A U G U S T 2 0 2 0

Science of Scaling

Dr. Marc Schut (m.schut@cgiar.org)

Achieving SDGs requires impact at scale

CGIAR

REACHING MILLIONS: The science of scaling

Special Invitation

Against the backdrop of the World Food Prize 2018, the premier conference in the world on global agriculture, we invite you to join our panel of experts for a conversation on the transformational solutions which are required to deal with today's global challenges.

Date and time: October 17, 2018 from 19:30 to 21:30 PM at Downtown Des Moines Marriott, Dubuque Room

Transformational solutions are required for the complex challenges facing the global food supply. Agricultural research is an essential component to ending hunger, achieving food security, improving nutrition and promoting sustainable agriculture.

We will explore how CGIAR is working with partners to make significant progress in agricultural research and in scaling up innovations to contribute to the Sustainable Development Goals (SDGs). What are the unique challenges and opportunities in the science of scaling to ensure that improved agricultural practices and technologies are adopted by the largest number possible.

Panel of experts:

Opening and moderator: Marco Ferroni, Chair, CGIAR System Management Board

Speakers:

Maria Andrade, 2016 World Food Prize Co-Laureate; Country Manager and Senior Sweepotato Breeder for sub-Saharan Africa and Asia, International Potato Center (CIP)

Neal Gutterson, Chief Technology Officer, Corteva Agriscience

Marc Schut, Senior Scientist and Country Representative for Rwanda, International Institute of Tropical Agriculture (IITA)

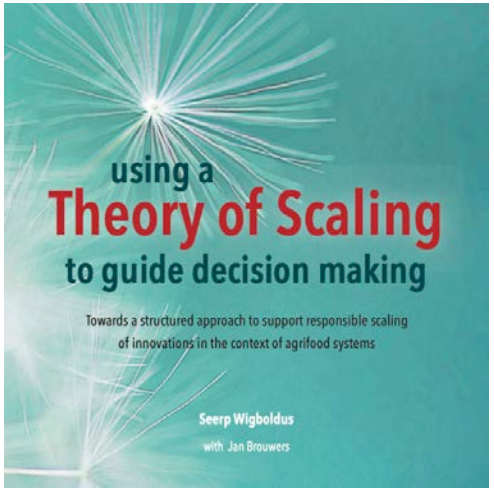
Spaces are limited. Please RSVP to v.pezzi@cgiar.org

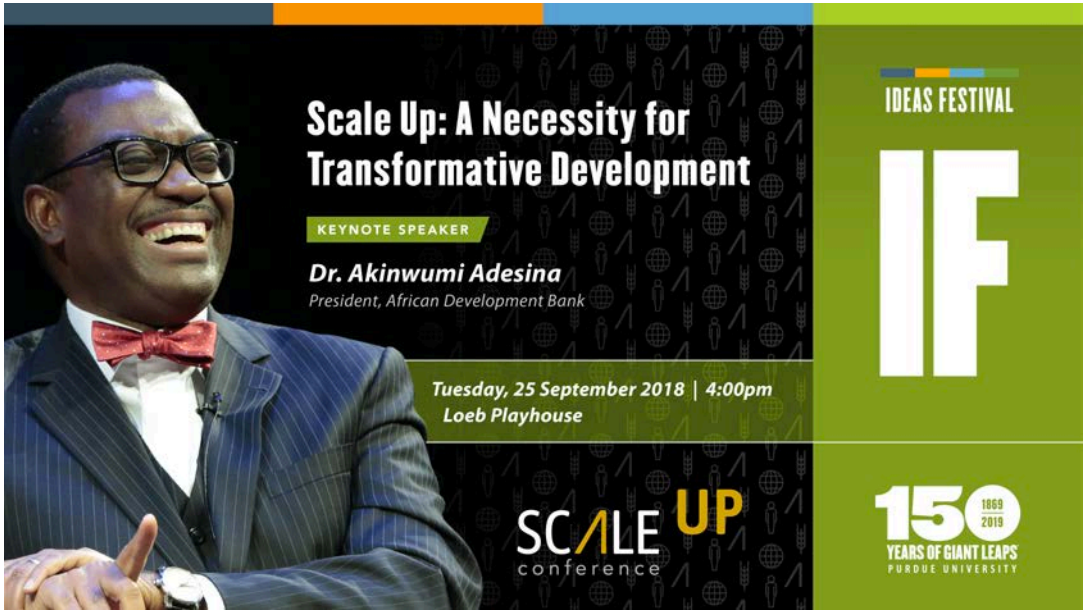
THE WORLD FOOD PRIZE

www.cgiar.org #CGIARatWFP www.worldfoodprize.org

Scaling Up NUTRITION

ENGAGE • INSPIRE • INVEST





Scaling the old way

1. End of project or program
2. No resources allocated
3. Limited insights in the needs of public and private scaling partners
4. Unrealistic ideas about impact (from unproven idea to reaching 2M farmers in 3 years)
5. One size fits all approach in terms of strategies and partnerships
6. No scaling experts involved

Resulting in disappointing results and impacts

Science of Scaling

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Science of Scaling: Understanding and guiding the scaling of innovation for societal outcomes

