

**SKim**

**Strengthening Knowledge Management  
for Greater Development Effectiveness  
in the Near East, North Africa,  
Central Asia and Europe**



## **Scaling Readiness of Natural Resource Governance Framework & Sustainable Natural Resources and Livelihood Programme in Sudan**

**Dr. Murat Sartas (ICARDA)**  
[murat.sartas@gmail.com](mailto:murat.sartas@gmail.com)

24<sup>th</sup> May 2022, International Center for Agricultural Research in the Dry Areas (ICARDA)



**Procasur**



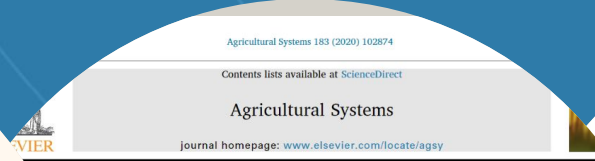


**Before Starting ....**



# Scaling Readiness

Concepts, Practices, and Implementation



Scaling Readiness: Science and practice of an approach to enhance impact of R&D for development

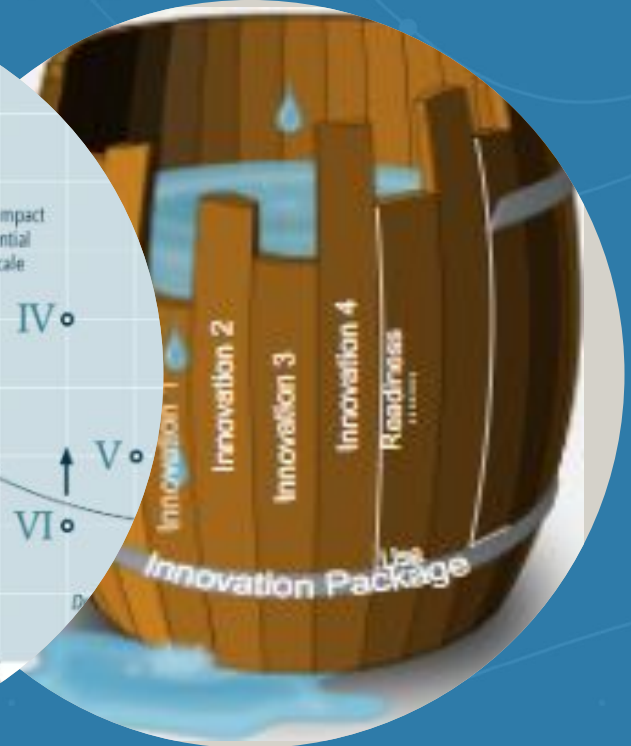
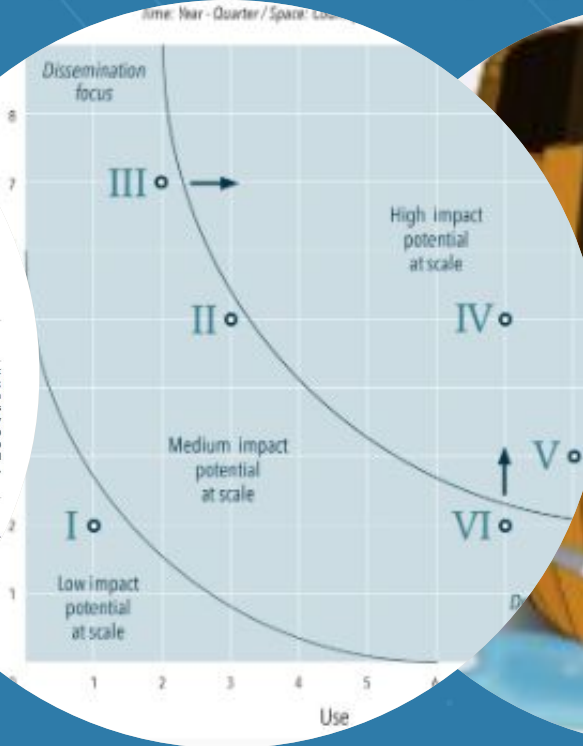
Marc Schut<sup>a,b,\*</sup>, Claudio Proietti<sup>c</sup>, Graham Thiele<sup>c</sup>, Cees Leeuwis<sup>a</sup>

<sup>a</sup> Innovation Group, Wageningen University, P.O. Box 8130, 6700 EW Wageningen, the Netherlands  
<sup>b</sup> Tropical Agriculture, Kariakoo, KG 563 Street #3, Kigali, Rwanda  
<sup>c</sup> Rices, Tubers and Bananas (RTB) 1558, Av. la Molina 1895, La Molina 15023, Peru

A key requirement for addressing societal challenges in sectors such as health, agriculture, and the environment. Research for development and other interventions struggle to make particular innovations go to scale. Current conceptualizations of scaling are often too simplistic; nensional perspectives, frameworks and measures are needed. There is a gap between new complexity-aware theories and perspectives on approaches that can improve strategic and operational decision-making in R&D interventions that aim to scale innovations. This paper aims to explore the key concepts and measures of Scaling Readiness. Scaling Readiness is an approach that encourages critical reflection on how scaling and what appropriate actions could accelerate or enhance scaling. Scaling Readiness provides action-oriented support for (1) diagnosing the current readiness and use of innovations as a proxy for their readiness to scale; (2) identifying bottlenecks for scaling; (3) developing a process to allow for adaptive management. Scaling Readiness has the potential to support evidence-based scaling strategy design, monitoring, and – if applied across multiple interventions – can be used to manage a portfolio of innovation and scaling investments.

... and professional interest in how innovations spread in long historical roots, going back to the work of Ryan and Rogers (1962) on the adoption and diffusion of innovations. Today, such processes of adoption or diffusion are generally referred to as the scaling of innovations. Innovations can be technologies, services and practices, but also organizational and institutional arrangements. Scaling refers to the increased use of innovations involved in its initial design and testing. Scaling is often used in the context of global investments in research and development (R&D) organizations that aim to address societal challenges related to health, agriculture, and the environment. The scaling of innovations is particularly relevant for R&D organizations that aim to address societal challenges related to health, agriculture, and the environment. The scaling of innovations is particularly relevant for R&D organizations that aim to address societal challenges related to health, agriculture, and the environment.

extension officers or health educators) and then diffuse within communities of individual beneficiaries (Rogers, 1962) has been largely related (Belling, 1988; Leeuwis, 2004). Historians of technology, for example, argue that scaling of innovation involves competition between supporters of different technological solutions, and those who are interested in and sunk investment associated with incumbent technologies (Geels and Schot, 2007; Schot and Geels, 2008). Or that the scaling of one innovation (e.g., using a new seed variety) depends on the simultaneous upscaling of other complementary innovations (e.g., weeding, pesticide-use, distribution of inputs, and the downscaling of existing practices (e.g., seed variety) (Wigboldus et al., 2016). This paper explores the existence of interdependencies among these practices (Leeuwis and Aarts, 2016) and argues that scaling agriculture may be more complex than currently assumed.



