

Farming Systems Analysis in support of user-centred research and innovation. A joint cross-initiative collaboration

MCamila Bonilla (Alliance of Bioversity International and CIAT), Mark Caulfield (International Livestock Research Institute), Katrien Descheemaeker (WUR), Evan Girvetz (Alliance of Bioversity International and CIAT), Aniruddha Gosh (Alliance of Bioversity International and CIAT), Jeroen Groot (WUR), Zhe Guo (IFPRI), James Hammond (International Livestock Research Institute), Santiago Lopez-Ridaura (International Maize and Wheat Improvement Center), An Notenbaert (Alliance of Bioversity International and CIAT), Julian Ramirez (WUR & Alliance of Bioversity International and CIAT), Todd Rosenstock (Alliance of Bioversity International and CIAT), Peter Steward (Alliance of Bioversity International and CIAT), Philip Thornton (Independent), Elke Vandamme (CIP), Joao Vasco Silva (CIMMYT), Mark van Wijk (International Livestock Research Institute), and Liang You (IFPRI)



Impact areas



Nutrition,
health &
food security



Poverty reduction,
livelihoods
& jobs



Gender equality,
youth & social
inclusion



Climate
adaptation
& mitigation



Environmental
health &
biodiversity

Introduction

Farming Systems Analysis (FSA) is commonly used in CGIAR to assess ‘what works where, and for who?’. The findings are used to prioritize tailored/context-specific interventions and target investments for greater impact. An assessment of seven new CGIAR initiatives showed us that FSA is employed in a similar way across these initiatives, opening up avenues for strong collaboration and sharing of data, methods and results to achieve better synergies than we have done in the past.

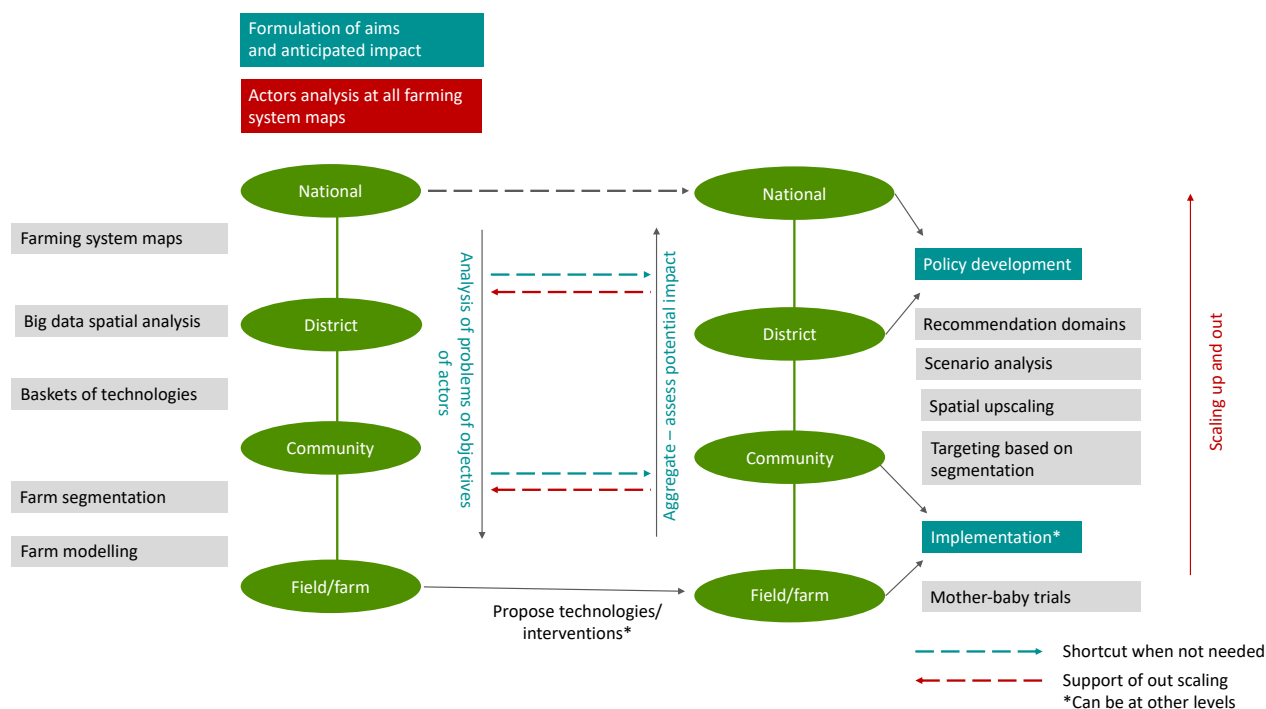
In September 2022, representatives from these seven CGIAR Initiatives (Sustainable Intensification of Mixed Farming Systems, Livestock Climate and System-Resilience, Building Systemic Resilience Against Climate Variability and Extremes, Excellence in Agronomy, Nature-Positive Solutions for Shifting Agrifood Systems to More Resilient and Sustainable Pathways, Sustainable Animal Productivity, and the East and Southern Africa regional initiative Ukama Ustawi) came together to coordinate FSA-related work. Through better coordination and building shared resources and approaches, we aim to:

