



FEED THE FUTURE

The U.S. Government's Global Hunger & Food Security Initiative

WEBINAR SERIES | FEB 21-MAR 14 2023 | Hosted by Feed The Future Innovation Lab for Horticulture

Innovating and Scaling

for Social Transformation in International Food Systems

Erin McGuire



Lennart Woltering



Anne Rietveld



Jessica Bagdonis



Maria Boa Alvarado



Cees Leeuwis



Nina de Roo





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Innovating and Scaling for Social Transformation in International Food Systems

WEBINAR 1 | FEB 21, 2023



E. McGuire

L. Woltering

Introduction to Scaling and Development in Agriculture

Speakers

Erin McGuire

Lennart Woltering



Innovating and Scaling

for Social Transformation in International Food Systems

Introduction to Scaling and Development in Agriculture

Feb 21



Erin McGuire is the Associate Director of the Feed the Future Innovation Lab for Horticulture. She

specializes in diversifying agricultural innovation pipelines and equity in scaling. Most recently, Erin worked closely with CGIAR and Wageningen University & Research to build GenderUp, a conversational method for responsible scaling.



Lennart Woltering is a Scaling Advisor at the International Maize and Wheat Improvement Center (CIMMYT). His Systems Research supports project teams in formulating scaling ambitions and helps create a realistic picture of what a project can and cannot address.

Social Differentiation in Scaling

Feb 28



Presenting with **Erin McGuire**: **Anne Rietveld** is an Associate Scientist at the Alliance of Bioversity

International and CIAT. She is an interdisciplinary social scientist specializing in gender and social equity, farming systems research, inclusive scaling of agricultural innovations and sustainable agricultural intensification.

Introduction to Innovation Systems

Mar 7



Jessica Bagdonis (PhD) serves as a Human and Institutional Capacity Development Advisor in the Bureau for

Resilience and Food Security's Inclusive Development Division at USAID, focusing on localization and local capacity strengthening.



Maria Boa Alvarado is co-chair of the working group Agriculture and Rural Development in the Scaling Up

Community of Practice. Previously, she acted as a Scaling Coordinator for CIMMYT's global Sustainable Agrifood Systems program and facilitated participatory research processes. Her current Ph.D. research at Cornell focuses on transitions towards climate-resilient and sustainable food systems.

Innovating for Social Transformation

Mar 14



Cees Leeuwis (PhD) is a professor of Collaborative Research, Communication and Change at Wageningen

University & Research. He studies processes of socio-technical innovation, scaling and transformation in networks, and interdisciplinary research for development policy.

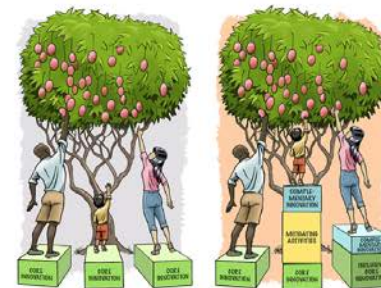


Nina de Roo (PhD) is an Action Researcher and advisor on science-society interaction at

Wageningen University & Research. Her research focuses on inclusive food systems and facilitating dialogue and effective interactions in science-based change processes characterized by complexity and controversy.

For more on this webinar series and how to register visit: tinyurl.com/3ekkb4w7

Hosted by the Feed the Future Innovation Lab for Horticulture horticulture.ucdavis.edu



(above) Illustrated depiction of equality vs. equity.

This Webinar Series is made possible by the generous support of the American people through the United States Agency for International Development (USAID). The contents are the responsibility of the Feed the Future Innovation Lab for Horticulture and do not necessarily reflect the views of USAID or the United States Government.

Goal of the webinar series and class

Webinar Objective

- Discuss current perspectives on scaling and innovation, with an emphasis on addressing social inequality and improving the effectiveness of achieving social objectives.

Class Objective

- Gain knowledge of fundamental concepts and practices related to scaling and innovation systems.
- Establish a conceptual framework and/or methodology to guide researchers in their efforts to innovate for social transformation.

Organization of class and webinar series

Webinar series

- 8:00 – 9:00 AM
Tuesdays
- February 21 – March 14

Class

- 8:00 – 9:00 AM Lecture
- 9:05 – 9:50 AM
Discussion / working
groups
- February 21 – April 11

Diversity statement

While we strive for objectivity in scholarship, much of our learning is influenced by subjectivity and perspectives built from a small subset of voices who are in power. We have many well-known authors on our syllabus, who also will be lecturing, and we will continue to add to the diversity of perspectives as the course evolves. As participants, we encourage you to critically analyze the positions presented by each author and pay attention to what is omitted and who is excluded or missing from the conversation.

To provide suggestions of authors / lecturers:
please submit to ejmcguire@ucdavis.edu

Introduction – My Positionality

"I think one of geography's greatest strengths-- one of its greatest pleasures-- as a discipline, is the way that it gathers together very different talents and skills, and puts them to work together in the task of understanding the world we all share."

-- Professor Gillian Rose

Work with WUR and CGIAR

- Developed GenderUp with WUR and CGIAR.



Horticulture Innovation Lab, UC Davis

- Associate Director
- Locally-led, Globally Supported
- Bio-physical and social science research related to fruits and vegetables.

Areas of interest

- Place-based power relations in international agriculture development. Decentralizing power.
- Inclusion and empowerment in innovation systems, knowledge systems, information pathways
- Social relations within and access to fruits and vegetables

Introducing Lennart Woltering

- Lennart Woltering is helping colleagues achieve more and lasting impact with their work. By finding practical applications for complex theories on scaling, he has been able to support project teams in formulating scaling ambitions, help provide clarity on what an “enabling environment” for an innovation means, and create a realistic picture of what a project can and cannot address and where strategic collaboration is required to exert influence.
- Prior to joining CIMMYT, Woltering worked for ICRISAT in Niger (2005-2010) on local adaptation of innovations. From 2010-2016 he worked for a management consulting firm designing, implementing and backstopping projects for international donors.

Agenda

- **Setting the stage**
 - SDGs
 - Importance of small-scale farming
- **Important concepts in scaling and innovation**
 - Responsible Research and Innovation
 - Gender Responsive Research
 - Science of Scaling
- **Scaling and systems transformation, contextualized**
- Who is benefiting, what is missing?

Let's Begin: Sustainable Development Goals

1

Goal 1

End poverty in all its forms everywhere.

7

Targets

37

Publications

55

Events

1177

Actions

[More info](#)

5

Goal 5

Achieve gender equality and empower all women and girls.

9

Targets

34

Publications

34

Events

1287

Actions

[More info](#)

10

Goal 10

Reduce inequality within and among countries.

10

Targets

11

Publications

36

Events

776

Actions

[More info](#)

Small-scale farming

The UN estimates that small-scale farmers produce over 70% of the world's food.

The FAO estimates that there are around 500 million small-scale farms worldwide, most of which are in Africa, South Asia, and Central and Latin America.

In sub-Saharan Africa, small-scale farmers account for around 90% of all farms and produce up to 80% of the region's food.

Despite their important contribution to global food security, small-scale farmers often face numerous challenges, including limited access to resources, markets, and technology.