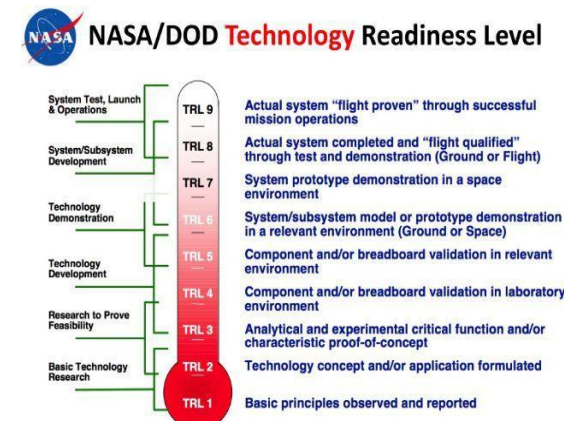
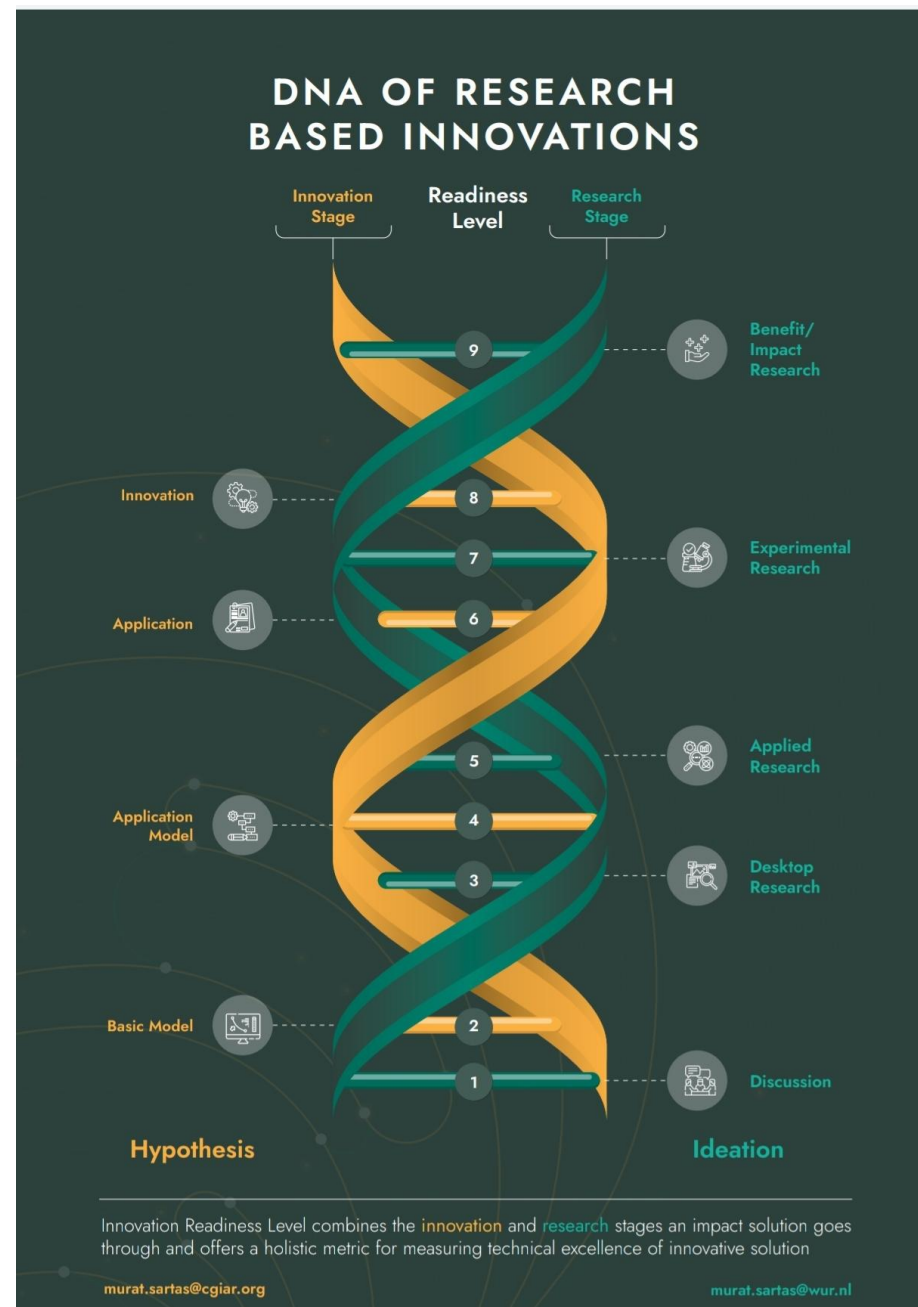
## Scaling Readiness Basics



## Why Scaling Readiness?

### Need for integrating Research and Innovation Processes

- CGIAR focus (and comparative advantage) is science-based innovations
- There is substantial learning generated by NASA and EU on how to manage innovations and innovation portfolios

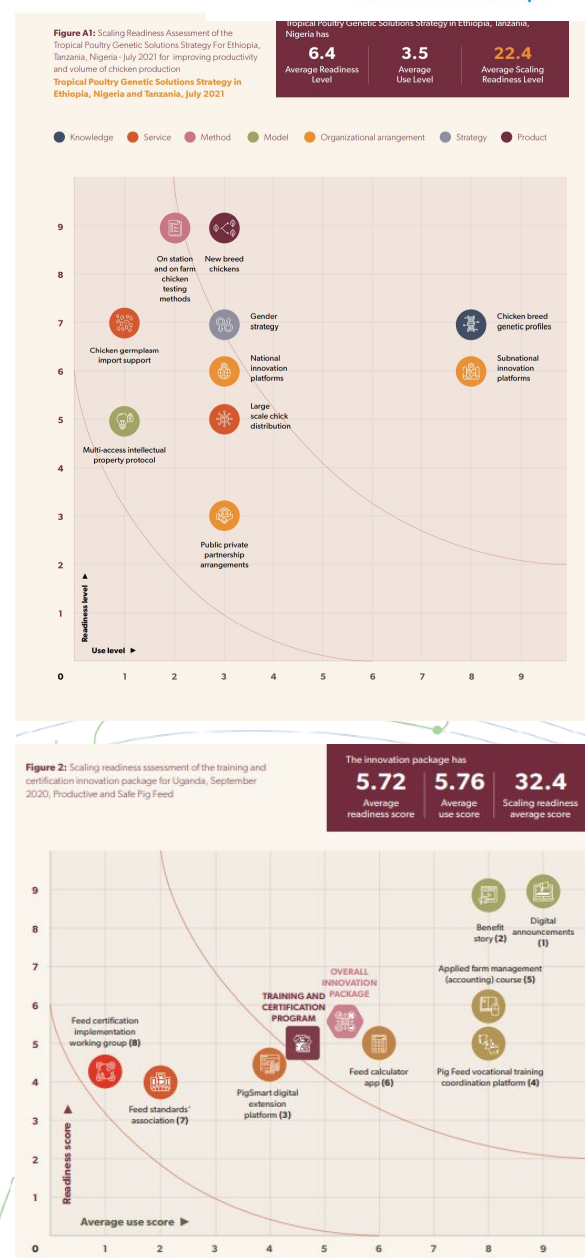
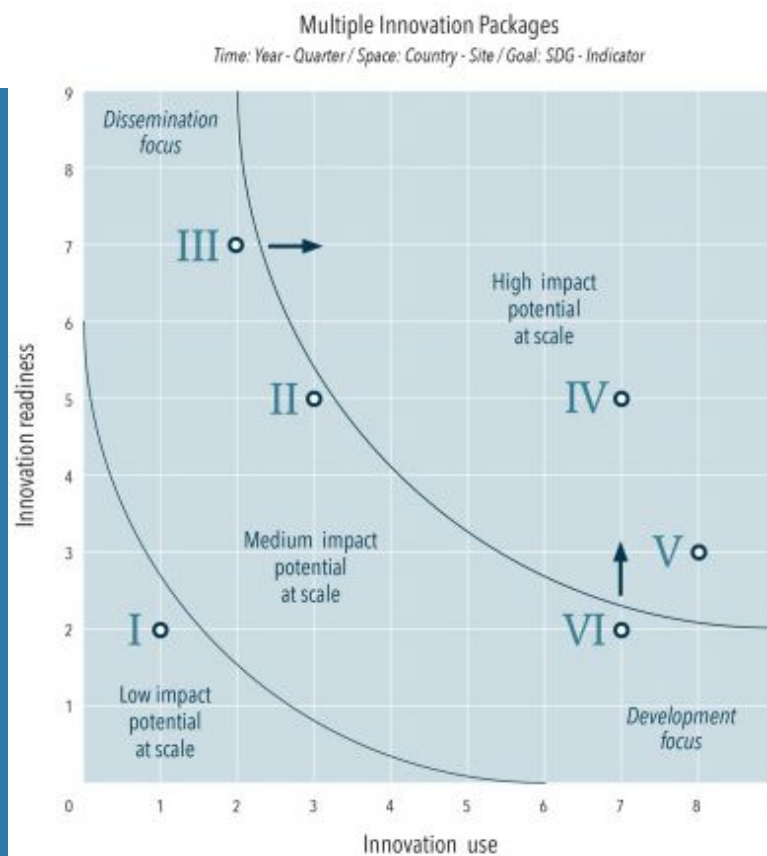


# Why Scaling Readiness?

Need for measures combining technical excellence with actual use

- Technical excellence does not imply use at scale
- “Innovation Readiness” and “Innovation Use” need to be simultaneously identified for right context-specific scaling and impact strategies

## Scaling Readiness Assessments from A Livestock Initiative (SAPLING)



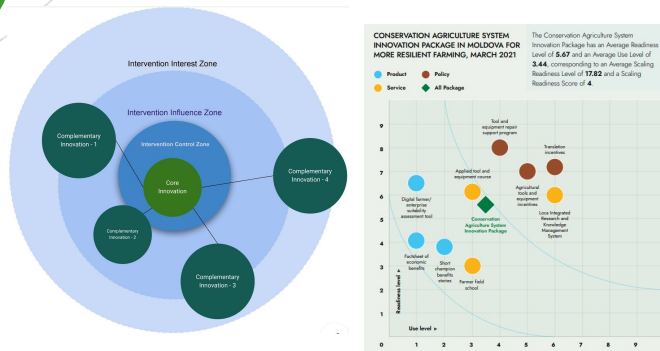


# What does Scaling Readiness help with?

## Project Management



## Portfolio Management



## Stakeholder Management



## Innovation Prioritization



## Evidence Management

Evidence	Reported & Unreported References
41	Clanton Type <a href="#">Clanton Type</a> <a href="#">Link</a>
42	Clanton Type <a href="#">Clanton Type</a> <a href="#">Link</a>
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## Innovation Science