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ABSTRACT

This Editorial to the Special Issue "Science of Scaling: connecting the pathways of agricultural research and development for improved food, income and nutrition security" presents the framing, overview and analysis of 10 articles focussed on scaling innovation in the agricultural research for development sector. The publications cut across three categories that focus on: (i) Understanding the scaling trajectory retrospectively from a longer term, systems perspective, (ii) Understanding scaling of innovation retrospectively as part of shorter term agricultural research for development interventions, and (iii) Conceptual or methodological approaches aimed at guiding scaling prospectively. Cross-cutting review of the publications leads to several insights and critically questions dominant ways of understanding and guiding scaling of innovation in the agricultural research for development sector. This provides a starting point for proposing more outcome-oriented scaling as a *third wave* of understanding and guiding scaling, beyond technology adoption (*first wave*) and the scaling of innovation (*second wave*). The Editorial proposes three Research Domains for the Science of Scaling: (1) 'Understand the big picture of scaling innovation' that can inform more realistic ideas about the factors, conditions and dynamics that affect innovation and scaling processes; (2) 'Develop instruments that nurture efficient and responsible scaling' that comprises new approaches, concepts and tools that can facilitate the development of evidence-based scaling strategies; and (3) 'Create a conducive environment for scaling innovation' that focusses on the institutional arrangements, partnership models, and monitoring and learning for scaling of innovation.

1. Introduction

Achieving impact at scale is one of the greatest challenges facing the development community (CGIAR, 2015) and the term 'scaling' is increasingly popular in the world of public research for development (Hall and Dijkman, 2019). Scaling usually refers to the adaptation, uptake and use of innovations such as practices, technologies, and market or policy arrangements across broader communities of actors and/or geographies (Eastwood et al., 2017; Glover et al., 2017). In research for development, scaling is usually perceived to be the result of deliberate efforts and interventions that lead to defined societal outcomes such as securing public health, sustaining food availability, living within planetary boundaries, creating jobs and growth, and promoting equality of opportunity. In that sense, scaling is associated with positive change and high target numbers have become an indicator for those funding, implementing, and evaluating research for development to assess the success of projects, policies, programs and other types of interventions. Rising popularity has contributed to the perception that 'scaling' is something one can do and should aspire to when pursuing Sustainable Development Goals (Wigboldus et al., 2016).

In the agricultural sector one of the largest public research for development players is the CGIAR,[1] a global partnership that unites public and private organisations engaged in research for a food secure future (Barrett, 2020). In the agricultural research for development (AR4D) context, there is increasing pressure to demonstrate fast and visible returns on investment and impact at scale (Glover et al., 2016). On the one hand, this pressure has stimulated more critical thinking about how to better link investments in research to development outcomes through theories of change and impact pathways (Douthwaite et al., 2003). On the other hand, it has resulted in sometimes unreasonable and unrealistic expectations about the responsibilities of AR4D organisations

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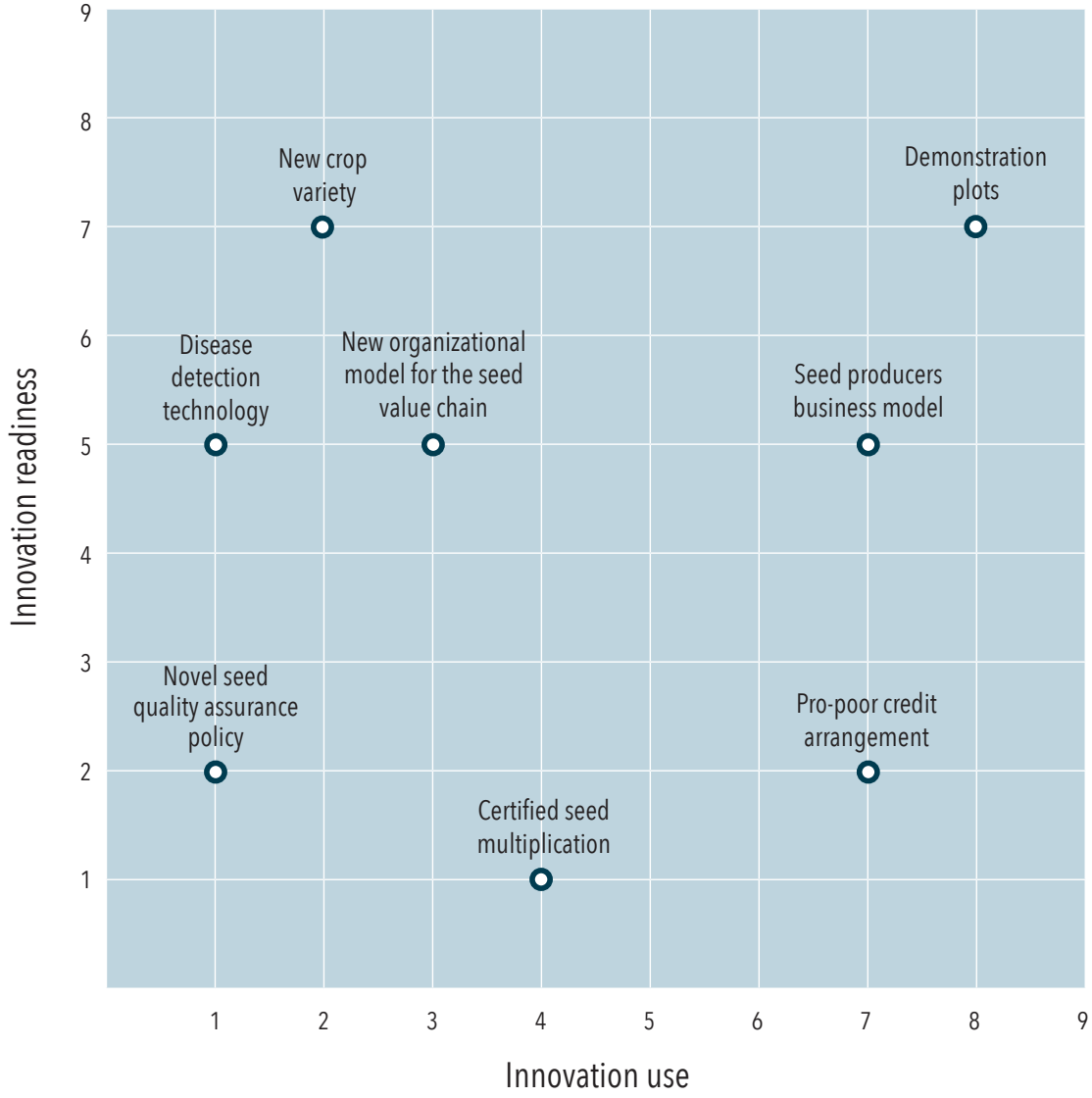
- "The design, testing, validation and use of scientific theories, concepts and methods to understand and guide scaling of innovation to achieve societal outcomes."
- Schut et al., 2020. https://doi.org/10.1016/j.agsy.2020.102908.