Women in farming

- Women represent approximately 43% of the agricultural labor force in developing countries. (FAO)
- In Sub-Saharan Africa, women represent about 50% of the agricultural labor force and produce up to 80% of the food crops. (UN)



Women in farming

- Women in developing countries own less than 20% of the land, and in some countries, they are legally prohibited from owning or inheriting land. (International Food Policy Research Institute)
- Only 10-20% of agricultural extension services are specifically designed to reach women farmers. (World Bank)
- Women-led farms tend to have lower yields and productivity due to these structural barriers. (FAO)

The literature path to responsible and effective scaling

Responsible Research and Innovation (RRI)

- Making upstream techno science more inclusive, reflexive, responsive and anticipatory
- Preventing undesirable consequences
- Contribute to positive societal impact

Gender responsive research

- Responds to the needs of men and women, and other socially marginalized groups with the aim to reduce rather than exacerbate any existing gender disparities.
- Informed through gender analysis
- Considers innovation for social transformation

Science of Scaling

- Scaling pathways, Systems thinking, Transformation



Responsible + effective scaling

- Focus on user and non-users from a socially inclusive perspective. Considers who will benefit or not from an innovation.
- Acknowledges that innovation influences gender relations and dynamics - and vice versa
- Anticipates socially differentiated effects of scaling through identifying relevant diversity
- Anticipates longer term negative consequences and trade-offs associated with scaling

Responsible Research and Innovation

- Promotes socially desirable, inclusive, and sustainable science and innovation.
- Engages diverse stakeholders throughout the research process.
- Prioritizes ethical and integrity-driven research, with a focus on creating inclusive and sustainable outcomes.
- Emerged as a response to critiques of the traditional science and innovation model that prioritized commercial interests.

Example – Precision agriculture technologies



Responsible Research and Innovation



- RRI is now a key component of science policy worldwide, integrated into funding and evaluation processes.
 - Implementing RRI is challenging despite widespread agreement on its importance.
- RRI discussions now focus on integrating it into global governance and emerging technologies such as AI and biotech.

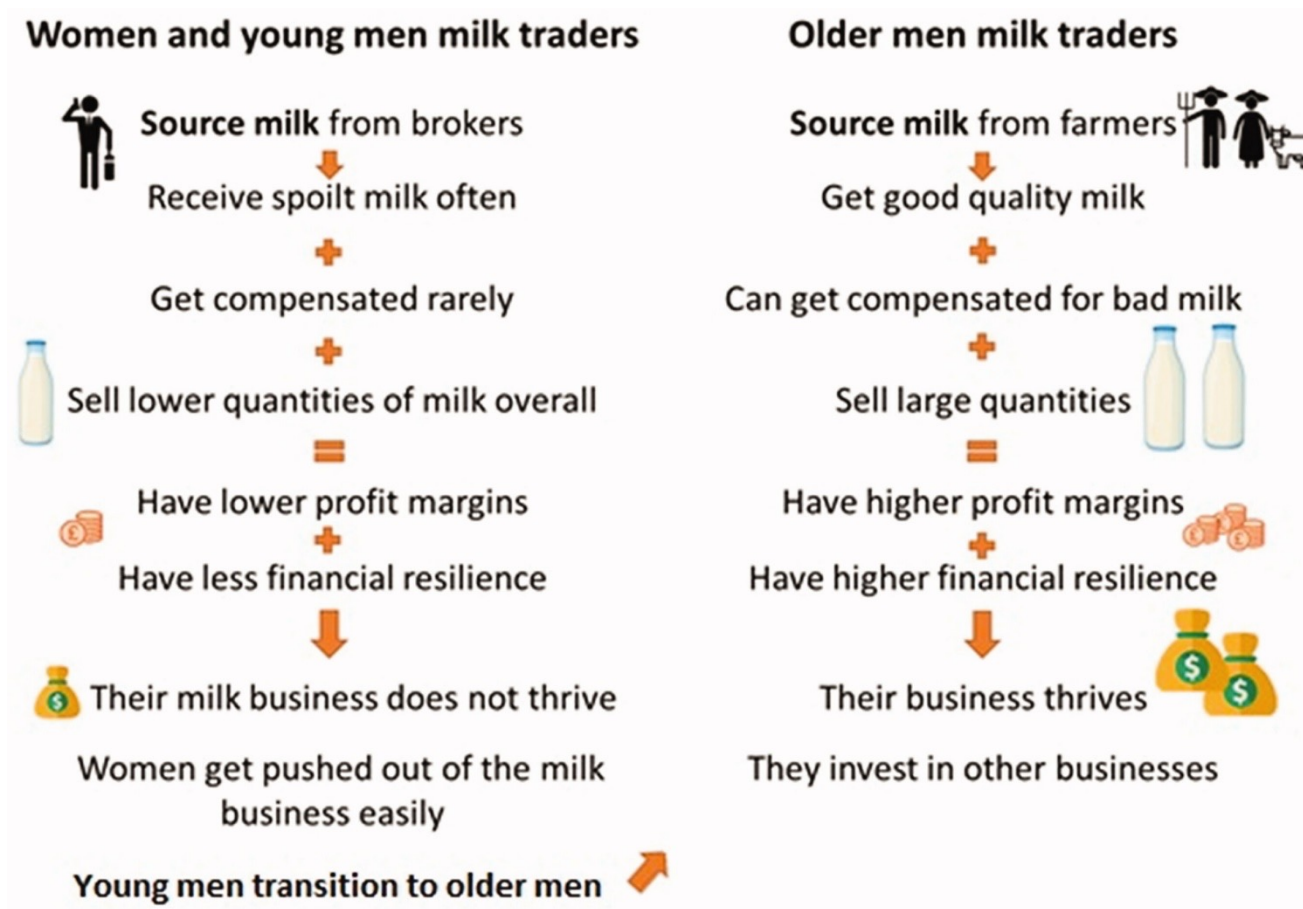
Responsible Research and Innovation Literature

- von Schomberg, R. (2013). A vision of responsible innovation. In R. Owen, J. Bessant, & M. Heintz (Eds.), *Responsible innovation: Managing the responsible emergence of science and innovation in society* (pp. 51-74). John Wiley & Sons.
- Stilgoe, J., Owen, R., & Macnaghten, P. (2013). Developing a framework for responsible innovation. *Research Policy*, 42(9), 1568-1580.
- European Commission. (2015). *Responsible research and innovation: Europe's ability to respond to societal challenges*. Publications Office of the European Union.
- Fisher, E., Mahajan, R. L., & Mitcham, C. (Eds.). (2006). *Midstream modulation of technology: Governance, robustness, and innovation*. Springer.
- Forsberg, E. M., & Hasselqvist, H. (2015). Responsible research and innovation: A manifesto for empirical research. *Journal of Responsible Innovation*, 2(2), 168-181.

Gender responsive research

- Gender Responsive Research (GRR) is an approach that recognizes that gender biases can affect research outcomes and that addressing these biases can lead to better and more equitable research.
- GRR involves considering gender and other social factors at every stage of the research process, including design, data collection, analysis, and dissemination.
- One key goal of GRR is to generate research that is relevant and applicable to all genders, not just the dominant gender or a subset of genders.
- GRR aims to ensure that research is conducted ethically and with sensitivity to power imbalances that may arise due to gender and other social factors.

Example – Kenya’s informal dairy sector



Galiè, Alessandra, et al. "Gendered barriers and opportunities in Kenya's informal dairy sector: enhancing gender-equity in urban markets." *Gender, Technology and Development*, vol. 26, no. 2, 2022, pp. 214-237. doi: 10.1080/09718524.2022.2084491.

Gender responsive research



Woman farmer in Mali: <https://www.voanews.com/a/women-farmers-in-africa-call-for-more-support/1812911.html>

- GRR includes diverse and inclusive research teams to represent gender minorities.
- GRR leads to more accurate research outcomes and equitable benefits for all genders.
- Implementing GRR is challenging due to cultural changes and resistance to addressing gender biases.