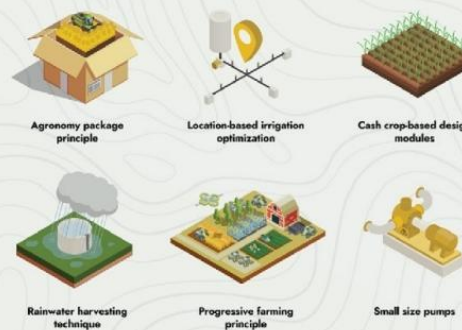




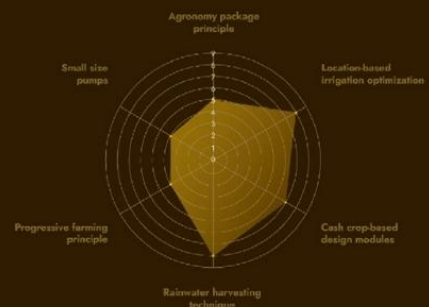
# INNOVATION PROFILES and PRIORITIZATION

- Dashboards and hardcopy innovation profiles
- Seeing the components and their readiness
- Seeing the locations, impact areas, SDGs and ...

## NOVEL COMPONENTS



READINESS LEVELS OF THE COMPONENTS OF SUPPLEMENTARY IRRIGATION  
in June 2021 for Improving Water Availability and Efficiency of Rainfed Farming in Burkina Faso, China, Ethiopia, Iraq, Iran, Jordan, Kenya, Lebanon, Morocco, Pakistan, Syria, Tunisia and Turkey

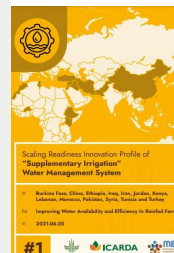
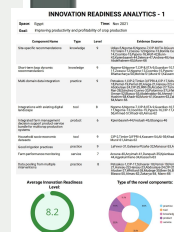


**SPACE:** Burkina Faso, China, Ethiopia, Iraq, Iran, Jordan, Kenya, Lebanon, Morocco, Pakistan, Syria, Tunisia and Turkey

**TIME:** June 2021

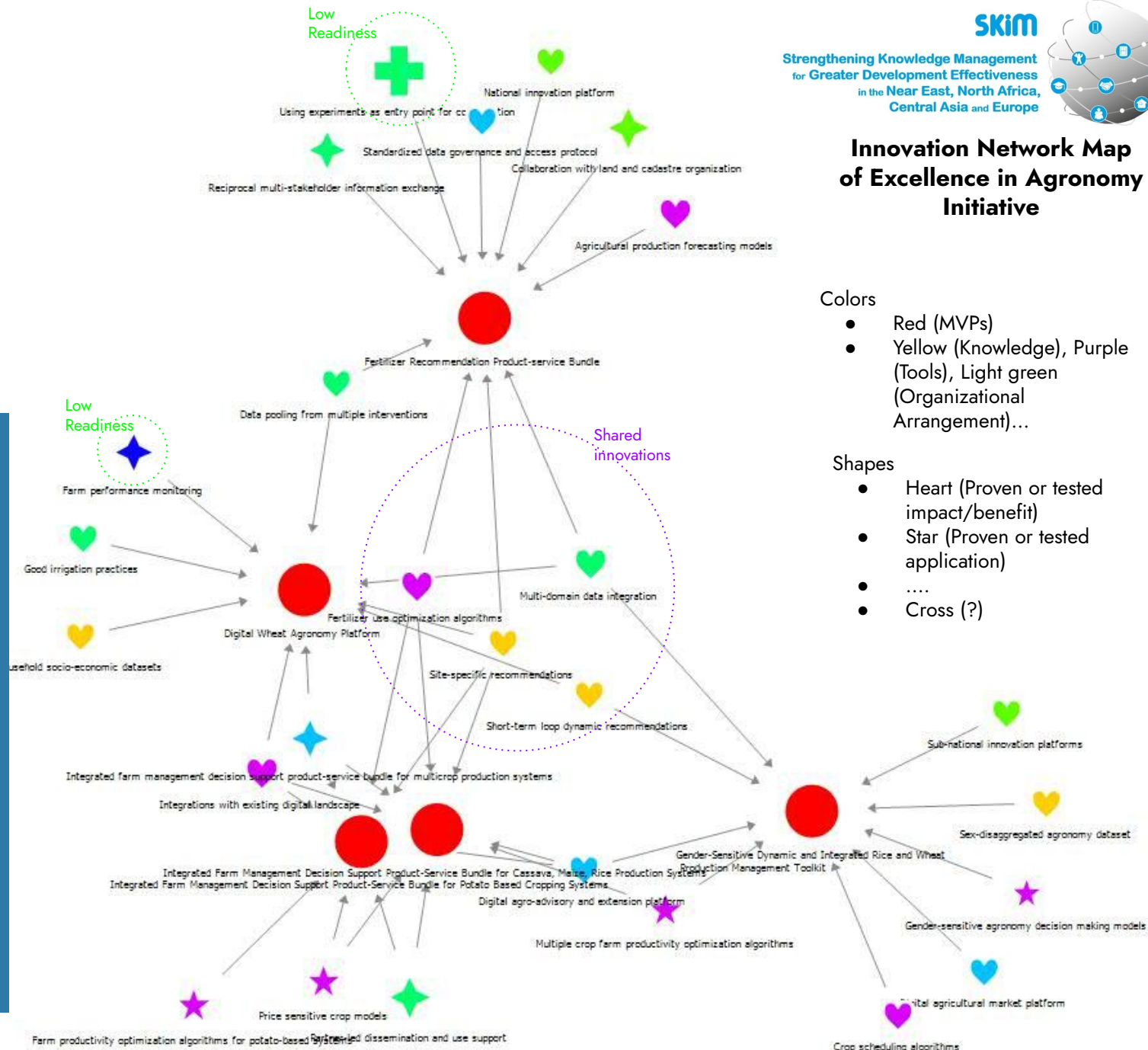
**GOAL:** Improving Water Availability and Efficiency In Rainfed Farming

Components of the System	Type	Readiness Level	Evidence Sources
Agronomy Package Principle	Principle	5	6, 7, 8, 9, 11, 12, 13, 15, 20, 21, 22, 23, 24, 25
Location-Based Irrigation Optimization	Feature	8	1, 2, 3, 5, 10, 19, 24, 25
Cash Crop Based Design Modules	Feature	7	4, 8, 1, 19
Rainwater harvesting technique	Technique	8	1, 5, 6, 14, 17, 18, 20, 21, 22, 23, 24, 25
Progressive farming principle	Principle	4	16, 21, 22
Small size pump	Tool	4	16



## Combining innovation packages at the country, initiative and center levels

- So we can holistically see what we innovate and how to synergize learnings and investments and what to prioritize





The background is a solid blue color. It features several white, curved lines that sweep across the frame from the top left towards the bottom right. Small white dots are placed along these curves, some of which are connected by thin white lines, creating a sense of motion or a path. There are also some larger, faint white circular shapes scattered in the upper right area.

