands, gender is still a major factor to take into account in these participatory processes.

Similarly, another Africa RISING fast-track project tested a semi-quantitative approach to understand and characterise diversity among stakeholders in the same area (see Annex 1). This alternative approach might bring valuable experiences and complementarities to the development of the final R4D approach.

R4D approach

This approach builds on farmers' own understandings of diverse farm practices and livelihood strategies to construct livelihood typologies. These 'participatory typologies' in turn inform type-specific research and intervention strategies, thus contributing to a more demand-oriented agricultural research and intervention. Such demand-orientation can be further enhanced by subsequent type-specific participatory R4D (Figure 2). This means that although the household is still an essential unit, the major focus of this approach is on *livelihood types* assuming that households with the same livelihood strategies (i.e. livelihood type) face similar options and challenges for SI (e.g. Tiftonell et al., 2005). For each step of this approach, different activities need to be conducted and different methods can be used (see Annex 2 as an example). Finally, across the whole R4D approach two major activities are needed:

- a. *Facilitation*: creates the necessary environment challenging and empowering stakeholders to participate and learn along the R4D approach.

- b. *Documentation*: records the whole process systematically, facilitating the communication, analysis and learning along the R4D approach.

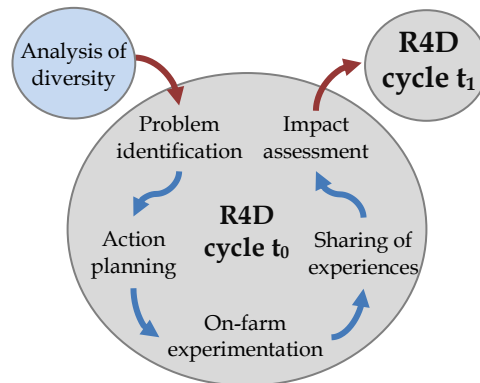


Figure 2. R4D cycle (after Ellis-Jones et al., 2005)

Step0 Engaging & analysis of diversity (pre-R4D cycle): before going into a R4D cycle, diversity of livelihood strategies within a study area need to be explicitly mapped and characterised with stakeholders. Based on this diversity, we can contextualise better a demand-driven R4D process. For example, strategies based on non-agricultural activities might not be a priority for a project promoting SI innovations. Most importantly, this step requires entering a community and building trust to facilitate the whole R4D process by explaining and discussing the project. To achieve this, four major activities need to be conducted:

- a. *Situational analysis*: to make sure that most of the spatial and temporal diversity of livelihood strategies is included, *literature review* and/or *consultations with local experts* need to be conducted generating a system overview on drivers, institutions, diversity and dynamics of the agro-ecosystem.
- b. *Mapping diversity*: based on this situational analysis, a large diversity of farmers can be invited for *group discussions* to build and characterise a *livelihood typology* of the study area.
- c. *Household survey*: based on this typology, *household surveys* can be designed to validate, adapt and better characterise the identified types, as well as to better describe the whole agro-ecosystem.
- d. *Type selection*: based on the previous activities and the analysis of the household survey, livelihood types identified previously can be selected to start an individual R4D process for each of these selected types.

R4D cycle

If strategies, opportunities and challenges substantially differ among types, this part of the process needs to be conducted for each type or group of types separately.

Step1 Options and problem identification: all stakeholders involved need to have a common understanding of the major strategies, challenges and potential solutions for the diversity of livelihood types. This step consists of one major activity: *farmer and other stakeholder consultations*. The aim of this consultation is to identify and prioritise future

scenarios, current strategies, challenges and potential solutions. Based on this prioritisation, relevant stakeholders can be identified to be included in the subsequent steps of the R4D processes (e.g. soil scientists, private sector or local NGOs).

Step 2 Action planning: based on the identification and prioritisation of potential solutions and relevant stakeholders an action plan to select, adapt and test innovations or combination of innovations can be designed. In this step, stakeholders come together to develop *innovation platforms* in order to implement potential solutions. Five major activities are part of this step:

- a. *Identification of innovations:* including past and current innovations in place related to the potential solutions identified in Step 1. *Participatory mapping of current practices and "positive deviance"*.
- b. *Selection of indicators and development outcomes:* with stakeholders to assess the results of this action plan. This will include indicators at different scales including household, community and landscape. *Participatory ranking & selection*.
- c. *Design experiments:* with stakeholders using *mother-daughter approach* (see also Step 6).
- d. *Ex-ante evaluation:* characterise the likely consequences (social, economic, environmental etc.) of the target system / farm type to develop an effective action plan to deal with them. *Ex-ante & participatory modelling*.
- e. *Skill identification and strengthening:* identify and support the management / decision making skills that farmers would require to operate these action plans and fill the gaps as required. *Training*.