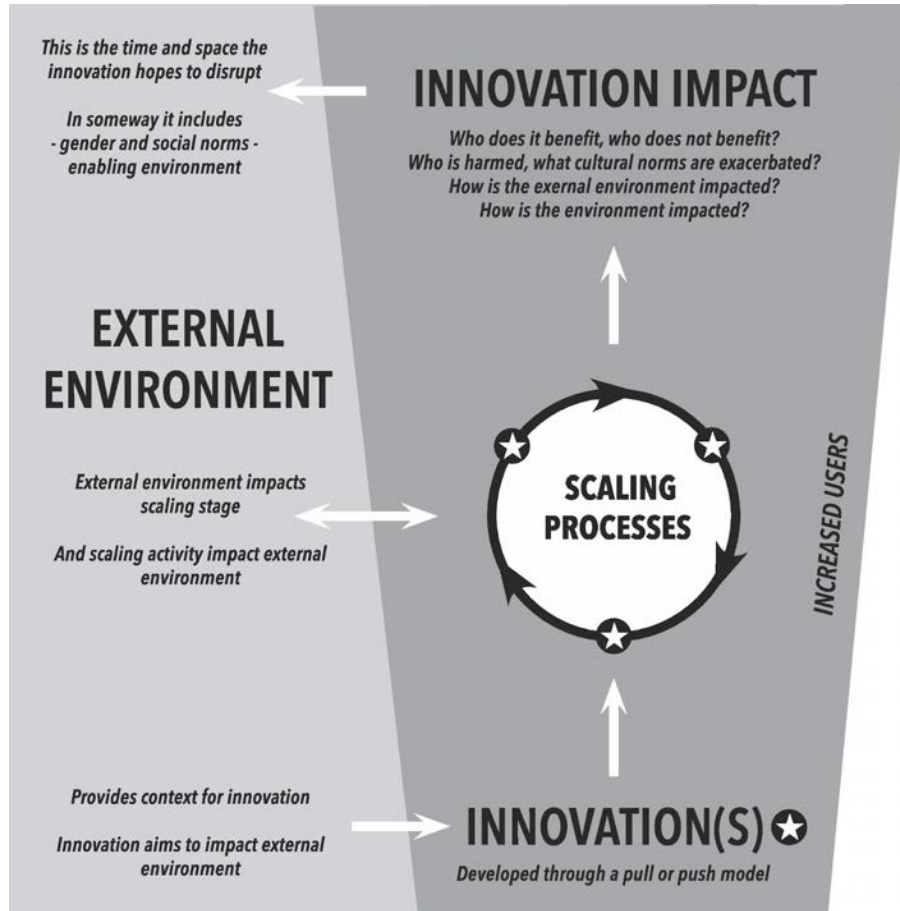
Gender responsive research

- Klerkx, L., Adu-Acheampong, R., Tricault, Y., Affognon, H. D., & Asiedu, R. (2021). Gender-responsive research for agricultural development: A review of approaches and applications. *International Journal of Agricultural Sustainability*, 19(3), 219-236.
- Flora, C. B., & Flora, J. L. (2019). Gender-responsive research and development: A critical review of literature and development of a gender-responsiveness framework. *Agriculture and Human Values*, 36(1), 15-33.
- Rottgers, D., Birner, R., & Davis, K. (2018). How to promote gender-responsive agricultural research and development: Lessons from five case studies. *Development in Practice*, 28(5), 620-631.
- Koningstein, M., & Wiegiersma, N. (2018). Designing gender-responsive agri-food research: A practical guide. CGIAR Research Program on Policies, Institutions, and Markets.
- Kabeer, N. (2016). Gender equality, economic growth, and women's agency: The “endless variety” and “monotonous similarity” of patriarchal constraints. *Feminist Economics*, 22(1), 295-321.
- Gendered Innovations project. (n.d.). Retrieved from <https://genderedinnovations.stanford.edu/>

Science of Scaling

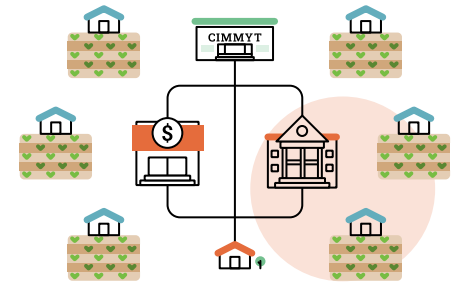
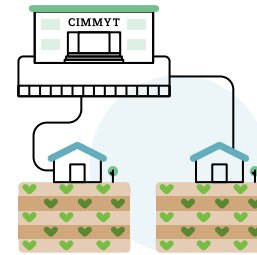
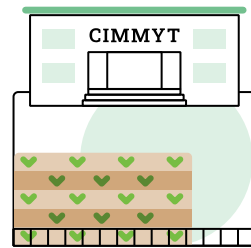
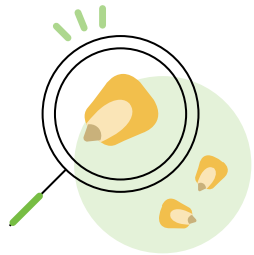
- Scaling pathways
- Contextualization
- Sustainability
- Monitoring and evaluation
- Partnership and collaboration
- Innovation diffusion
- Systems thinking
- Innovation bundling

Why scale?



- Scaling (up and out) – Increasing users
- Purpose: Expanding and deepening impact, and thereby contributing to a development outcome

Scaling: More of a good thing



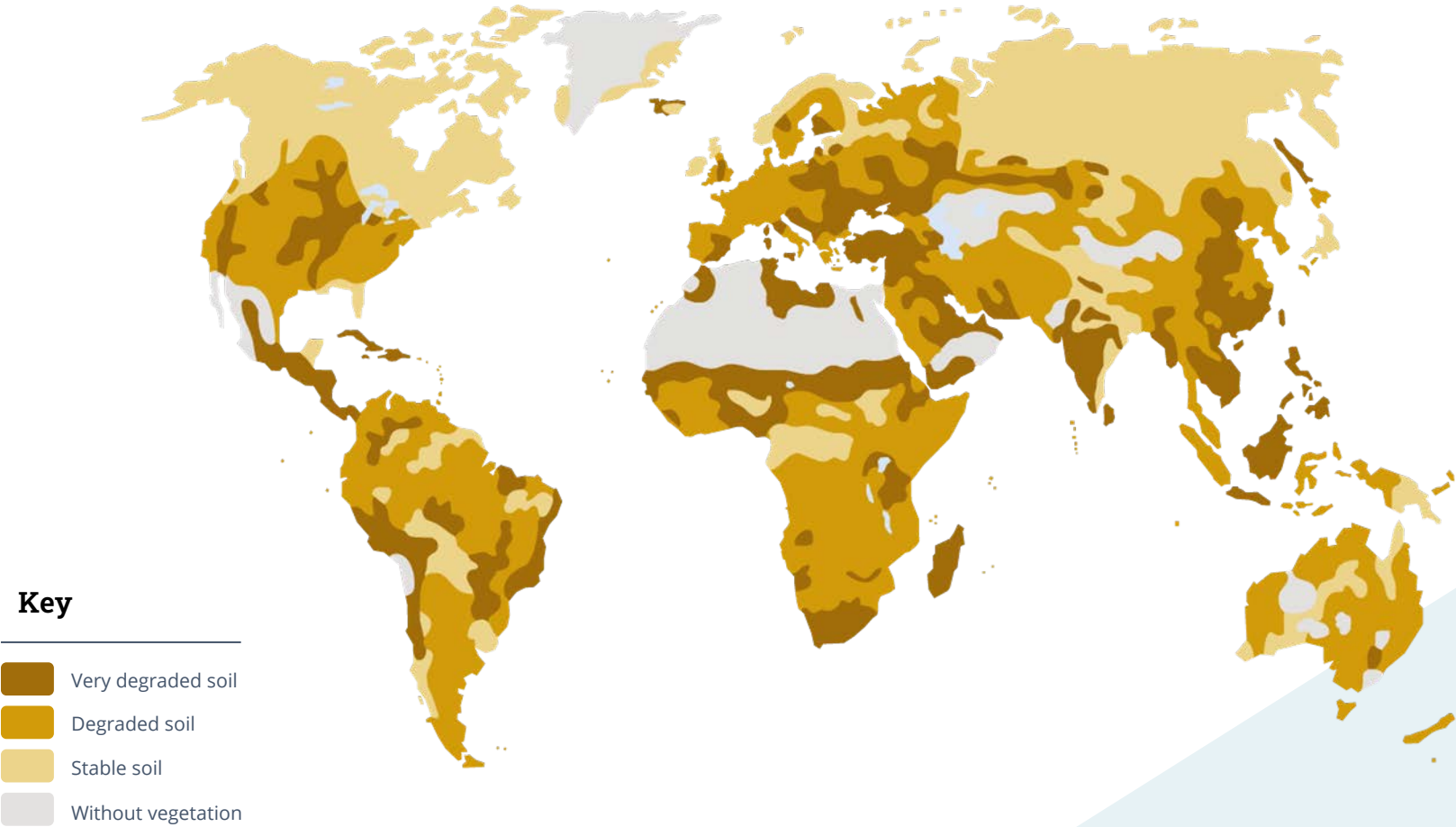
Discovery

Proof of
concept

Piloting

Scaling

Big Problem:



Response:

- Project to scale proven technologies
- Measure of success = “more adoption during the project”

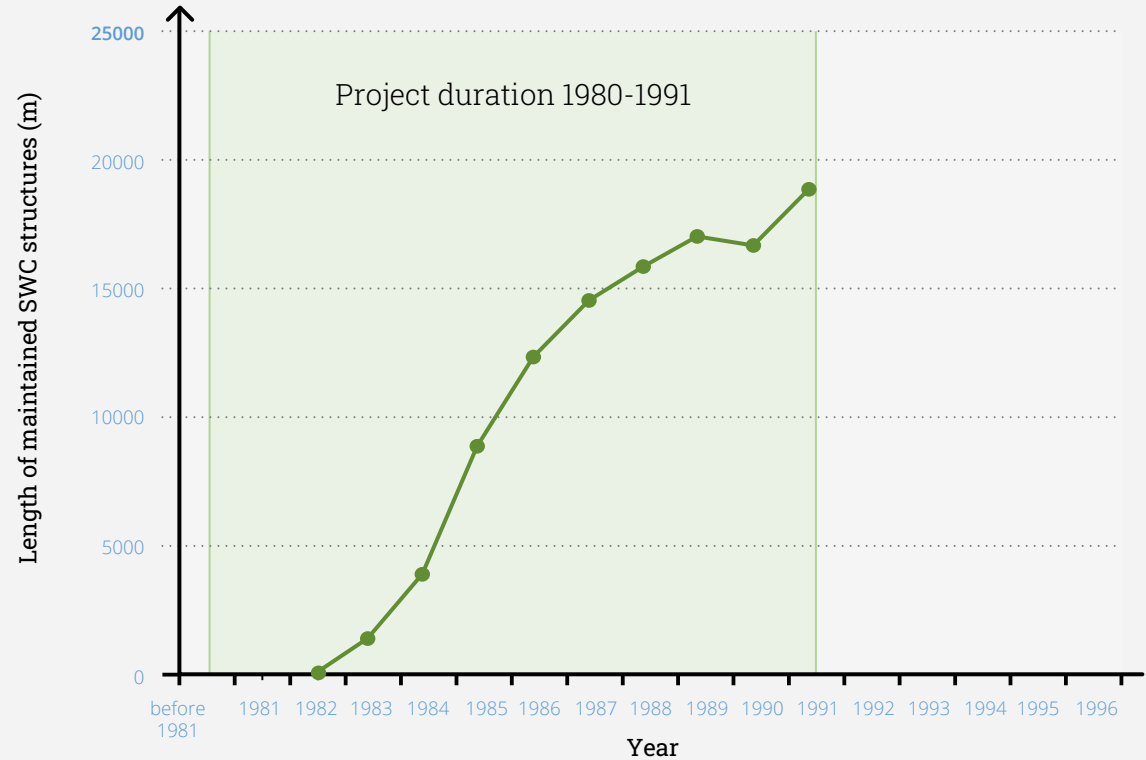
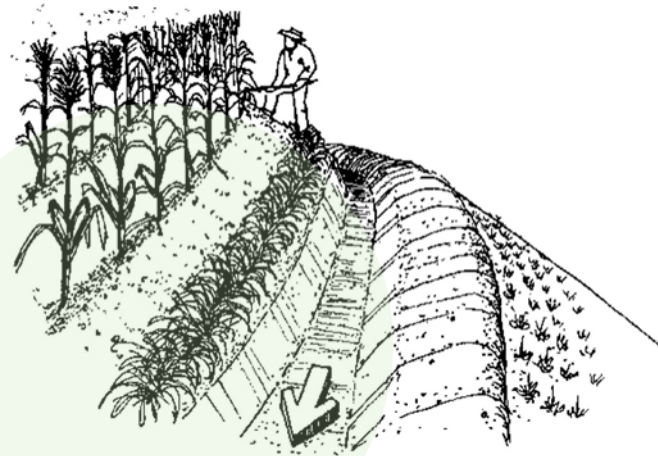


Fig 2. Adoption and abandonment of structural SWC technologies in La Paz, Honduras. Project duration 1980-1991. Direct incentives provided 1984-1991. Number of farms -147.

—● Infiltration ditches

But...

A large majority of projects:

- do not scale up to make a wider impact,
- fade out after initial funding ends.