**Scaling Readiness Up to Now**

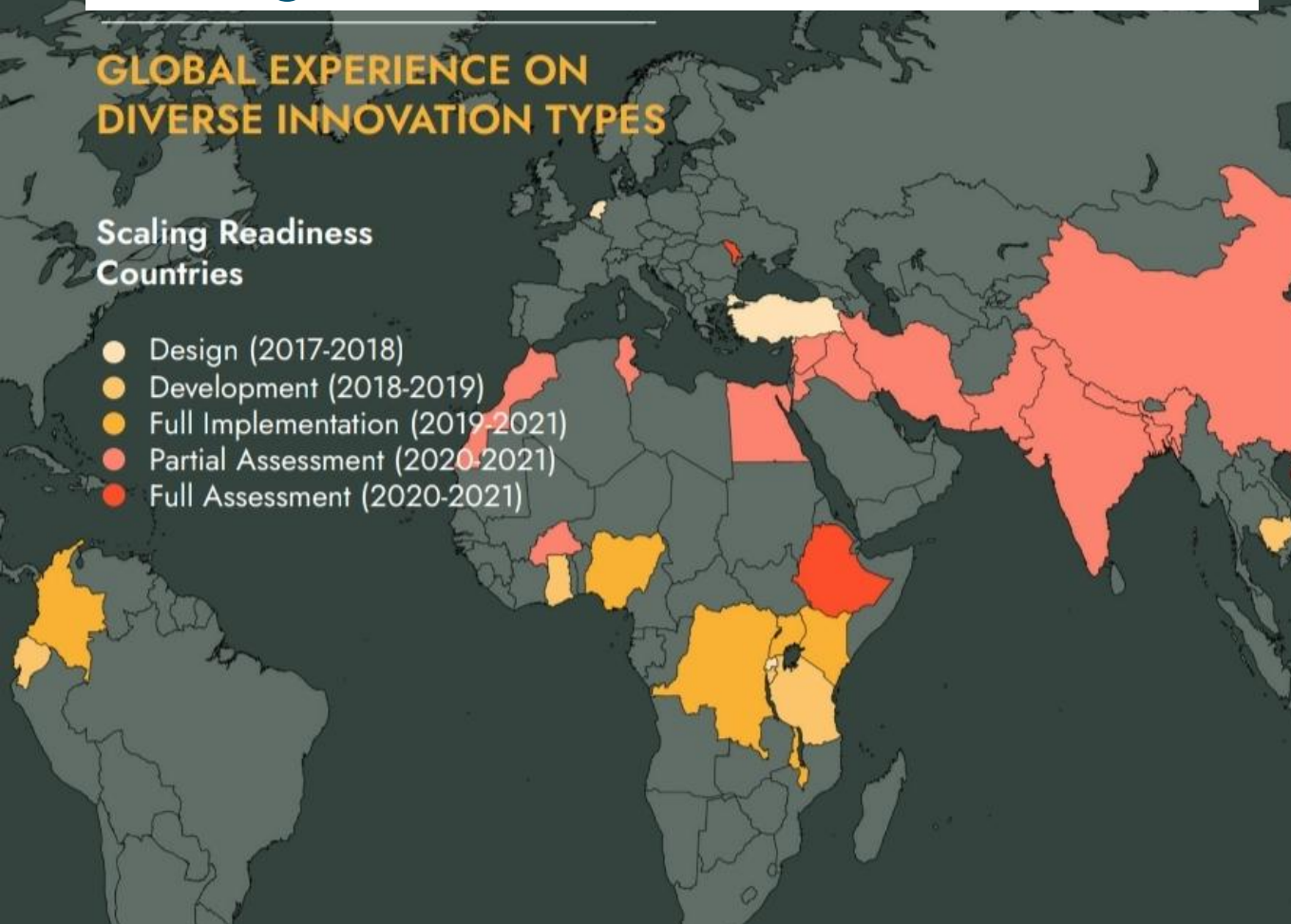


# Scaling Readiness Implementations Timeline, Locations and Innovation Packages

## GLOBAL EXPERIENCE ON DIVERSE INNOVATION TYPES

### Scaling Readiness Countries

- Design (2017-2018)
- Development (2018-2019)
- Full Implementation (2019-2021)
- Partial Assessment (2020-2021)
- Full Assessment (2020-2021)



1. Cambodian Cassava National Policy
2. Potato Late Blight Management Tool
3. Single Disease Stem Removal Approach For Managing Banana Xanthomonas Wilt
4. Cassava Agronomy At Scale
5. Decision Support Tool For Cassava Production
6. Triple 3 + Sweetpotato Plant Material Storage
7. Cassava Peel Processing Equipment For Feed Production
8. Sectoral Collaboration For Better OFSP Puree Use
9. Supplementary Irrigation Water Management System
10. Community Based Breeding Program For Small Ruminants
11. Cactus Based Complementary Feed
12. Mechanized Raised Seedbed Technology
13. Multi-Functional Lentil Varieties
14. Apical Cuttings Technique For Potate Plant Material
15. Training And Certification Program For High Quality Pig Feed

### Innovation Types Based on CGIAR Definition

	Policy	Capacity Building	Technology
1. Cambodian Cassava National Policy	✓	✓	
2. Potato Late Blight Management Tool		✓	✓
3. Single Disease Stem Removal Approach For Managing Banana Xanthomonas Wilt	✓	✓	✓
4. Cassava Agronomy At Scale			✓
5. Decision Support Tool For Cassava Production		✓	✓
6. Triple 3 + Sweetpotato Plant Material Storage		✓	✓
7. Cassava Peel Processing Equipment For Feed Production		✓	✓
8. Sectoral Collaboration For Better OFSP Puree Use	✓	✓	✓
9. Supplementary Irrigation Water Management System		✓	✓
10. Community Based Breeding Program For Small Ruminants	✓	✓	✓
11. Cactus Based Complementary Feed		✓	✓
12. Mechanized Raised Seedbed Technology			✓
13. Multi-Functional Lentil Varieties		✓	✓
14. Apical Cuttings Technique For Potate Plant Material		✓	✓
15. Training And Certification Program For High Quality Pig Feed	✓	✓	✓

## CGIAR INNOVATION PACKAGES AND SCALING READINESS FRAMEWORK (Under development)

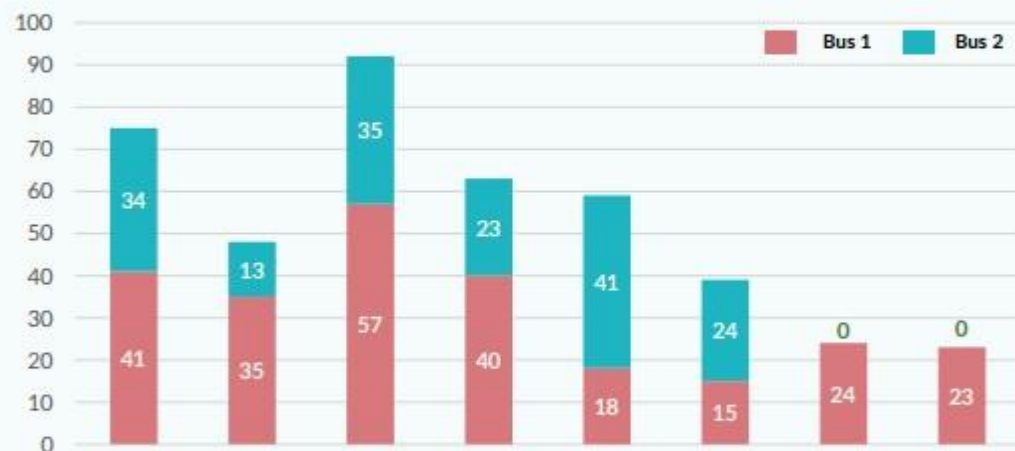
### Core Innovations and Innovation Packages



**Core Innovation:** Innovations that are at the heart of Initiatives and that are expected to contribute to impact at scale



**Innovation Package:** Combination of interrelated innovations and enabling conditions that, together, can lead to transformation and impact at scale



Core Innovations	Innovation Packages	Core Innovations	Innovation Packages	Core Innovations	Innovation Packages	Core Innovations	Innovation Packages
							
System Transformation (ST)		Resilient Agri-Food Systems (RAFS, exd RIIs)		Regional Integrated Initiatives (RIIs)		Genetic Innovation (GI)	
USD 5.79M investment, 1.7% of total budget		USD 4.96M investment, 1.4% of total budget		USD 4.28M investment, 2.1% of total budget		USD 3.82M investment, 0.54% of total budget	

# 9131

**Researchers and Research supporters**

Manages and implements research activities

- Design research
- Conduct research
- Produce publications
- Co-produce innovations
- Uses specifications and evidence in Complete Scaling Readiness Studies

# 198

**Initiative Managers**

Manages initiatives and work packages

- Design initiative
- Manage research
- Manage innovations
- Uses Innovation Package Reports to plan activities and find partners

# 129

**CGIAR Managers**

Manages management units and centers

- Manage CGIAR
- Manage units
- Manage initiatives
- Uses Innovation Profiles to manage Innovation Portfolios

# 33

**Innovation Package and Scaling Readiness experts**

Manages Innovation Package and Scaling Readiness activities

- Manages innovation package and Scaling Readiness activities
- Receives training and backstopping from the support group
- Produces Innovation Profiles, Innovation Package Reports and Complete Scaling Readiness Studies

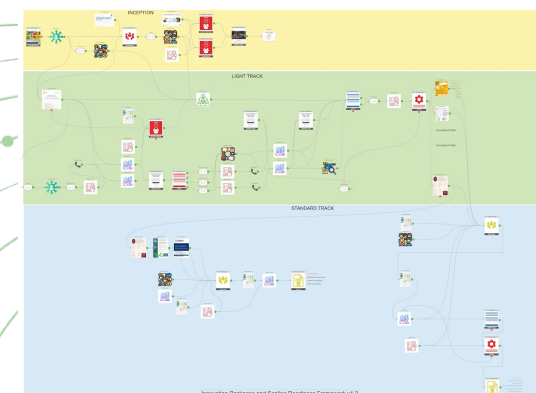
# 8

**Innovation package and Scaling Readiness support experts**

Backstops Innovation Package and Scaling Readiness activities

- Provides training
- Provides backstopping
- Prepares support tools
- Checks quality of Innovation Profiles, Innovation Package Reports and Complete Scaling Readiness Studies