Lessons learned from 10 publications

Table 2
Overview of Special Issue publications and their categorisation.

#	Publication	Category
1	Low, J. W. & Thiele, G. (2020). Understanding innovation: The development and scaling of orange-fleshed sweetpotato in major African food systems. *Agricultural Systems*179: 102770.	Understanding the scaling trajectory retrospectively from a longer term, systems perspective
2	Shilomboleni, H., Owaygen, M., De Plaen, R., Manchur, W. & Husak, L. (2019). Scaling up innovations in smallholder agriculture: Lessons from the Canadian international food security research fund. *Agricultural Systems*175: 58–65.	
3	Totin, E., van Mierlo, B. & Klerkx, L. (2020). Scaling practices within agricultural innovation platforms: Between pushing and pulling. *Agricultural Systems*179: 102764.	Understanding scaling of innovation retrospectively as part of shorter term AR4D interventions
4	Seifu, M., van Paassen, A., Klerkx, L. & Leeuwis, C. (2020). Anchoring innovation methodologies to 'go-to-scale'; a framework to guide agricultural Research for Development. *Agricultural Systems*182: 102810.	
5	de Roo, N., Almekinders, C., Leeuwis, C. & Tefera, T. (2019). Scaling modern technology or scaling exclusion? The socio-political dynamics of accessing in malt barley innovation in two highland communities in Southern Ethiopia. *Agricultural Systems*174: 52–62.	
6	Prain, G., Wheatley, C., Odsey, C., Verzola, L., Bertuso, A., Roa, J. & Naziri, D. (2020). Research-development partnerships for scaling complex innovation: Lessons from the Farmer Business School in IFAD-supported loan-grant collaborations in Asia. *Agricultural Systems*182: 102834.	
7	Van Loon, J., Woltering, L., Krupnik, T. J., Baudron, F., Boa, M. & Govaerts, B. (2020). Scaling agricultural mechanization services in smallholder farming systems: Case studies from sub-Saharan Africa, South Asia, and Latin America. *Agricultural Systems*180: 102792.	
8	Woltering, L., Fehlenberg, K., Gerard, B., Ubels, J. & Cooley, L. (2019). Scaling – from "reaching many" to sustainable systems change at scale: A critical shift in mindset. *Agricultural Systems*176: 102652.	Conceptual or methodological approaches aimed at guiding scaling prospectively
9	Sartas, M., Schut, M., Proietti, C., Thiele, G. & Leeuwis, C. (2020). Scaling Readiness: science and practice of an approach to enhance the impact of research for development. *Agricultural Systems*183: 102874.	
10	Hammond, J., Rosenblum, N., Breseman, D., Gorman, L., Manners, R., van Wijk, M. T., Sibomana, M., Remans, R., Vanlauwe, B. & Schut, M. (2020). Towards actionable farm typologies: Scaling adoption of agricultural inputs in Rwanda. *Agricultural Systems*183: 102857.	

L1. Innovations scale as part of packages



- Such packages are context specific
- Such packages consists of technological and non-technological innovations
- Innovations often have different levels of readiness and use

L2. Numbers are only part of the story?