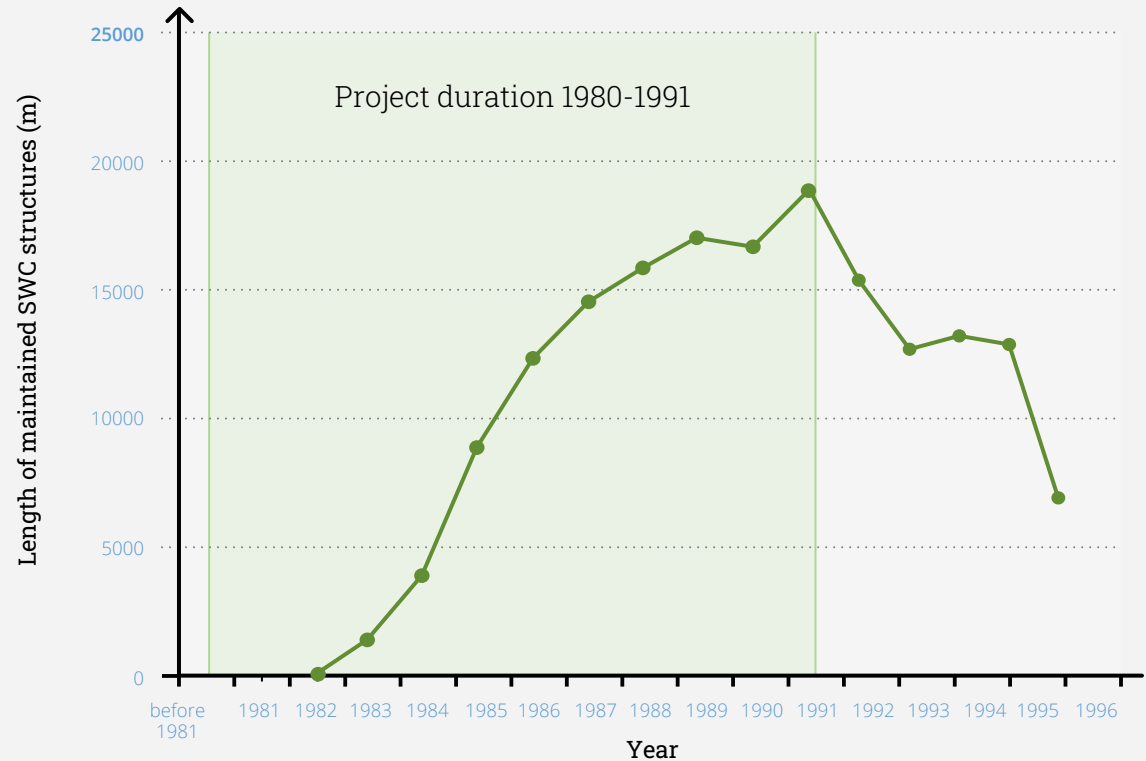
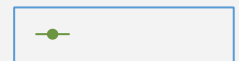
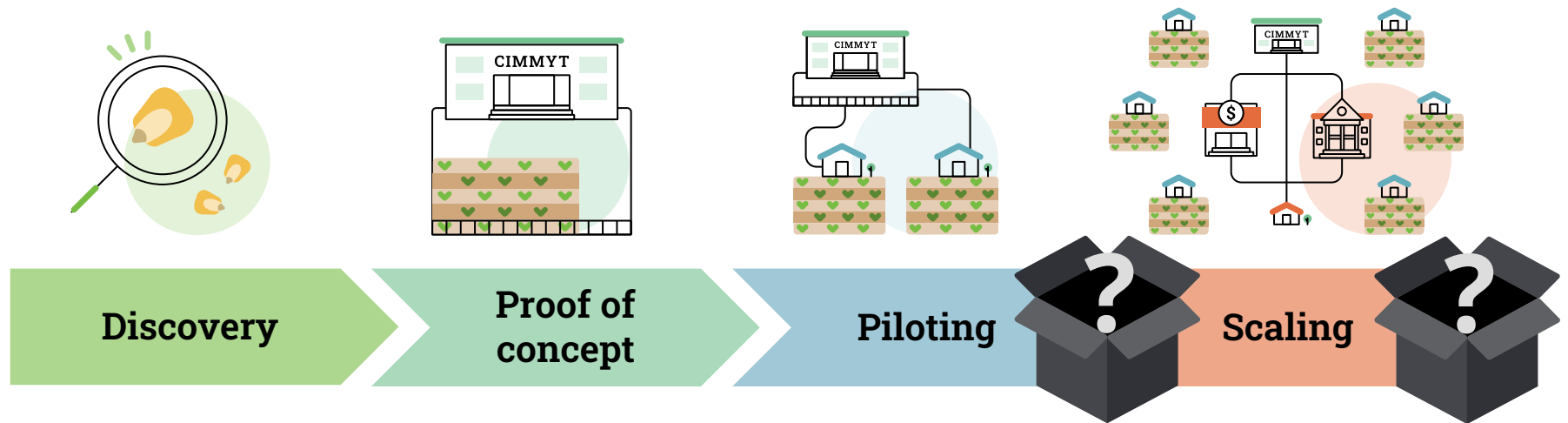


Fig 2. Adoption and abandonment of structural SWC technologies in La Paz, Honduras. Project duration 1980-1991. Direct incentives provided 1984-1991. Number of farms -147.



Infiltration ditches

Scaling: More than just more?



Box 1: “Pilots never fail, pilots never scale”

Box 2: Successful projects \neq sustainable change at scale

Pilot context → real world at scale



We learned a lot!

- Successful pilots are no guarantee for success at scale
- Adoption vs Scaling
- Multiple innovations
- Skills and capacities



ScienceDirect

Journals & Books



Science of scaling: connecting the pathways of agricultural research and development for improved food, income and nutrition security

Pilots vs. real conditions

Most of our projects operate in controlled environments

- **Strong leadership**, often managed by **external experts**, in **parallel to local systems**
- Heavy support for “**partnerships**” and **value chain actors**
- Expensive and intensive **capacity strengthening**
- Relying on **unsustainable grants** over a **fixed start and end date**

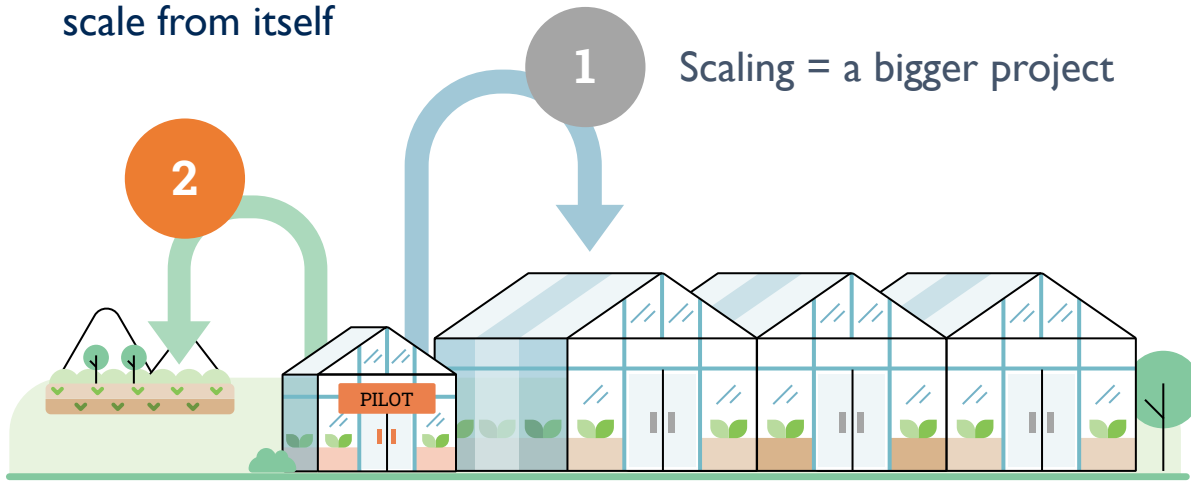


Shielded from
politics, markets,
etc.



Two common scaling strategies

Our innovation is so good, it will scale from itself



Key learning

A successful pilot is no guarantee for success at scale.

Extrapolating what happens in the pilot to the real world won't work

Context is King

The more we **create an environment** where an innovation can work, the more **we fool ourselves** that it can work at scale as well

**SUSTAINABLE SYSTEMS
CHANGE AT SCALE:**

Not “**scaling up**” but getting “**down to earth**”











Image above from:

<https://nextbillion.net/global-development-needs-realistic-approach-to-scale/>

Not just one innovation...

Electric vehicles



-  Technological innovation (battery strength/ life)
-  Infrastructural innovation (charging stations)
-  Market innovation (promotions, incentives)
-  Policy innovation (subsidies for clean vehicles)
-  Value chain innovation (availability of spare parts)
-  Design innovation (electric cars are 'cool' and sexy)
-  Educational innovation (training of new mechanics)
-  Political innovation ('manage' fossil fuel lobby?)

(based on Marc Schut (IITA), 2017)

... All these innovations need to scale in parallel... takes time and resources...