Data: <https://www.cgiar.org/how-we-work/accountability/gender-diversity-and-inclusion/dashboards/cgiarworkforce/>

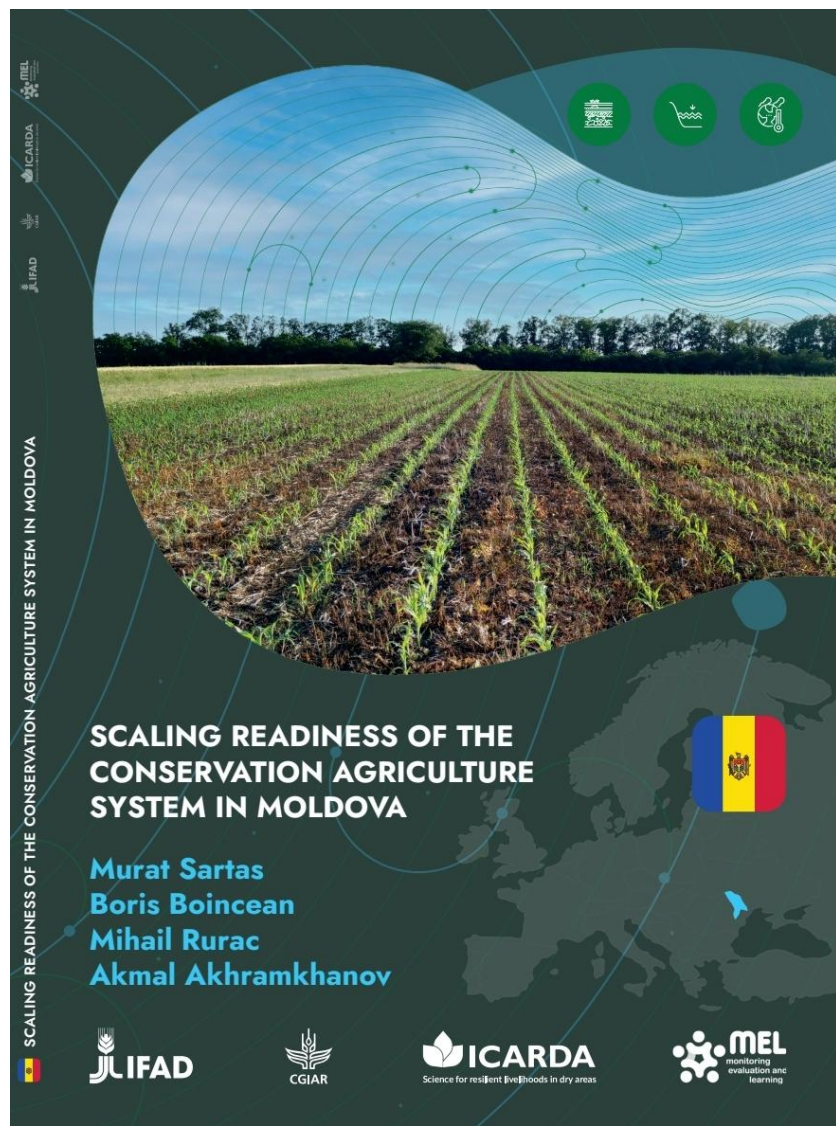




The background is a solid blue color. It features several white, curved lines that sweep across the frame from the top left towards the bottom right. Small white dots are placed along these lines, some at the ends and others in between. In the upper right quadrant, there is a cluster of three overlapping white circles of different sizes, with a larger dot in the center of the largest circle.

# Scaling Readiness with IFAD

# Scaling Readiness of Conservation Agriculture System in Moldova



12 OCT 2021

## An innovation perspective to IFAD impact investments: how ready is the conservation agriculture system in Moldova for impact at scale?

### The Importance of Understanding and Measuring Innovations

The Financial Times' late 2018 Report on Impact Investing showed that impact investing could help small-scale farmers in rural areas improve their livelihoods. However, investing ventures and enterprises that practice this type of investing -that produces positive social or environmental benefit in addition to returns on investment- often face funding barriers to scale up good practices.


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## An Innovation Perspective to IFAD Impact Investments: How Ready is the Conservation Agriculture System in Moldova for Impact at Scale?



The background is a solid blue color. It features several thin, white, curved lines that sweep across the upper half of the image. Small white dots are placed at various points along these curves, some of which are connected by short line segments, creating a sense of movement or a path. There are also some larger, faint white circles or ovals scattered in the upper right area.

# Scaling Readiness Sudan



## Scaling Readiness of NRGF and SNRLP in Sudan

- Reviewing 49 Evidence Sources from Sudan and beyond
- Including Qualitative and Quantitative Studies
- First systematic Scaling Readiness Deep Dive Study on Natural Resource Governance



## What are the innovative components of the NRGF in Sudan?

**NRGF is an innovative framework introducing novelties to governance in Sudan**

- increasing effectiveness, efficiency, **inclusivity** and sustainability of NR use
- Our study has identify 23 components critical for the success of NRGF
- 10 of these are innovations introduced to Sudan NRG
- NRGF combines approaches, processes, platforms, teams, digital systems



ecosystem based cluster or network approach,



participatory evaluation approach,



multi-stakeholder shortlisting process of investment options,



intra-state collaboration platform,



drought and flood monitoring system,



natural resource-based revenue generation and reinvestment framework,



detailed terms of references (knowledge) for multi-stakeholder collaboration,



multi-disciplinary expert teams,



social and cultural responsible strategizing process,

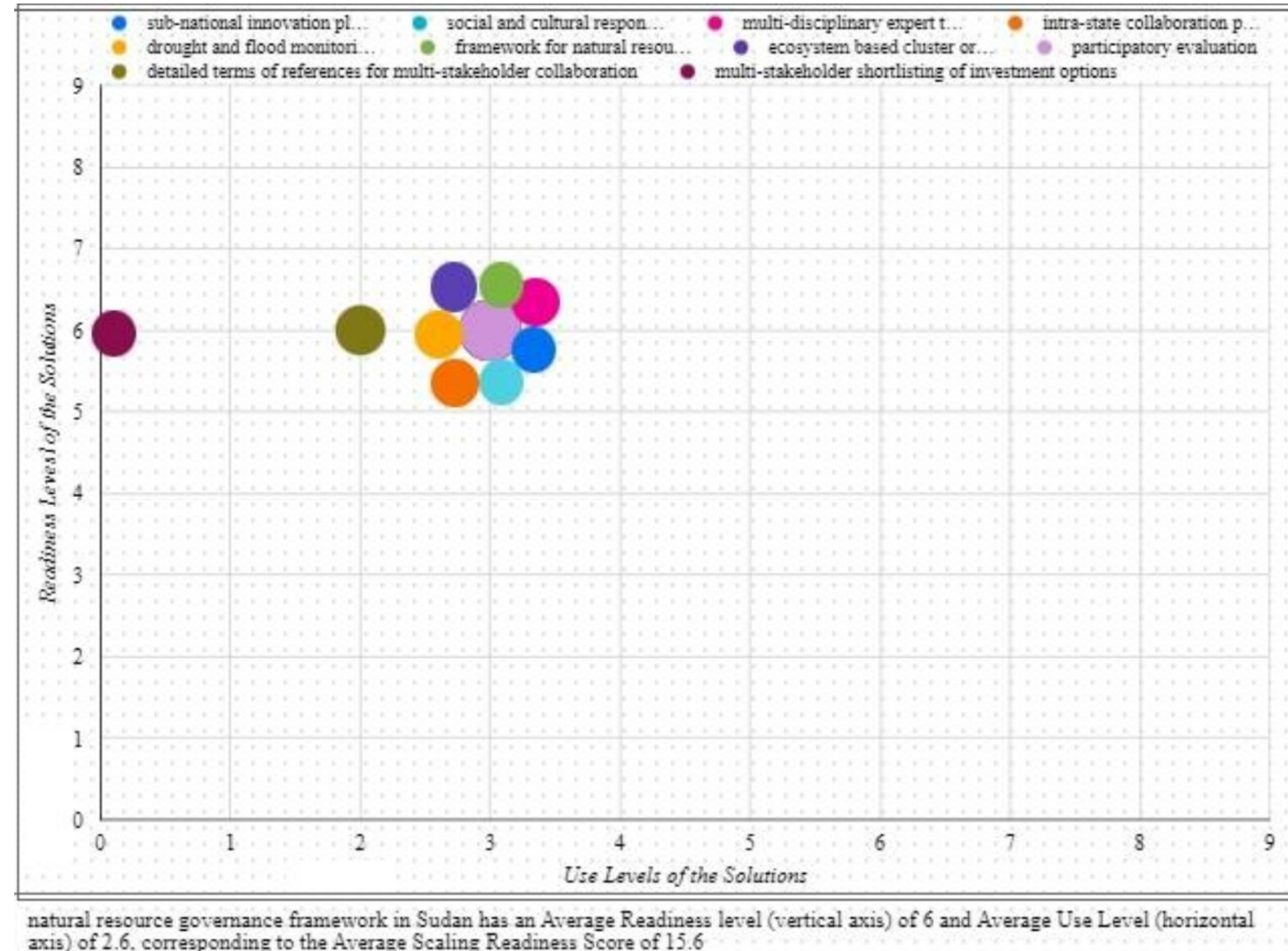


sub-national innovation platforms.