Fetish for numbers creates wrong incentives

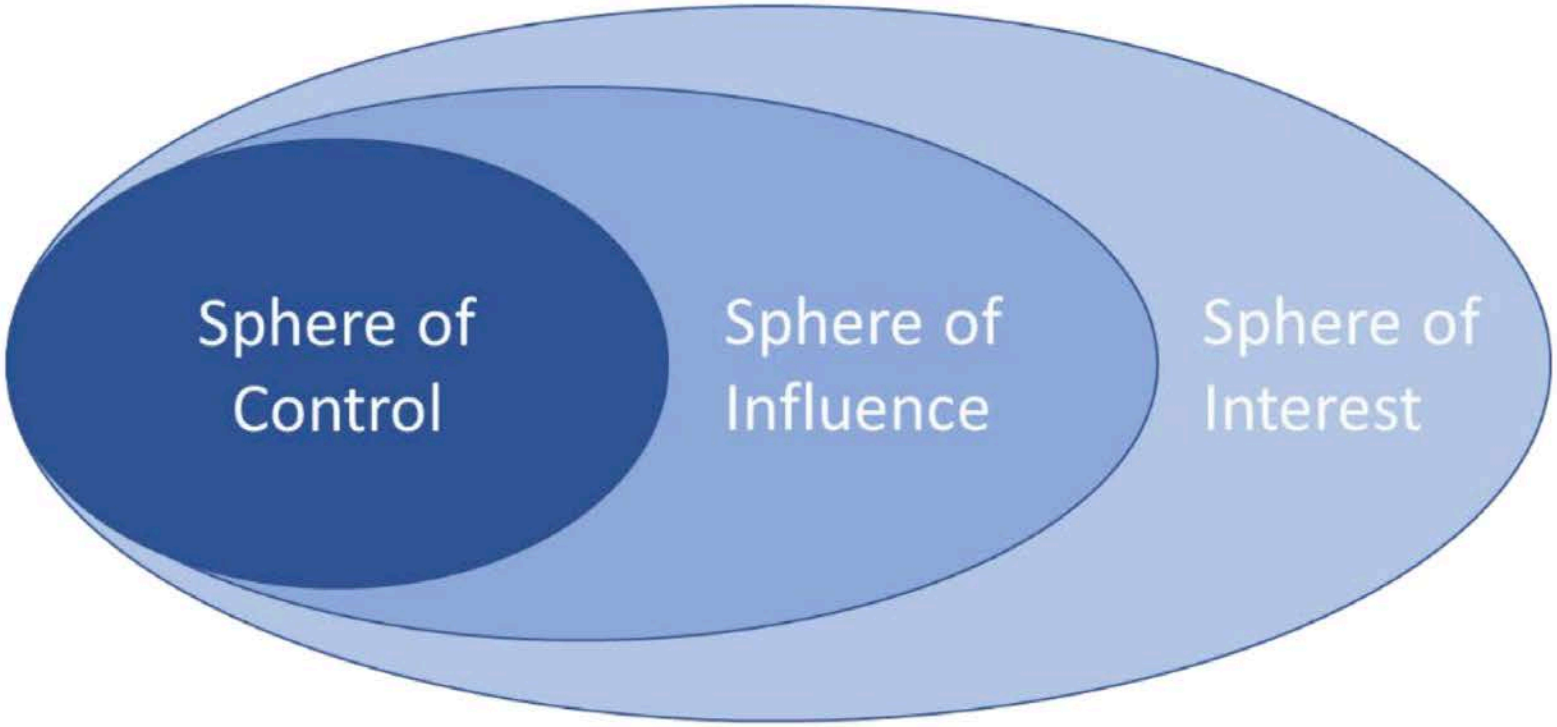
L3. Short projects vs long-term change

- Projects should focus on overcoming bottlenecks that can trigger systemic change and impact at scale
- R4D scaling projects do not need to achieve the numbers if they contribute to overcoming bottlenecks for innovation use by next- or end-users
- Context-specific theory of change focused on increasing scaling readiness of innovations

L4. New competencies and conditions

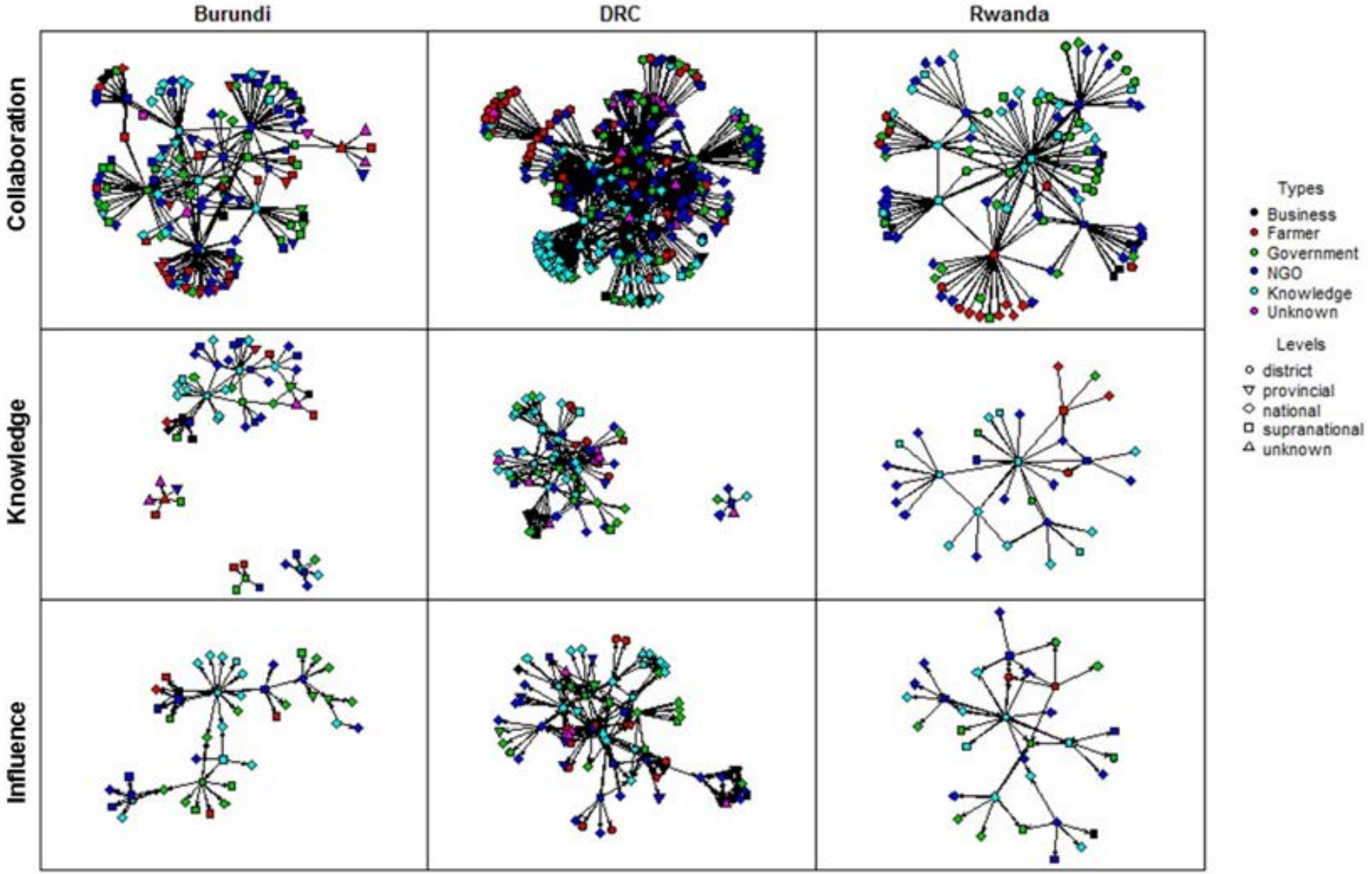
- New competencies required (scaling champions ≠ scientist)
- New institutional arrangements and conditions (e.g. flexibility, truly demand-driven approach)
- New partnership models (co-investment with scaling partners)
- Who's in the driving seat? Role of negotiation.
- Scaling is not neutral, it requires downscaling of current dominant innovations, incumbent systems that have sunk investments
- New forms of MEL to make 'tough' decisions