Scaling requires different roles and skills

- Multi disciplinary and multi actor
- Different phases
- “Do what you do best, partner for the rest”
- Coordination and leadership
- Intermediary functions (investment packaging, fundraising, advocacy, change management, impact evaluation, etc)



The Scaling Scan

A practical tool to determine the strengths and weaknesses of your scaling ambition



Learning objectives



Scale in Context



Core and supporting innovations



Role and Collaboration

User friendly, rapid, accesible
www.ScalingScan.org

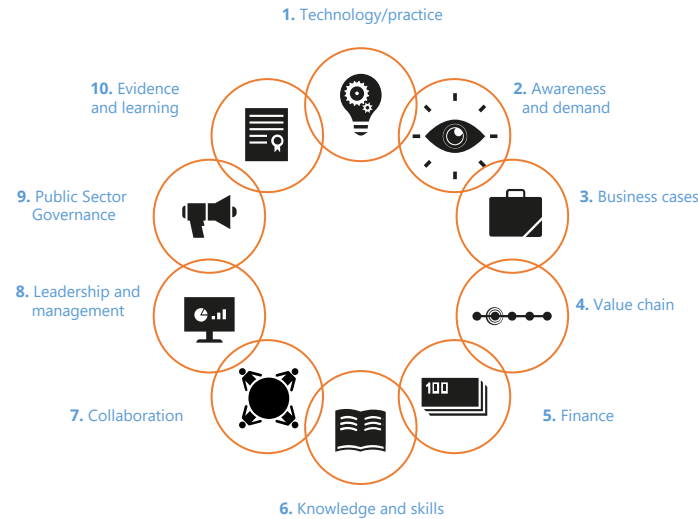
The Scaling Scan



Innovation

X

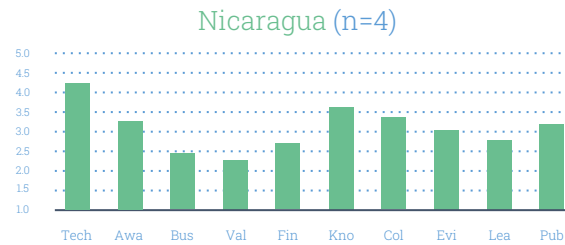
Context



Break it down into systems we can :

- Control
- Influence
- Interest

Rapid assessment of what else needs to scale



Adapted from Sartas et al., 2017

1

Define a scaling ambition

2

Assess the 10 scaling ingredients

3

Identify bottlenecks and opportunities

Implications for projects

- Pilot as much in the “real world conditions”
- Pilot the scaling of supporting innovations in finance, collaboration, etc.
- From the beginning: design for scaling and involve the “scalers”





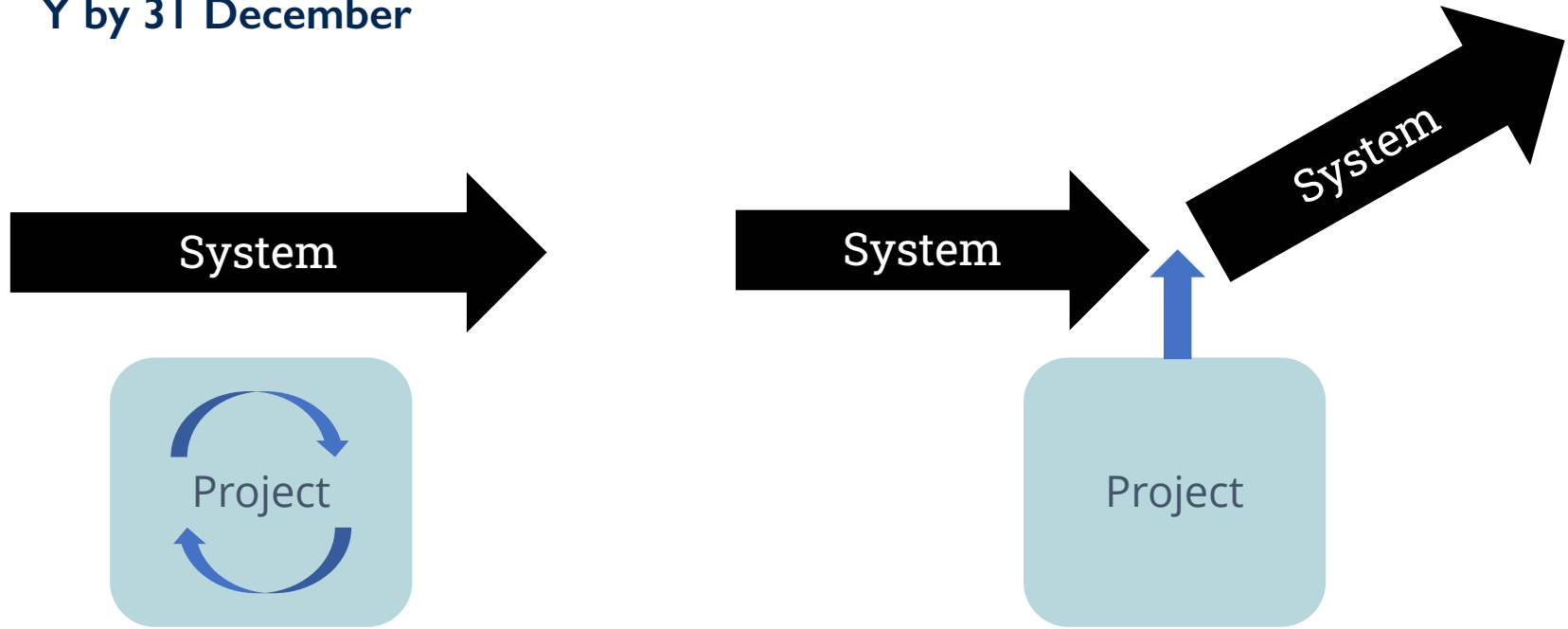
Lots of “successful” projects ≠ sustainable change at scale

- Scaling initiatives have led largely to islands of very local short-lived success that do not lead to lasting change



Changes in the project:
x direct beneficiaries adopt
Y by 31 December

Project that changes the system



Adapted from L.Cooley

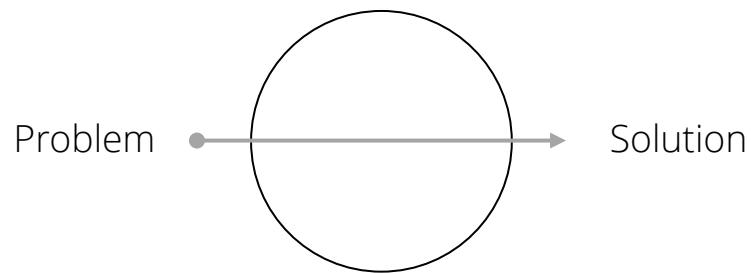
Systems approach to scaling

- **WHY scaling?? → GOOD CHANGE**
- **Systems change aims to bring about lasting change by altering underlying structures and supporting mechanisms (e.g. policies, routines, relationships, resources, power structures and values) which make the system operate in a particular way (Foster-Fishman, P. (2002))**

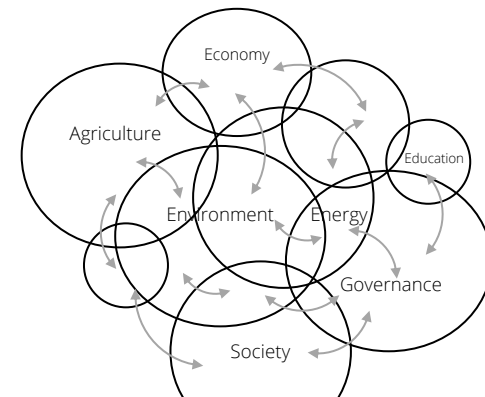
Systems approach to scaling

- Avoid treating wicked problems as tame problems

Tame Problems



Wicked Problems



Systems approach to scaling

- Recognize that “the problem” we perceive is a result of a system working perfectly well
- The System (the interplay of history, culture, behaviours, structures, etc) perpetuates land degradation (soil is lost 100x faster than it forms in some locations)
(<https://www.nature.com/articles/474151a>)



Example Land Restoration in Central America

Land Degradation



Underinvestment in R&D

Insecure land tenure

Policies give away control over nat resources

Exploitation

Economic inequality

EVENTS

What just happened?

PATTERNS

What has been happening over time?

STRUCTURE

What policies, laws, physical structure
influence the patterns?

MENTAL MODEL

What are the mindsets, values and
assumptions?

NOTE: Adapted from the iceberg canvas by SystemsInnovation 2020

<https://nextbillion.net/systems-change-scaling-innovations-development-challenges/>

 **CIMMYT**
International Maize and Wheat Improvement Center

Example Land Restoration in Central America



EVENTS

What just happened?