## How Ready and Used (Adopted and by Whom?) is NRGF?

**NRGF has worked outside Sudan but needs to be validated in Sudan.**

- Readiness levels of all the novel critical components of NRGF is at the level of 6, implying that each of them shown to **influence the impact performance of NRGFs across the world, but there is no systematic evidence about their performance in Sudan.**
- Use levels of most of the components are 3, which implies that many stakeholders are involved in their implementation and use them. **However, all the documented users of the critical novel components are part of the IFAD and government interventions.**

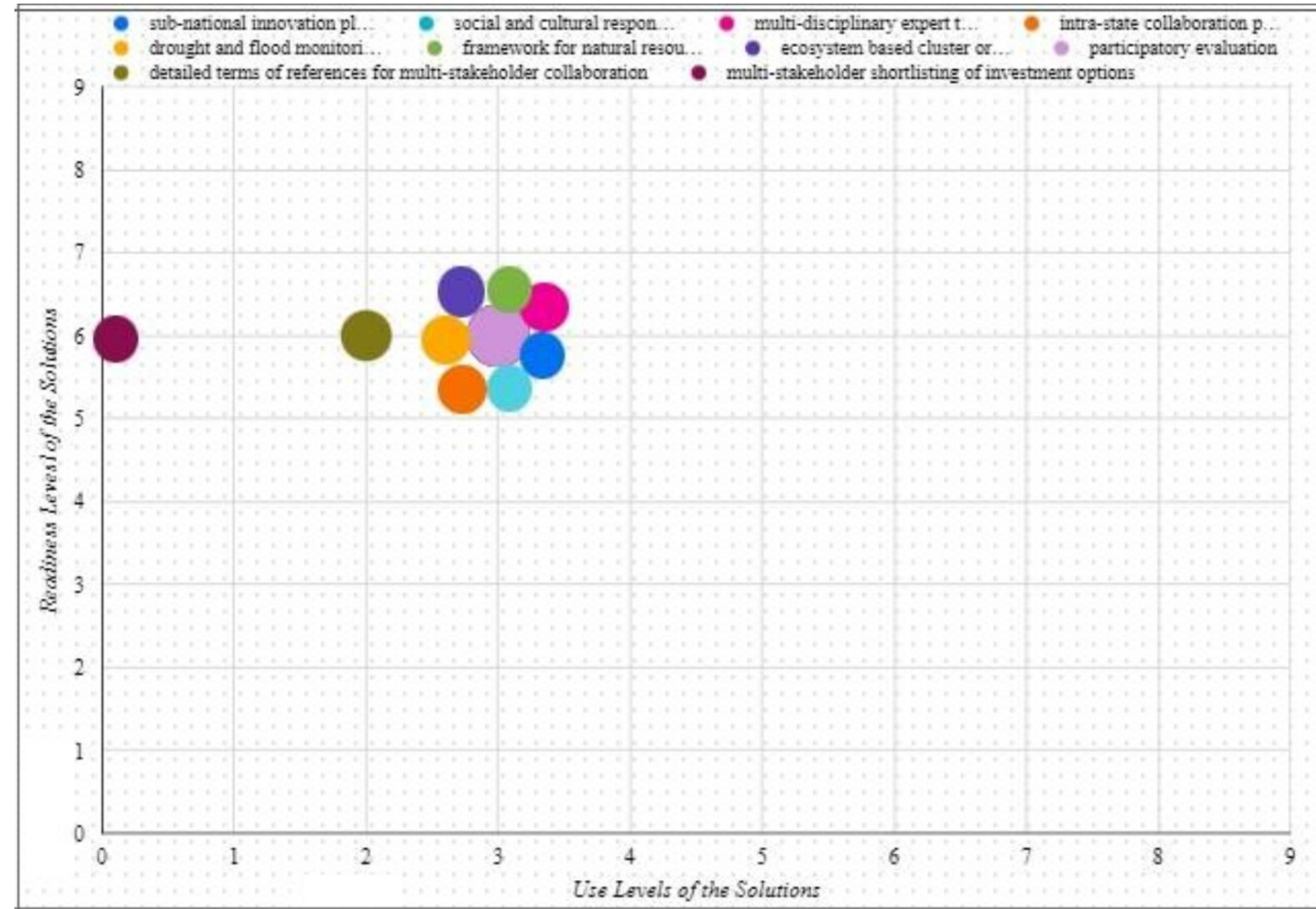




## What is the first step to address current bottleneck for the impact at scale potential of NRGF?

**A mechanism for co-prioritization of high return investment options with broad consultation with various stakeholders so that public and private investment on NR**

- multi-stakeholder short listing investment options can be considered a bottleneck for improving the impact at scale of the natural resource governance framework in Sudan
- A mechanism for co-prioritization of high return investment options with broad consultation with various stakeholders so that public and private investment on NR



natural resource governance framework in Sudan has an Average Readiness level (vertical axis) of 6 and Average Use Level (horizontal axis) of 2.6, corresponding to the Average Scaling Readiness Score of 15.6

## What are the innovative components of the SNRLP in Sudan?

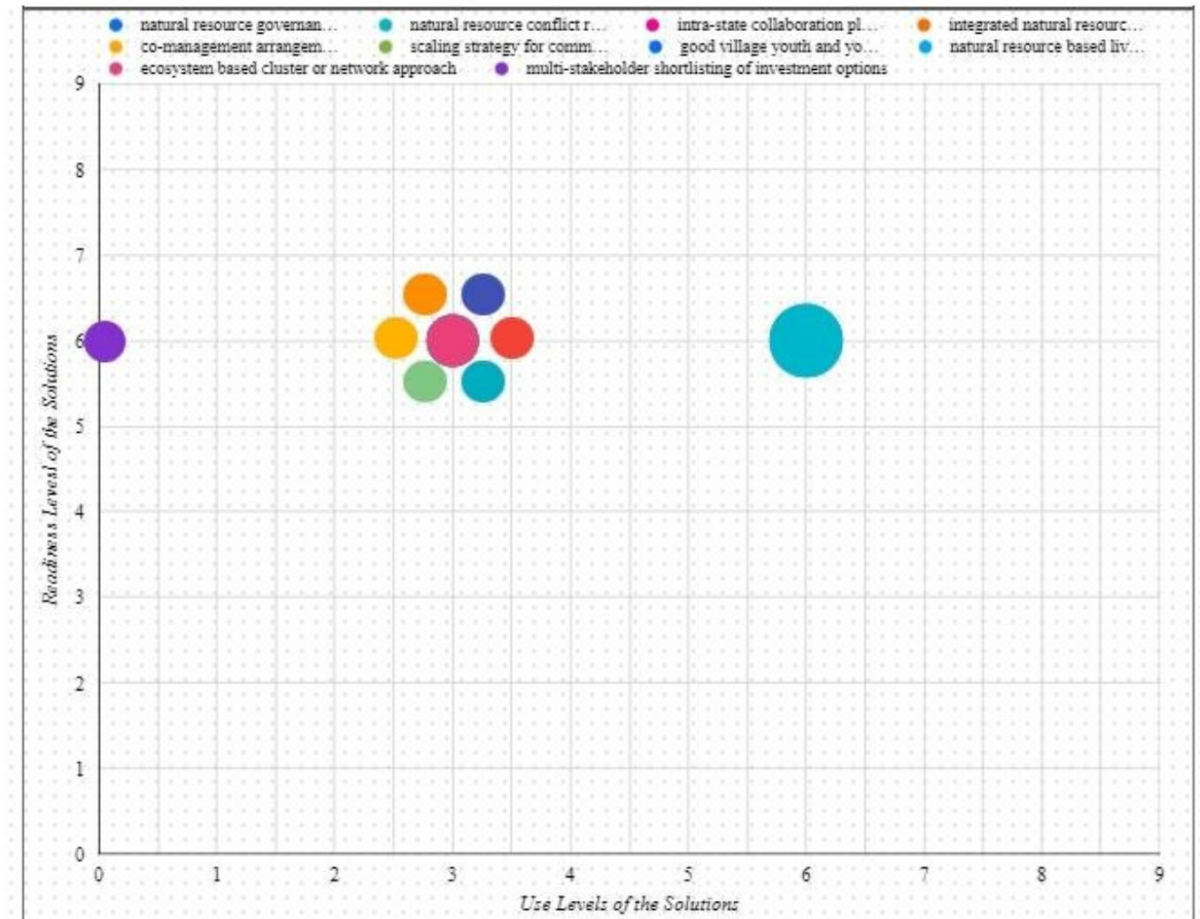
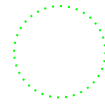
**SNRLP advances the organizational and institutional innovation agenda of the NRGF and connects it with broader sectoral and socio-cultural systems**