Step 3 On-farm experimentation: promising innovations (endogenous or exogenous) for the selected type(s) are compared by participants with common practices in on-farm (farmer-led) trials to test the added value of the new combination of innovations. This might require iteration with the *action planning* to adapt or improve the on-farm experiments. Activities and methods would largely depend on the innovation selection and experiment design.

Step 4 Sharing experiences: stakeholders involved need to evaluate the experimentation and look at the lessons learnt. Three major activities may take place:

- a. *Evaluation of innovations:* Results of on-farm experiments are evaluated by using indicators in the middle and the end of the season identified in participatory way with the selected type(s) by using *participatory M&E, budgeting and ranking*.
- b. *Drawing lesson learnt:* This is a learning process including achievements and mistakes of R4D. *Discussion and field days* are necessary to adapt this R4D process for a new season.
- c. *Share experiences:* Learning lessons in the experimentation and the whole R4D process need to be shared targeting different stakeholders and regions by linking it to *stakeholder discussions and field days* bringing together farmers and other stakeholders from different regions.

Step 6 Impact assessment: this is a type of prospective evaluation that attempts to determine whether the proposed intervention brought about positive changes on farmers' well-being, and if these changes are, in fact, due to the R4D intervention (as opposed to another intervention). Most impact evaluations test the efficiency and effectiveness of a particular intervention (e.g. use of improved seeds and tools). However, since the R4D approach is a participatory process and builds upon the farmers' own experiences and priorities, this type of impact assessment will be more difficult. For this reason, the R4D impact assessment will seek to measure the impact of the R4D cycle on key outcomes that are common across all villages. In particular, this will involve five major activities, some of which can be part of previous steps:

- a. *Household surveys* (Step 0): Collect baseline data from a subsample of farm households in all eligible communities prior to the program, primarily on socio-demographic information, agricultural knowledge and practices, assets, SI, social capital and other livelihoods.
- b. *Type identification* (Step 0): identifying key eligible types for project.
- c. *Farmer selection* (Step 2): of those eligible types, randomly assigning ½ of the farmers belonging to these types to participate in the R4D cycle (at least during the first year).
- d. *Panel surveys:* after the R4D cycle, we need to collect follow-up data from the same farm households (a panel) using a similar type of survey instrument.
- e. *Assessment:* comparative analysis can elucidate the potential impact of the R4D approach. This can be done by comparing the panel surveys, or the population of farmers who participate in the process and those who did not.

Concluding remarks

The combination of expert knowledge and fieldwork confirm that the implementation of demand-led R4D needs to consider the diversity of households to better approach SI in smallholder mixed farming systems. The use of typologies is a relevant methodological approach to account for household diversity by including the major livelihood strategies in a study area. Still livelihood is not a straightforward concept and a clear and common understanding among stakeholders is fundamental. The relevance of these typologies, as well as the engagement of farmers and other stakeholders into R4D processes, requires appropriate participatory processes. To achieve this, good facilitation and collaboration among stakeholders is essential.

Based on these experiences, three major questions on the proper implementation of a R4D approach still remain related to: organisational arrangements, capacity building and up/out-scaling.

- a. *Organisational arrangements:* how can national and international organisations build synergies to promote partner-led processes?
- b. *Capacity building:* how can we ensure proper facilitation and translation (when needed) along the R4D process?

- c. *Up/out-scaling*: how can this R4D approach go beyond localised impact? Can we extrapolate results to similar types in other regions? Do we need to replicate the process in different regions before up-scaling?

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Annex 1. Evaluation of an alternative method to capture the livelihood diversity in Bekoji.