PATTERNS

What has been happening over time?

STRUCTURE

What policies, laws, physical structure influence the patterns?

MENTAL MODEL

What are the mindsets, values and assumptions?

Better crop yields, water security, safe and healthy environments

Community governance

Multi-stakeholder platforms

Linking social with environmental degradation

Youth groups

Underinvestment in R&D

Insecure land tenure

Policies give away control over nat resources

Exploitation

Consumption

Economic inequality

NOTE: Adapted from the iceberg canvas by SystemsInnovation 2020



Systems enable scaling of innovations

- Chickpea Ethiopia
- ...



A recipe for success? Learning from the rapid adoption of improved chickpea varieties in Ethiopia

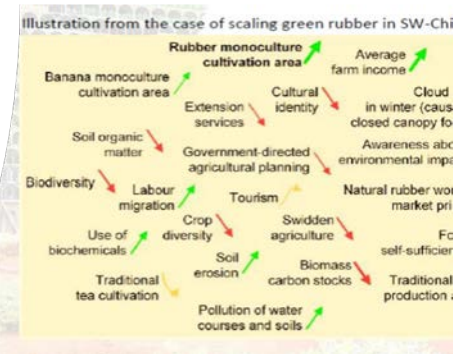
Simone Verkaart ^{a,b}, Kai Mausch ^{a,c}, Lieven Claessens ^{d,e} and Ken E. Giller ^f

^aEastern and Southern Africa Program, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Nairobi, Kenya;

Scaling can also change systems



- When something scales up, something else scales down
- Scaling is not good per se → **responsible scaling**



Contents lists available at ScienceDirect

Agricultural Systems

ELSEVIER

journal homepage: www.elsevier.com/locate/agsy

Scaling modern technology or scaling exclusion? The socio-political dynamics of accessing in malt barley innovation in two highland communities in Southern Ethiopia

Nina de Roo^{a,*}, Conny Almekinders^b, Cees Leeuwis^b, Tewodros Tefera^c



Scaling can change systems: from a project to a local process

- “End-users” define what is “good” change → responsible scaling
- Nurture local ownership and leadership
- Anticipate resistance to change (winners vs losers, renegotiation of power)
→ Critical appraisal of (dis-)incentives of stakeholders to (not) support the scaling process beyond the project
- Only the local private and public sector actors can grow and sustain the impact to a population level → engage them from the beginning, strengthen existing movements, design for local stakeholder needs
- Invest in local capacity to INNOVATE, COLLABORATE and SCALE

We are the system

Mindset & paradigm shift

Scaling as “higher adoption” matches well with current way we design and implement projects

Attribution	→ contribution
Direct beneficiaries	→ indirect beneficiaries
More is better	→ responsible/ optimal scale
Ego	→ Eco (ecosystem of actors)
Project	→ set of interventions
Short term	→ long term



Scaling Pyramid



Scaling deep

Shifting mindsets, values and practices

$$1 + \heartsuit = 5$$



Scaling up

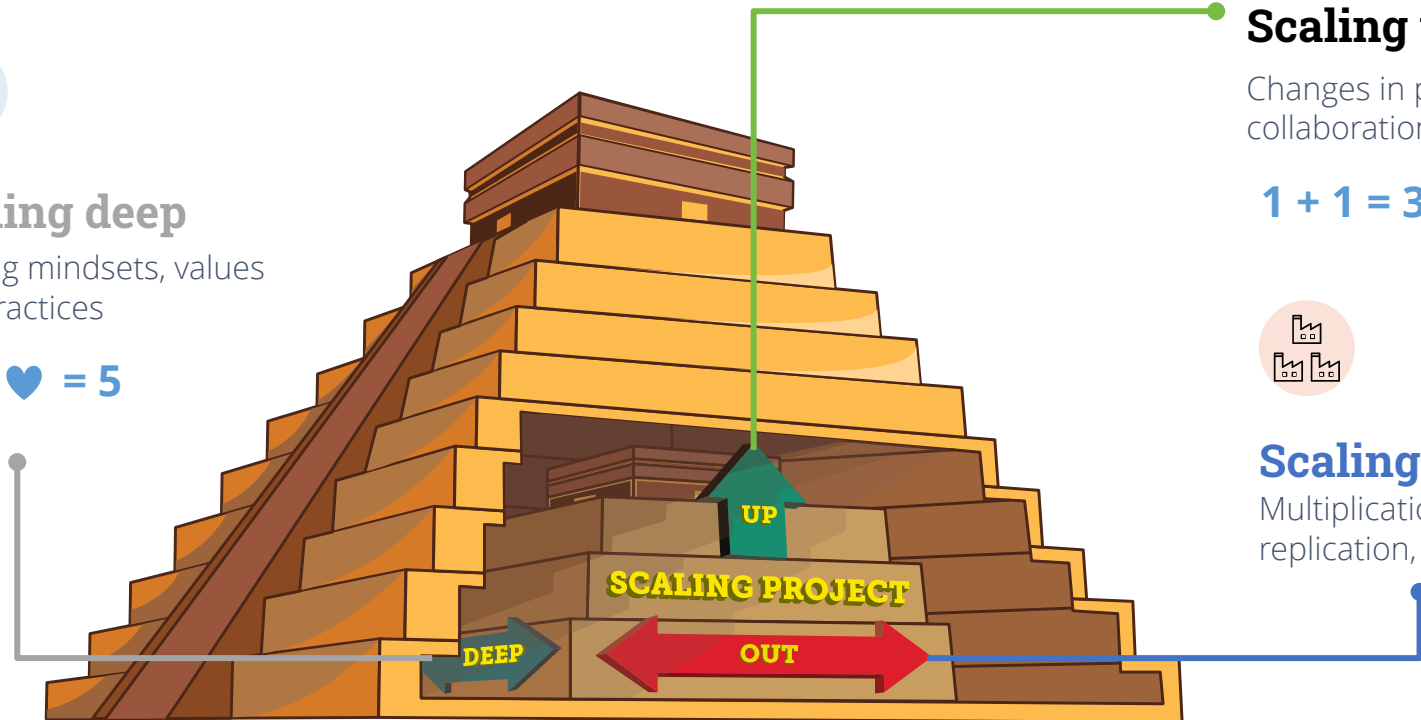
Changes in policy, ways of collaboration, etc

$$1 + 1 = 3$$



Scaling out

Multiplication, extension, replication, etc.



Key points (1/2)

- **Innovators** that increase adoption of their **one innovation** in **(semi-)controlled environments** have not led to the necessary sustainable change of scale we need to achieve and sustain the **SDGs**
- Scaling doesn't automatically lead to sustainable Development

Important Principles:

- Pursue a **shared vision of change**
- Nurture **local ownership and leadership**
- **Design for scaling from the beginning**
- Launch, Learn and **Adjust**



Key points (2/2)

Systems thinking as an important framework for collective action

- Not how to scale “my” innovation asap but → how to address multiple PAIN and LEVERAGE points in the system
- Not a project problem, but → a social problem that breeds social movements for change of power, relationships and mindsets
- No short-term window-dressing but → addressing deeper systemic causes of the problem and building a solid foundation for a range of solutions for the future
- A better system will produce better results



