Senior Expert Contributions to OneCGIAR Program Development

The science of scaling innovations from a systems perspective

Netherlands-CGIAR Partnership

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The aim of this two-pager[1] is to provide input for the OneCGIAR investment plan. Notably to identify key research challenges within the OneCGIAR impact areas, how these areas interact with Dutch policy priorities and how the challenges could be addressed / strengthened.

Key research challenges

The scaling of innovations (novel technologies, products, services, management practices, organisational models and/or institutional arrangements) is a key requirement and challenge for AR4D organisations that aim to have societal impact. 'Impact' or 'system transformation' never arises from an isolated innovation or change, but involves the uptake of multiple interdependent changes across different actors, levels and spheres, including the private sector. Thus AR4D organisations need to engage with multiple scaling processes and partners simultaneously, and consider both the 'up-scaling' of novel technologies, practices and arrangements, as well as the 'down-scaling' of the currently dominant ones.

Scaling of innovations does not only involve multiple actors and changes; it is also likely to affect multiple development outcomes and objectives. This multidimensionality poses challenges and introduces trade-offs, as -more often than not- outcomes may be positive in one domain (e.g. productivity, profit) but negative in others (e.g. biodiversity, gender equity). Even if such trade-offs are not very apparent (e.g. in case of a multi-purpose breeding efforts), the involvement of multiple actors (e.g. breeders, seed companies, distributors, farmers, processers) implies distributional issues and coordination and information challenges. There is scope to enhance feedback loops, learning and co-development in seed systems, value chains and innovation systems to ensure that research is responsive to societal demands, and that scaling potential is considered when research agendas are set.

While 'scaling' can be considered instrumentally as a practice, activity or strategy that AR4D organisations and their partners need to develop, implement, manage and coordinate, 'scaling' is also a topic of scientific investigation that can be approached from several disciplines. A recent (2020) special issue on 'Science of Scaling' in Elsevier's Agricultural Systems journal suggests that there are a number of important knowledge gaps where insights from different disciplines are likely to be relevant:

1 How do technical, organisational, economic, institutional, behavioural, discursive and political dimensions of change co-evolve over time, and which type(s) of change provides leverage over others in processes of innovation and scaling for systems transformation?
2 What are the strengths and weaknesses of innovation and scaling models governed through the public sector, the private sector, or public-private partnership? Which models are most appropriate for different types of innovation in different socio-economic or political settings?
3 How can (un)intended positive and negative conse-quences of scaling and system

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transformation be anticipated and differentiated across dimensions, levels, and societal groups, and how can such trade-offs and synergies guide investments in responsible innovation and scaling processes and pathways?

4 What kinds of institutional governance arrangements (e.g., incentive systems, fund allocation, adaptive management) can enable international AR4D organisations to engage effectively with impactful innovation and scaling processes?

Relevance

The current OneCGIAR strategy devotes considerable attention to the Practice of Scaling in the more instrumental sense, especially in Science Groups / Action Areas working on **genetic innovations & resilient agro-food systems**. However, the science of scaling is less clearly embedded still, which poses risks for the quality and underpinning of responsible scaling efforts and the realization of impact.

At the same time there is an active community within the CGIAR that is interested in approaching Scaling in a more systemic and interdisciplinary manner, and CGIAR donors demand the CGIAR to perform better in the area of innovation and scaling. It is important to ensure that the 'practice of scaling' becomes informed by the 'science of scaling' to increase its efficiency and effectiveness.

Dutch research institutes are at the forefront and highly visible on the topic of scaling and innovation. They are well positioned to advance this topic together with the various scaling communities and taskforces, and link it successfully with: (a) system transformation – taking a more systemic and interdisciplinary perspective; and (b) gender and diversity – ensuring that the benefits and risks of scaling are equitably distributed.

Approach

To address the challenges we propose to develop a large strategic research programme with the following features:

- Involving several social science disciplines to understand different dimensions of scaling (e.g. economics, sociology, innovation studies, governance, communication science, etc.);
- Pay attention to the distribution of benefits and risks associated with scaling across different categories of beneficiaries (e.g. along dimensions of gender, wealth, land-tenure, occupation, etc.);
- Involving technical and natural science disciplines to understand trade-offs between e.g. cultural, agricultural and ecological objectives occurring at different levels of scale (farm, community, region) in relation to scaling;
- Using situated research approaches, where mixed-methods research is embedded in ongoing interventions, public-private partnerships and scaling efforts;
- Explore the value of 'big data' (related to e.g. earth observation, social media, mobility, financial transactions) to generate relevant information and feedback relevant to the development and scaling of innovations;
- Combining research with capacity development of staff in CGIAR centres, NARS and other partner organisations involved in scaling efforts (MSc and PhD training);
- Including a strong component related to developing, testing and improving methodologies for scaling strategy development (e.g. Scaling Readiness) for practitioners, complementing existing approaches;
- Building linkages with existing communities of practice on scaling inside and outside agriculture;

The programmes should include multiple cases across OneCGIAR and be comparative in nature, allowing for synthesis across carefully chosen comparative horizons (e.g. types of innovations, political-economic settings, governance settings, agro-ecological settings, development objectives, etc.). The various cases should exchange experiences and be linked in a cross-cutting Scaling Platform at the level of OneCGIAR and/or within the System Transformation Science Group / Action Area.

Synergies

The above mentioned programme should be cross cutting in nature, closely collaborating with the Genetic Innovation and Resilient Agri-Food Systems Science Groups / Action Areas. It is best placed as a prominent Cluster within the System Transformation Science Group / Action Area, from where it can design an overarching research agenda in collaboration with planned "science as a practice" initiatives to foster joint learning, and inspire a systemic approach to scaling and ensure that the 'practice of scaling' in CGIAR can build on state-of-the-art 'science of scaling'.

The Programme or Cluster can integrate and bring together existing networks and collaborations that have affinity with the issue of (responsible) scaling and system transformation, for example those currently embedded in RTB, PIM, MAIZE, CCAFS and A4NH.

The would thus involve several Dutch knowledge partners (e.g. WUR, UT, UU, KIT) and several development NGOs and private sector parties (e.g. SNV, GIZ, East-West Seed, Solynta), and build on exist linkages and projects with several CGIAR Centres, notably CIP, IFPRI, IITA, Alliance, CIMMYT and ILRI.