Farmers in Bekoji Kebele also hosted another fast-track project studying the potential role of feed resource management in SI in the Ethiopian Highlands. The first step in this project was to develop and implement an approach to household stratification based on participatory identification and scoring of livelihood capital asset indicators (human, social, financial, natural and physical capitals). This approach could be applied reasonably rapidly (<3 days) in the field and was effective in discriminating household types based both on a one-dimensional benchmarking analysis (top 25% vs bottom 25% on average asset scores) and a PCA / cluster analysis to identify strata across all the livelihood indicators assessed. Whilst the approach requires further testing, initial indications are that it is effective. The livelihood strata identified were interpretable in terms of independent biophysical and socio-economic variables collected for the participating households. Furthermore, clear differences were observed between strata in the variables used by a study to characterise feed resources that was conducted independently on a subset of the households. A sharing of experiences between the “SL Indicators” and “Participatory Typologies” teams is suggested. There is also likely to be some value in exploring possibilities for using the two approaches in combination.

Annex 2: example of suggested methods to carry out the proposed activities.

RESEARCH FOR DEVELOPMENT PROCESS STEPS AND METHODS			
PROCESS STEP	OBJECTIVES/MAIN ISSUES?	STAKEHOLDERS /WITH WHOM?	TOOLS AND METHODS
1) Entering the community and building trust: <i>information meeting</i>	<ul style="list-style-type: none"> • presentation and discussion of new approach • consensus on way forward 	<ul style="list-style-type: none"> • Ward leaders 	Open discussion in meeting
2) Identifying and supporting effective organisation: <i>Institutional Survey</i>	<ul style="list-style-type: none"> • Identification of local institutions • analysis of their roles, strengths, weaknesses and co-operation 	<ul style="list-style-type: none"> • villagers • 'traditional' and 'modern' village organisations • farmer clubs • Govt Dept • Churches • NGOs 	individual, informal interviews
3) Feedback to the community <i>Community meeting</i>	<ul style="list-style-type: none"> • Report back on inst. survey • analysis of situation with people 	<ul style="list-style-type: none"> • leaders and community representatives 	<ul style="list-style-type: none"> • open discussion • Venn diagrams • group disc.
4) Raising awareness in the whole community: <i>Community workshop</i>	<ul style="list-style-type: none"> • identification of potential groups • start of problem identification • identification of leadership structures • raising of awareness through introd. of TFT in community 	<ul style="list-style-type: none"> • villagers/commu nity 	<ul style="list-style-type: none"> • discussions • role plays • codes • basic concept of Training For Transformation (TFT)
5) Identifying community needs: <i>'Needs Survey'</i> <i>Community workshop</i>	<ul style="list-style-type: none"> • identify and analyse felt needs and problems 	<ul style="list-style-type: none"> • with different categories of people, wealth, gender, age, master farmer/ non-MF • with the local people/villagers 	<ul style="list-style-type: none"> • group discussions • informal observations • informal interviews • wealth ranking • listening surveys
6) Prioritising problems and needs; 7) Searching for solutions 8) Mandating local institutions	<ul style="list-style-type: none"> • feedback on needs survey • prioritise problems • identify possible solutions and their sources • link and mandate problems to relevant local institutions 		<ul style="list-style-type: none"> • Meetings/workshops • present flipcharts on needs survey • ranking methods • group and plenary discussions --> consensus
9) Action planning <i>Workshop</i>	<ul style="list-style-type: none"> • planning of what to do, when and where • discuss need for further exposure to possible options/solutions • develop time plan of action 	<ul style="list-style-type: none"> • with the local people/villagers 	<ul style="list-style-type: none"> • group and plenary discussions • Time Plan of Action (ToA) forms.
10) Implementation / farmer experimentation Learning through trying out new ideas	<ul style="list-style-type: none"> • putting into action what was planned • farmers' own experimentation • monitoring (e.g. farmers' experiments) 	<ul style="list-style-type: none"> • local people • relevant institutions 	<ul style="list-style-type: none"> • experimentation • exposure tours/visits • method demonstrations • discussions

11) Mid-Season evaluation of new techniques	<ul style="list-style-type: none"> • evaluate successes and failures in the field • sharing of ideas 	<ul style="list-style-type: none"> • community and other institutions 	<ul style="list-style-type: none"> • field days/tours • visits discussions
12) Process review, self-evaluation and planning	<ul style="list-style-type: none"> • review TFT/leadership successes and failures • planning for next season • reassess needs & problems 	<ul style="list-style-type: none"> • community and other institutions 	<ul style="list-style-type: none"> • workshops • ToAs participatory evaluation & impact monitoring tools