- SNRLP has 6 other innovations that were not systematically targeted by the NRGF. One of the six is a strategy, two are plans, two of them are arrangements and one of them are a set of practices
- it is important to ensure the engagement of non-governmental actors and representatives of international community engaging in supporting Sudan including international development community and the Sudanese
- ecosystem based cluster or network *approach*
- multi-stakeholder investment options shortlisting *practices*
- intra-state collaboration *platform*
- scaling *strategy* for community based natural resource management and business practices
- integrated natural resource governance and land-use management *plans*
- co-management *arrangements* for open access common areas
- natural resource conflict resolution *arrangements*
- natural resource-based livelihood investment *plans*
- good village youth and young professionals' engagement *practices*

## How Ready and Used (Adopted and by Whom?) Is NRGF?

**NRGF has worked outside Sudan but needs to be validated in Sudan**

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- Use levels of most of the components are 3, which implies that many stakeholders are involved in their implementation and use them. **However, all the documented users of the critical novel components are part of the IFAD and government interventions.**



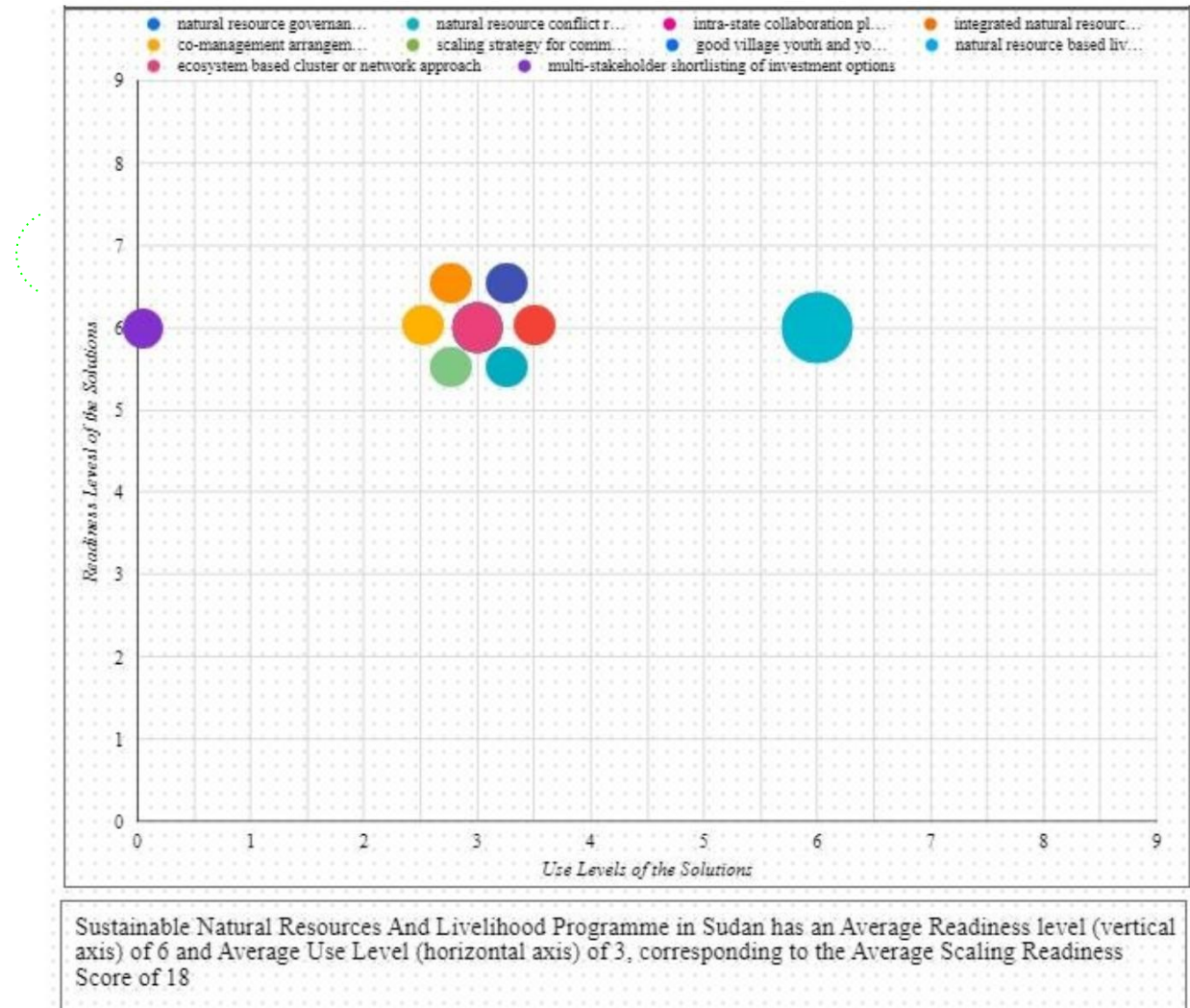
Sustainable Natural Resources And Livelihood Programme in Sudan has an Average Readiness level (vertical axis) of 6 and Average Use Level (horizontal axis) of 3, corresponding to the Average Scaling Readiness Score of 18



## What is the first step to address current bottleneck for the impact at scale potential of SNRGF?

**A mechanism for co-prioritization of high return investment options with broad consultation with various stakeholders so that public and private investment on NR**

- multi-stakeholder short listing investment options can be considered a bottleneck for improving the impact at scale of the natural resource governance framework in Sudan
- NRM conflict resolution arrangements are more studied and used
- **formally institutionalize** the investment prioritization process together with private sector, civil society, diaspora and other investment stakeholders and establish an international forum on natural resource governance in Sudan





## What did the Complete Scaling Readiness Study recommends?

It is critical to **document the processes** of NRGF and SNRLP and enable organizational and management researchers to rigorously analyze these documents so that the impact the NRGF and SNRLP can be sustained and improved in Sudan continuously

Establishing a **systematic knowledge management architecture** and **incentivizing partnerships** between Sudanese government, local universities and research units with international leaders of NRM governance can be important complementary interventions.

formally **institutionalize the investment prioritization process** together with private sector, civil society, diaspora and other investment stakeholders and establish an international forum on natural resource governance in Sudan.

# SKim

**Strengthening Knowledge Management  
for Greater Development Effectiveness  
in the Near East, North Africa,  
Central Asia and Europe**





## Why Scaling Readiness?

### Need for Packaging (Bundling) Technologies with Organizational and Institutional Innovations

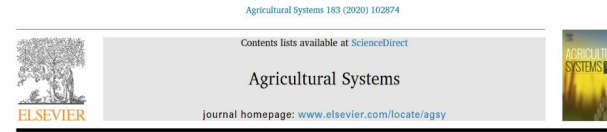
- **“Innovation Packages”** combining technologies with market, policy, capacity building and other complementary innovations
- The minimum of the innovation package determines what to work on



# INNOVATION (MANAGEMENT) SCIENCE

## Publishing the learning Scientific, Technical, Non-technical

- 5 Papers (2 upcoming)
- 3 Book Chapters
- 7 Complete Scaling Readiness Assessment
- 5 Innovation Package Reports
- 30 Innovation Profiles
- 7 Blogs
- 4 Newsletters
- 67 Presentations
- 150 + Social Media Posts



Scaling Readiness: Science and practice of an approach to enhance impact of research for development

Murat Sertas<sup>1,2</sup>, Marc Schut<sup>3,4</sup>, Claudio Proietti<sup>1</sup>, Graham Thiele<sup>1</sup>, Cees Leeuwis<sup>1</sup>

<sup>1</sup> Knowledge, Technology and Innovation Group, Wageningen University, P.O. Box 8130, 6700 EW Wageningen, the Netherlands