L5. Letting it go…



- Limited control over (ab)use of innovation at scale
- Implications for responsible scaling

L6. Fit-for-purpose partnerships



Partnerships (models) need to be fit-for-purpose!

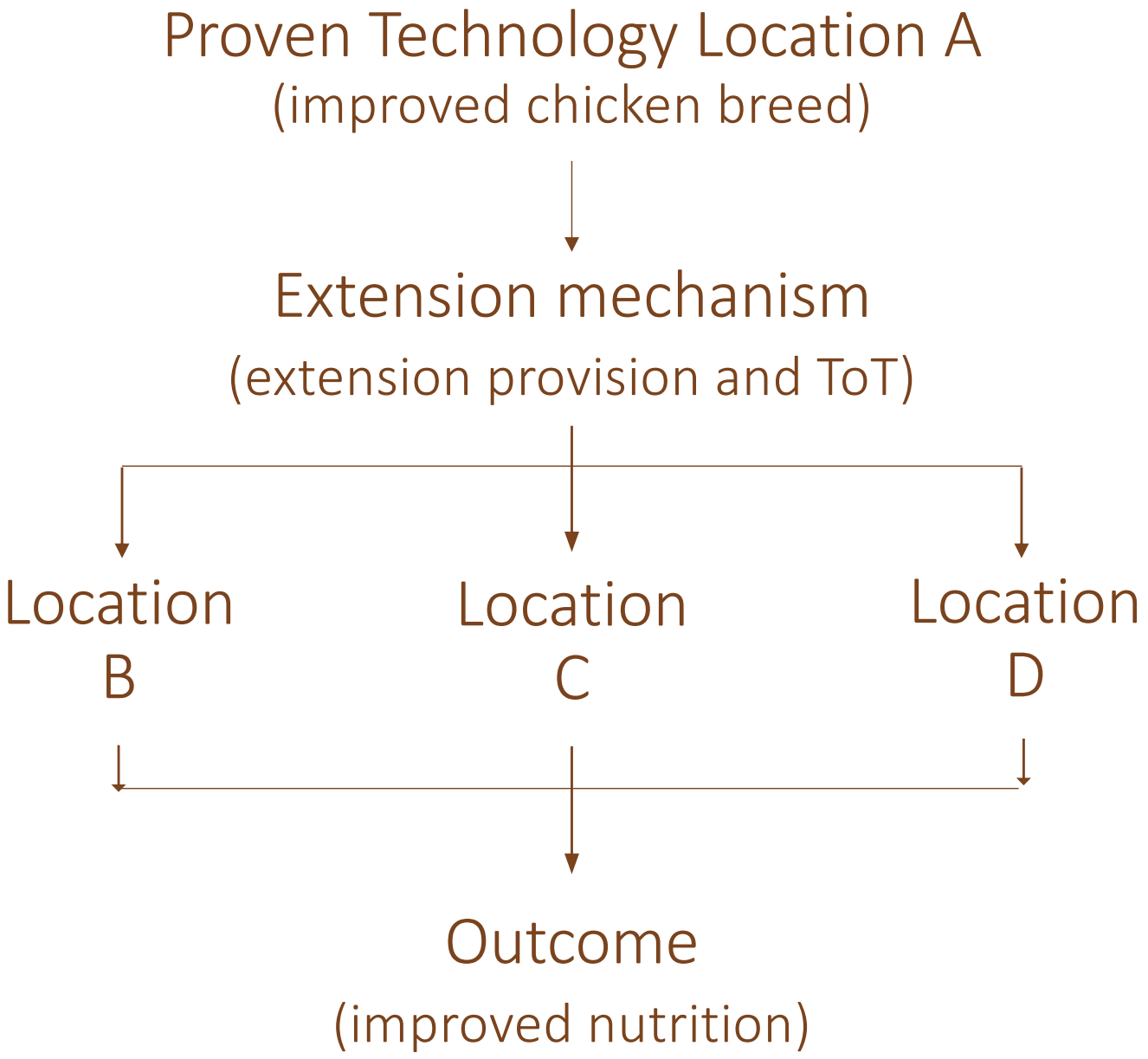
L7. A new paradigm: Scaling outcomes

Wave 1: Transfer of Technologies

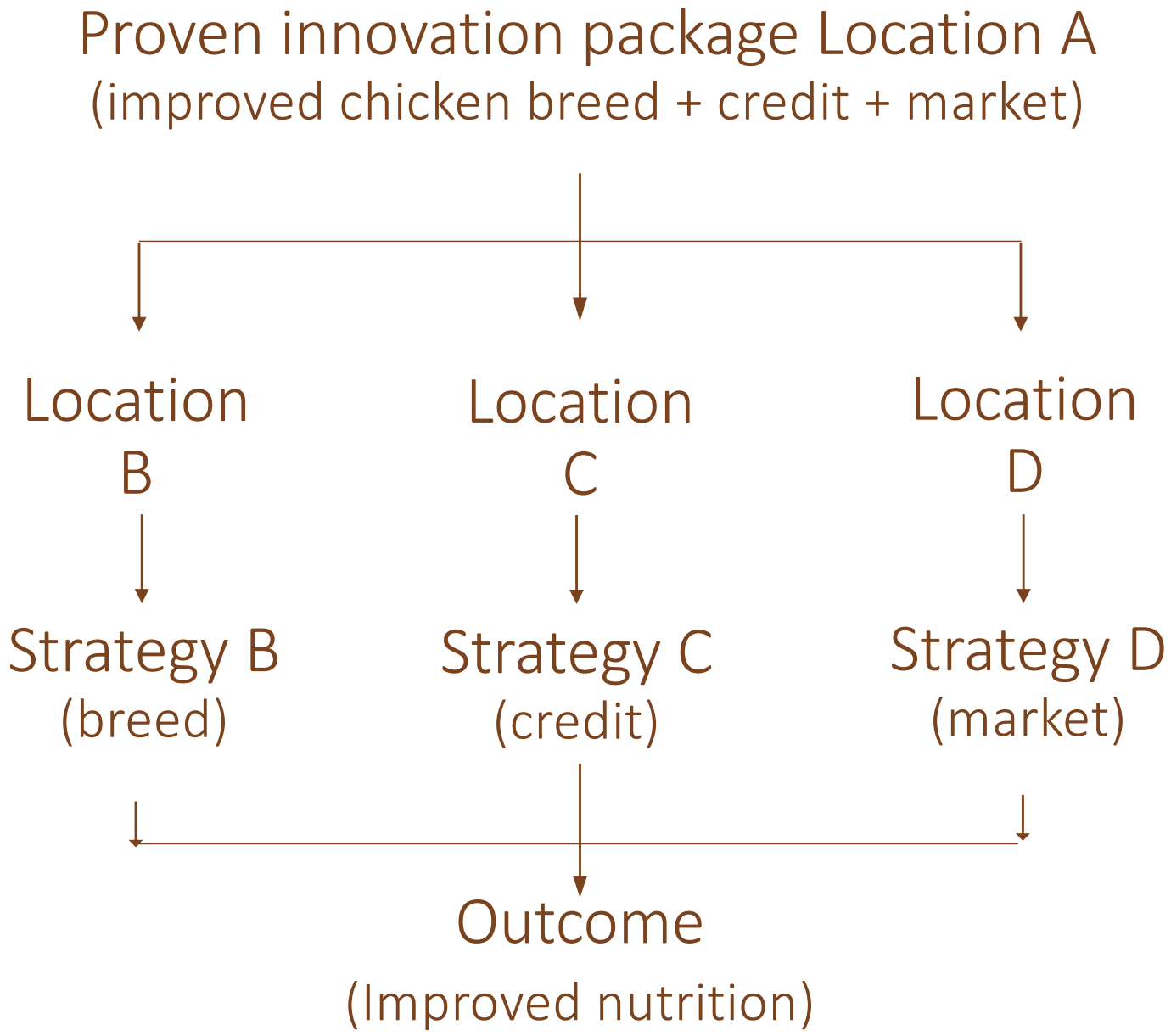
Wave 2: Scaling of Innovations