Tools developed for researchers and implementers to scale more successfully

In addition to Scaling Scan, there is Scaling Readiness, developed by CGIAR researchers

www.scalingreadiness.org

Scaling Readiness

Assessing and accelerating
the scaling of innovations

... And USAID's, Agriculture Scalability Assessment Tool

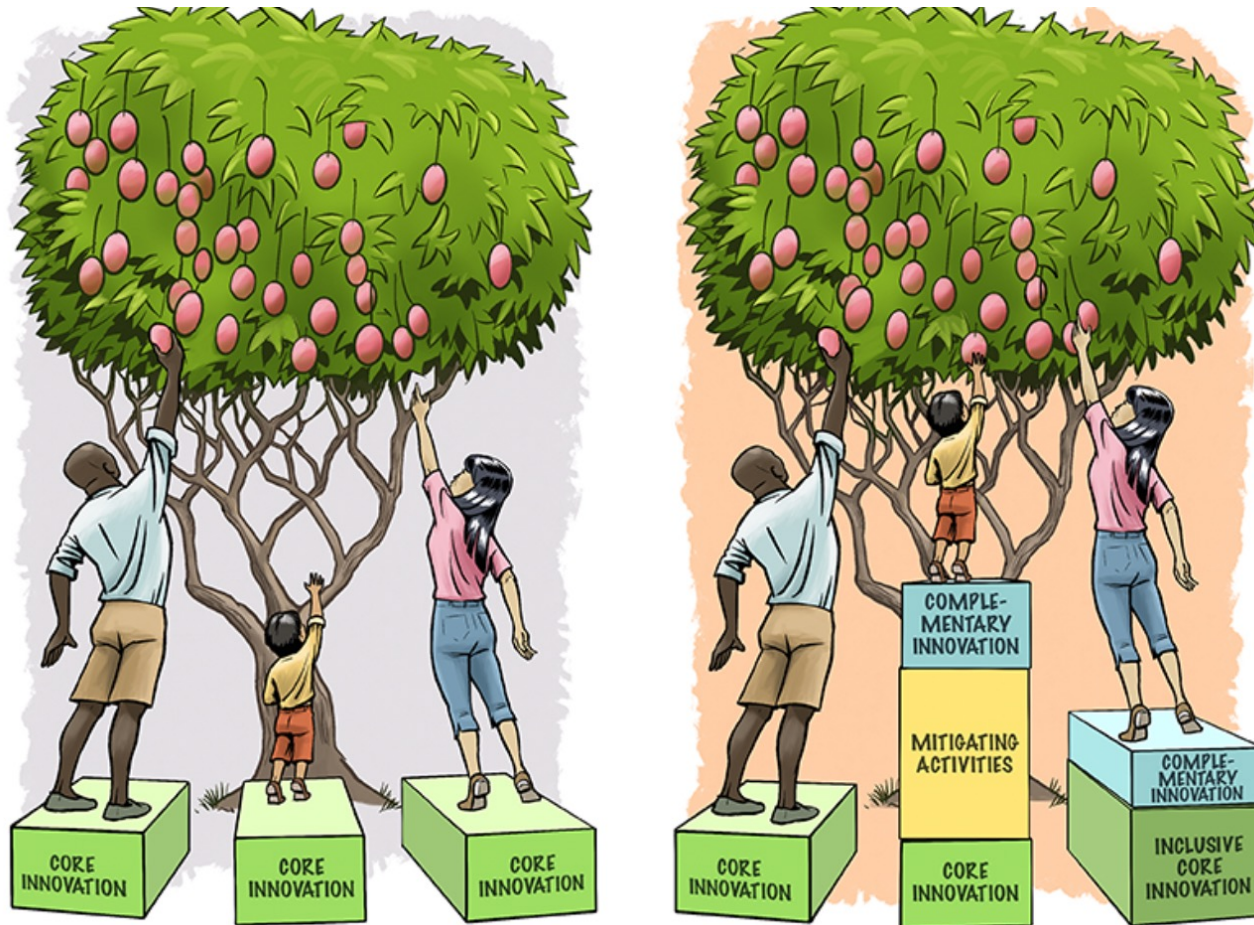
GUIDE TO THE AGRICULTURAL SCALABILITY ASSESSMENT TOOL

FOR ASSESSING AND IMPROVING THE SCALING
POTENTIAL OF AGRICULTURAL TECHNOLOGIES

agrilinks.org/sites/default/files/resources/asat_guide_revised_6-7-18.pdf

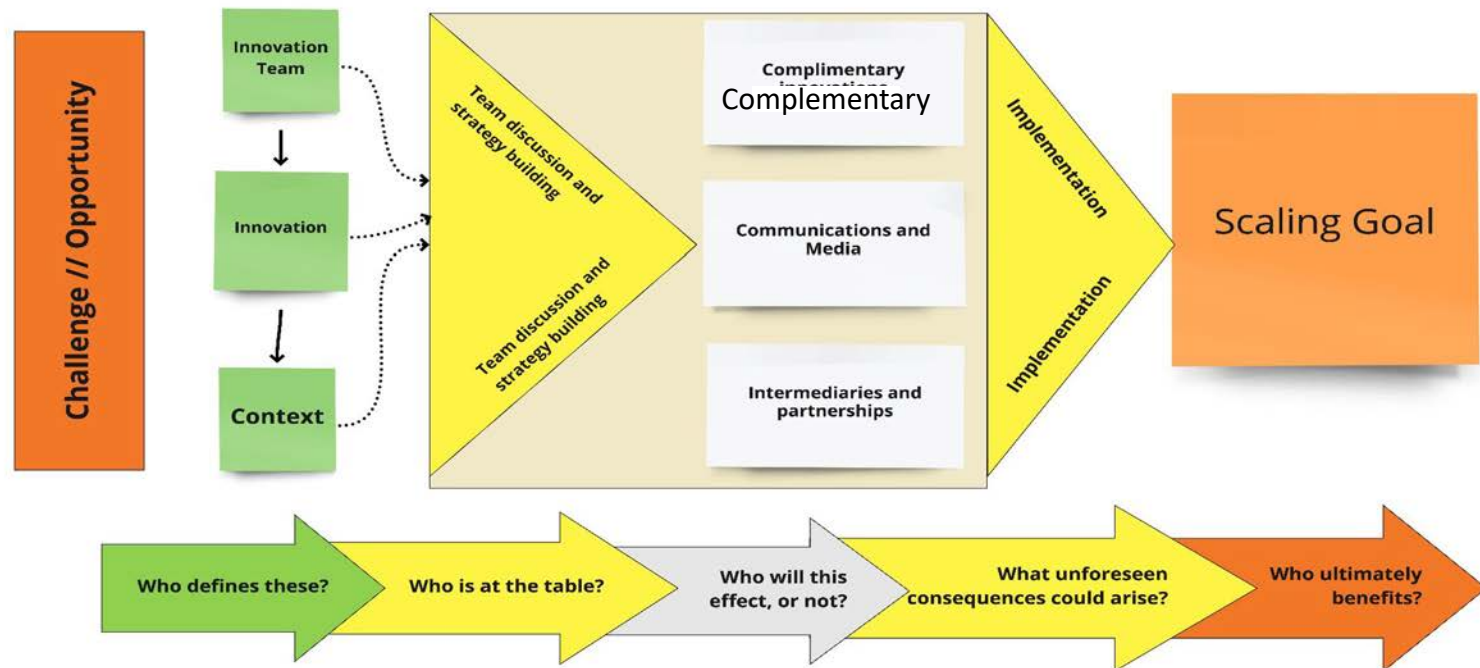


Who is benefitting?



Where does responsible scaling matter?

Incorporating social and gender differences in a scaling process



Negative impacts of Scaling

- The better-off benefit at the expense of the poor → aggravate inequality and food insecurity
- Women do not benefit as (much as) men → aggravate gender inequality
- Expansion of intensive, commercial agriculture → degradation of land and nature
- Non-users have livelihoods displaced.



What is missing?

- Considerations of different social experiences?
- Who wins, while others lose?

Webinar 2 will discuss more!

Social Differentiation in Scaling - February 28, 2023



FEED THE FUTURE

The U.S. Government's Global Hunger & Food Security Initiative

Innovation Lab for Horticulture

Thank you!

We hope you have enjoyed this presentation

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The U.S. Government's Global Hunger & Food Security Initiative

Innovation Lab for Horticulture

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