<sup>2</sup> International Institute of Tropical Agriculture, Kigali, RW 503 Street #3, Kigali, Rwanda

<sup>3</sup> CGIAR Research Program on Roots, Tubers and Bananas (RTB) 1558, Av. la Molina 1505, La Molina 15023, Peru

### ABSTRACT

Scaling of innovations is a key requirement for addressing societal challenges in sectors such as health, agriculture, and the environment. Research for development (R4D) programs, projects and other interventions struggle to make particular innovations go to scale. Current conceptualizations of scaling are often too simplistic; more systemic and multidimensional perspectives, frameworks and measures are needed. There is a gap between new complexity-aware theories and perspectives on innovation, and tools and approaches that can improve strategic and operational decision-making in R4D interventions that aim to scale innovations. This paper aims to bridge that gap by developing the key concepts and measures of Scaling Readiness. Scaling Readiness is an approach that encourages critical reflection on how ready innovations are for scaling and what appropriate actions could accelerate or enhance scaling. Scaling Readiness provides action-oriented support for: (1) characterizing the innovation and innovation system; (2) diagnosing the current readiness and use of innovations as a proxy for their readiness to scale; (3) developing strategy to overcome bottlenecks for scaling; (4) facilitating and negotiating multi-stakeholder innovation and scaling processes; and (5) navigating and monitoring the implementation process to allow for adaptive management. Scaling Readiness has the potential to support evidence-based scaling strategy design, implementation and monitoring, and – if applied across multiple interventions – can be used to manage a portfolio of innovation and scaling investments.



### Perspective

## A Human Machine Hybrid Approach for Systematic Reviews and Maps in International Development and Social Impact Sectors

Murat Sertas<sup>1,2,\*</sup>, Sarah Cummings<sup>2</sup>, Alessandra Garbero<sup>3</sup> and Akmal Akramkhanov<sup>1</sup>

<sup>1</sup> International Center for Agricultural Research in the Dry Areas (ICARDA), P.O. Box 4375, Tashkent 100000, Uzbekistan; A.Akramkhanov@cgiar.org

<sup>2</sup> Knowledge, Technology and Innovation, Wageningen University & Research, Leeuwenborch, Hollandseweg 1, 6706 KN Wageningen, The Netherlands; sarah.cummings@wur.nl

<sup>3</sup> Near East, North Africa, and Europe Division (NEN) Programme Management Department (PMD), International Fund for Agricultural Development, Via Paolo di Dono 44, 00142 Rome, Italy; a.garbero@ifad.org

\* Correspondence: murat.sertas@wur.nl



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**Academic Editors:**  
Gillian Petrokofsky and  
Sini Savitashko

**Abstract:** The international development and social impact evidence community is divided about the use of machine-centered approaches in carrying out systematic reviews and maps. While some researchers argue that machine-centered approaches such as machine learning, artificial intelligence, text mining, automated semantic analysis, and translation bots are superior to human-centered ones, others claim the opposite. We argue that a hybrid approach combining machine and human-centered elements can have higher effectiveness, efficiency, and societal relevance than either approach can achieve alone. We present how combining lexical databases with dictionaries from crowdsourced literature, using full texts instead of titles, abstracts, and keywords. Using metadata sets can significantly improve the current practices of systematic reviews and maps. Since the use of machine-centered approaches in forestry and forestry-related reviews and maps are rare, the gains in effectiveness, efficiency, and relevance can be very high for the evidence base in forestry. We also argue that the benefits from our hybrid approach will increase in time as digital literacy and better ontologies improve globally.

**Keywords:** effectiveness; efficiency; societal relevance; crowdsourcing; text mining; artificial intelligence; metadata



## Effects of multi-stakeholder platforms on multi-stakeholder innovation networks: Implications for research for development interventions targeting innovations at scale

Murat Sertas<sup>1,2,\*</sup>, Marc Schut<sup>3,4</sup>, Frans Hermans<sup>1</sup>, Paul van Asten<sup>1</sup>, Cees Leeuwis<sup>1</sup>

<sup>1</sup> Knowledge, Technology and Innovation Group, Wageningen University, Wageningen, The Netherlands  
<sup>2</sup> International Institute of Tropical Agriculture (IITA) Kigali Rwanda, 3 Avenue de la République, Kigali, Rwanda  
<sup>3</sup> CGIAR Research Program on Roots, Tubers and Bananas (RTB) 1558, Av. la Molina 1505, La Molina 15023, Peru  
<sup>4</sup> CGIAR Research Program on Roots, Tubers and Bananas (RTB) 1558, Av. la Molina 1505, La Molina 15023, Peru

\* Correspondence: murat.sertas@wur.nl



## Social network analysis of multi-stakeholder platforms in agricultural research for development: Opportunities and constraints for innovation and scaling

Murat Sertas<sup>1,2,\*</sup>, Marc Schut<sup>3,4</sup>, Frans Hermans<sup>1</sup>, Paul van Asten<sup>1</sup>, Cees Leeuwis<sup>1</sup>

<sup>1</sup> Knowledge, Technology and Innovation Group, Wageningen University, Wageningen, The Netherlands

<sup>2</sup> International Institute of Tropical Agriculture (IITA) Kigali Rwanda, 3 Avenue de la République, Kigali, Rwanda

<sup>3</sup> CGIAR Research Program on Roots, Tubers and Bananas (RTB) 1558, Av. la Molina 1505, La Molina 15023, Peru

<sup>4</sup> CGIAR Research Program on Roots, Tubers and Bananas (RTB) 1558, Av. la Molina 1505, La Molina 15023, Peru

**Abstract:** Multi-stakeholder platforms (MSPs) are a key mechanism for facilitating innovation and scaling in agricultural research for development (R4D). However, the effectiveness of MSPs in facilitating innovation and scaling is often questioned. This paper presents a social network analysis (SNA) of MSPs in agricultural R4D. The SNA reveals the structure and dynamics of MSPs, and identifies the factors that influence their effectiveness. The results show that MSPs are often characterized by a high degree of connectivity, with many actors having multiple links to other actors. This suggests that MSPs are often well-integrated into the R4D system. However, the SNA also reveals that MSPs are often characterized by a high degree of centralization, with a few actors having many links to other actors. This suggests that MSPs are often dominated by a few actors, which may limit their effectiveness in facilitating innovation and scaling. The results also show that MSPs are often characterized by a high degree of heterogeneity, with actors having different backgrounds and expertise. This suggests that MSPs are often well-equipped to address complex problems. Overall, the SNA reveals that MSPs are a key mechanism for facilitating innovation and scaling in agricultural R4D, but their effectiveness is often limited by factors such as centralization and heterogeneity. The results suggest that MSPs should be designed and managed to maximize their effectiveness in facilitating innovation and scaling.

**Keywords:** social network analysis; multi-stakeholder platforms; agricultural research for development; innovation; scaling

## Learning System for Agricultural Research for Development (LISARD): Development, application and analysis of performance factors in research for development

Murat Sertas<sup>1,2,\*</sup>, Marc Schut<sup>3,4</sup>, Frans Hermans<sup>1</sup>, Paul van Asten<sup>1</sup>, Cees Leeuwis<sup>1</sup>

<sup>1</sup> Knowledge, Technology and Innovation Group, Wageningen University, Wageningen, The Netherlands

<sup>2</sup> International Institute of Tropical Agriculture (IITA) Kigali Rwanda, 3 Avenue de la République, Kigali, Rwanda

<sup>3</sup> CGIAR Research Program on Roots, Tubers and Bananas (RTB) 1558, Av. la Molina 1505, La Molina 15023, Peru

<sup>4</sup> CGIAR Research Program on Roots, Tubers and Bananas (RTB) 1558, Av. la Molina 1505, La Molina 15023, Peru

\* Correspondence: murat.sertas@wur.nl

**Abstract:** The international development and social impact evidence community is divided about the use of machine-centered approaches in carrying out systematic reviews and maps. While some researchers argue that machine-centered approaches such as machine learning, artificial intelligence, text mining, automated semantic analysis, and translation bots are superior to human-centered ones, others claim the opposite. We argue that a hybrid approach combining machine and human-centered elements can have higher effectiveness, efficiency, and societal relevance than either approach can achieve alone. We present how combining lexical databases with dictionaries from crowdsourced literature, using full texts instead of titles, abstracts, and keywords. Using metadata sets can significantly improve the current practices of systematic reviews and maps. Since the use of machine-centered approaches in forestry and forestry-related reviews and maps are rare, the gains in effectiveness, efficiency, and relevance can be very high for the evidence base in forestry. We also argue that the benefits from our hybrid approach will increase in time as digital literacy and better ontologies improve globally.

**Keywords:** effectiveness; efficiency; societal relevance; crowdsourcing; text mining; artificial intelligence; metadata