Wave 3: Scaling Outcomes

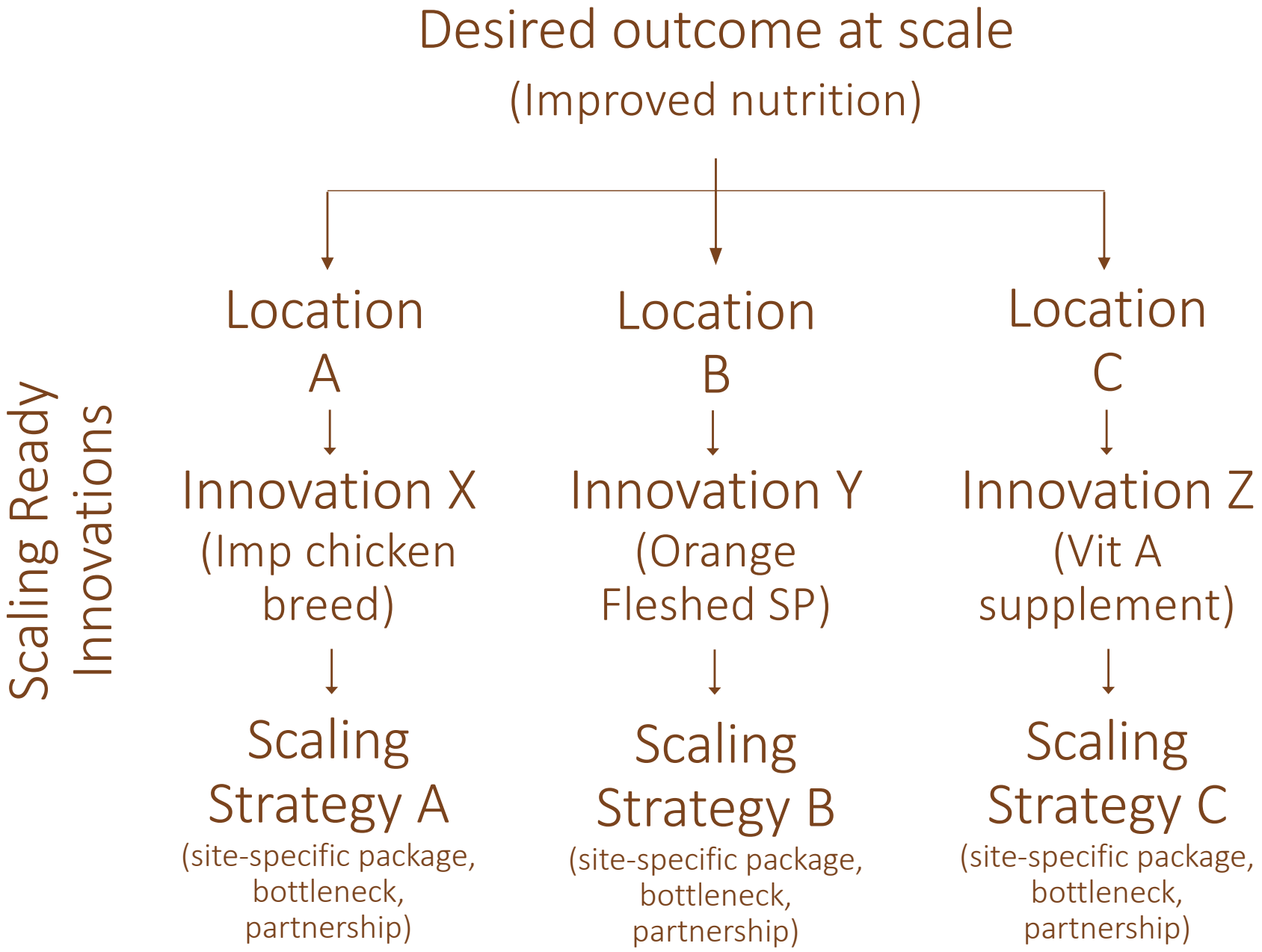
Wave 1: Transfer of Technology



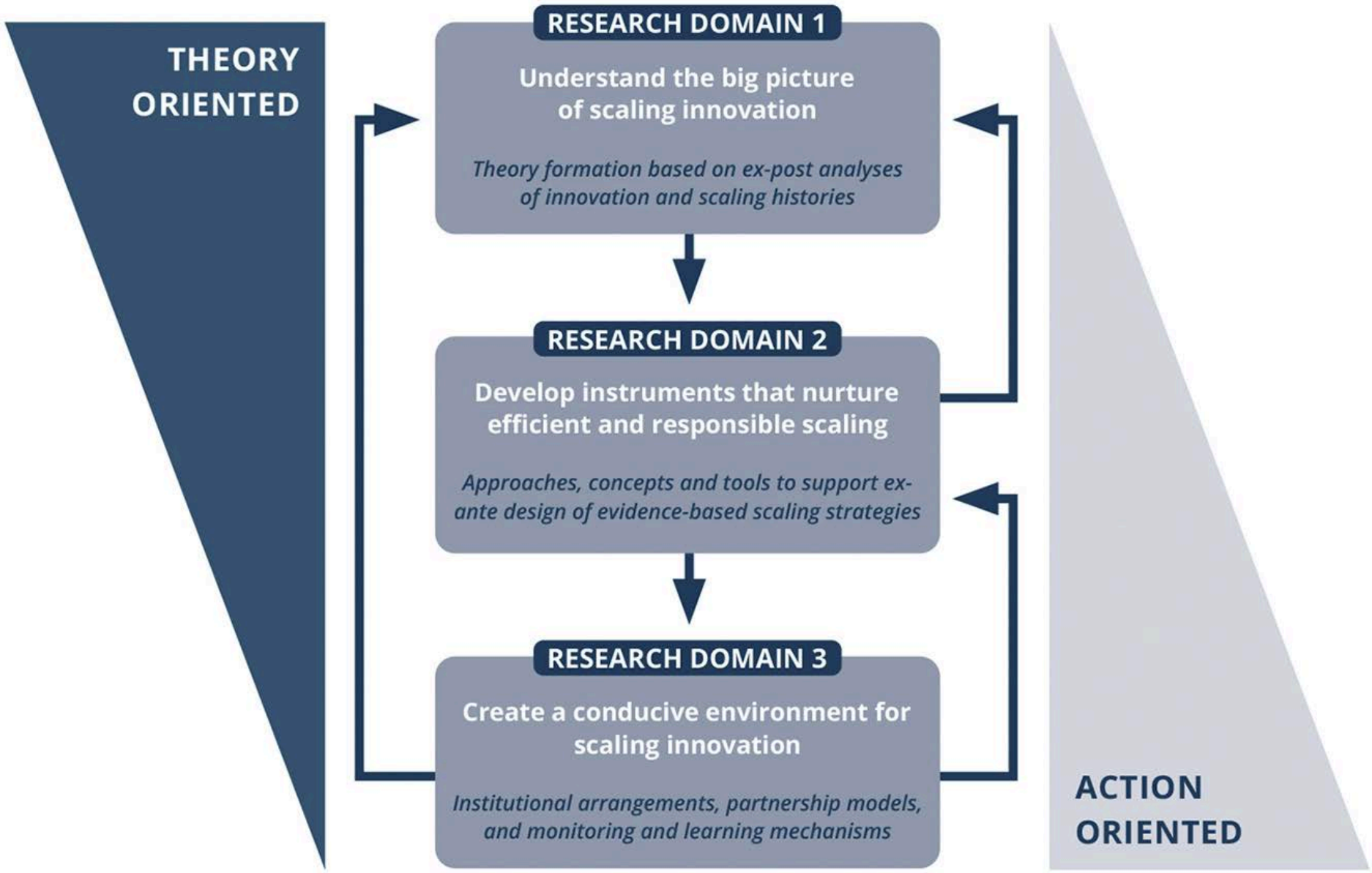
Wave 2: Scaling of innovation