- demonstrate the potential of FSA to enhance impact of CGIAR’s interventions along the various CGIAR Impact Areas; and
- encourage the use of global best practices in FSA across CGIAR initiatives

A common multi-level framework for previously uncoordinated analyses

The One CGIAR Initiatives Joint Workshop on Farming Systems Analysis developed an actionable framework to structure our work. The multi-level framework (Figure 1) encompasses diagnosis, intervention identification, scaling up and scaling out. Based on actor analyses at different integration levels, constraints and opportunities are identified based on the interests of the different sets of actors. In this work, we typically work from the higher integration levels (what are the big questions/problems/constraints?) towards the finer more micro-level scales to see how these factors work out at the local scale (left-hand side of Figure 1). Based on these findings, FSA can be employed at micro or meso scale to assess the potential impact of interventions, and this information can be aggregated across scales to prioritize and target these interventions (right-hand side of Figure 1). Specific methods and datasets can be used at different levels and for different purposes, thereby generating a flexible and fit-for-purpose framework that can be used in different settings and to address different development issues. This diagram is not new in its conceptual foundation, but given the new developments in data availability, data re-usability and analysis procedures over the last couple of years, the application of such multi-scale thinking is more feasible than ever.

Figure 1. Conceptual diagram of multi-scale farming systems analysis



Recent developments in two critical areas have re-invigorated FSA

The data ecosystem

Data availability has increased drastically over the last 10 years. At the micro level, World Bank, Food and Agriculture Organization of the United Nations (FAO) and CGIAR-driven initiatives like LSMS-ISA (Living Standards Measurement Study – Integrated Surveys on Agriculture - <https://www.worldbank.org/en/programs/lsms/initiatives/lsms-isa>), DHS (Demographic and Health Surveys - <https://dhsprogram.com>), GARDIAN (Global Agricultural Research Data Innovation Acceleration Network - <https://gardian.bigdata.cgiar.org/#/>), and RHoMIS (Rural Household Multi-Indicator Survey - <https://www.rhomis.org/>) have resulted in publicly available harmonized datasets that are easily accessible and easily re-usable. And at the macro level, spatial information systems on farming systems, crops, livestock and land use amongst others are now readily available (e.g. MapSPAM Spatial Production Allocation Model - <https://www.mapspam.info> or the World Development Report 2021 – Data for Better Lives - <https://wdr2021.worldbank.org/>).

Analytics

New tools to analyse data, assess impact and quantify trade-offs within farming systems have been developed and applied, as have approaches that allow for communication between datasets and tools. The tools to make use of the big data era are now ready, allowing for exciting opportunities to make FSA more relevant. A new example of this is the Agriculture Adaptation Atlas (<https://adaptationatlas.cgiar.org/>) where data and analytics come together in new innovative ways to map climate risks and find targeted solutions.

We will implement the FSA framework through two ‘use cases’:

Use case #1: Credit access in Kenya

Making better use of existing micro-level data, we plan to develop, perform and scale a climate vulnerability assessment to better evaluate the investment in climate risk insurance to improve climate risk management.

Use case #2: Prioritization and targeting of agronomy-related sustainable intensification options in Malawi

We will make use of newly available micro and macro level data to diagnose investment opportunities for agronomy-related technologies and scale up these results. Topical and regional initiatives will come together in this exercise.

Conclusions

The workshop was highly successful in identifying these across-initiative opportunities for collaboration and developing a common communication strategy to use in sharing data and methods.



© 2022



This publication is licensed for use under the Creative Commons Attribution 4.0 International Licence - <https://creativecommons.org/licenses/by/4.0>.

Unless otherwise noted, you are free to share (copy and redistribute the material in any medium or format), adapt (remix, transform, and build upon the material) for any purpose, even commercially, under the following conditions:



ATTRIBUTION. The work must be attributed, but not in any way that suggests endorsement by the publisher or the author(s).