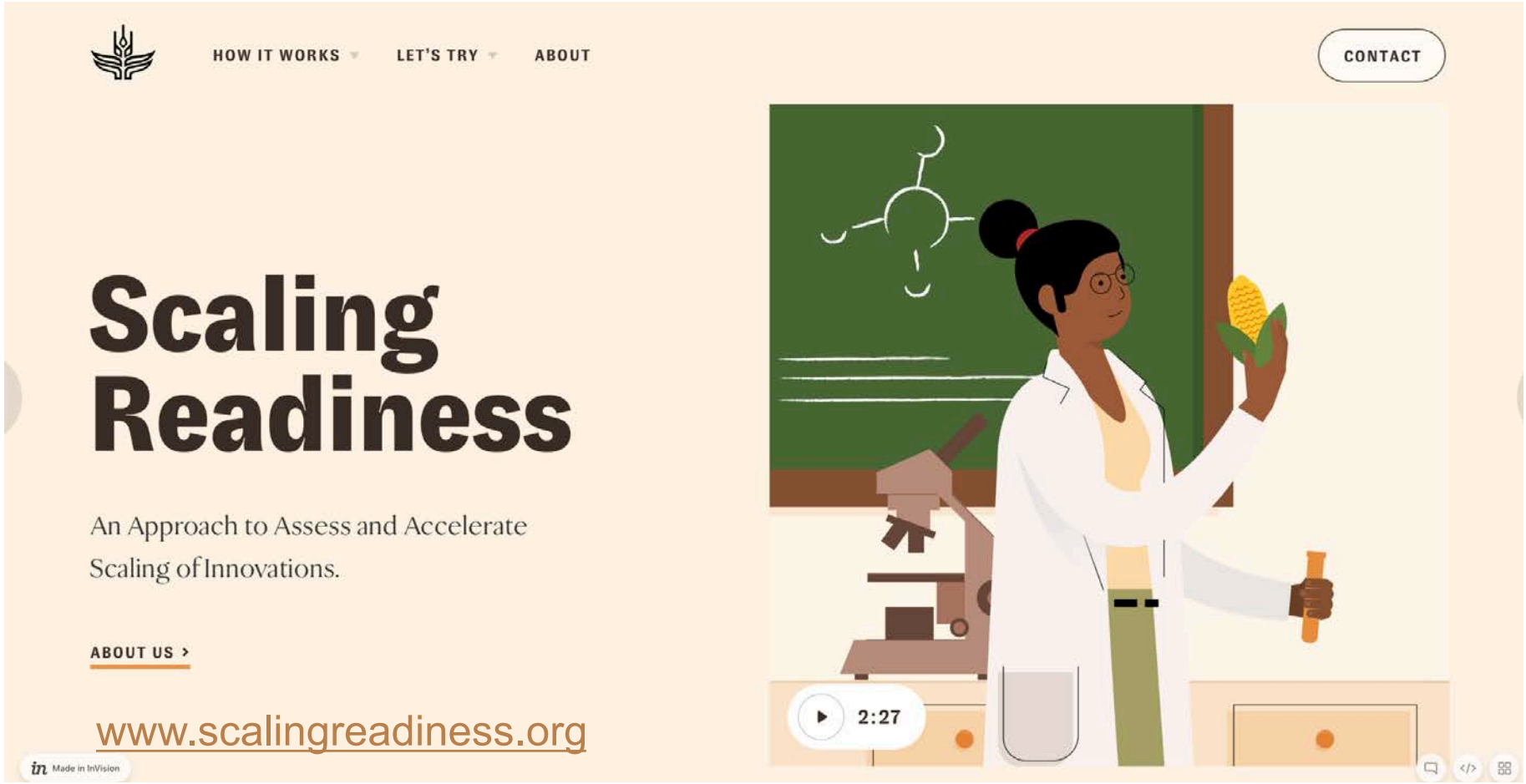
Wave 3: Scaling outcomes



Research agenda for Science of Scaling



Thank you so much!



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