



# Integrating and Scaling Innovations for Dryland Agriculture.

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DDG Research and Outreach ICARDA

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[icarda.org](https://icarda.org)

International Center for Agricultural Research in the Dry Areas

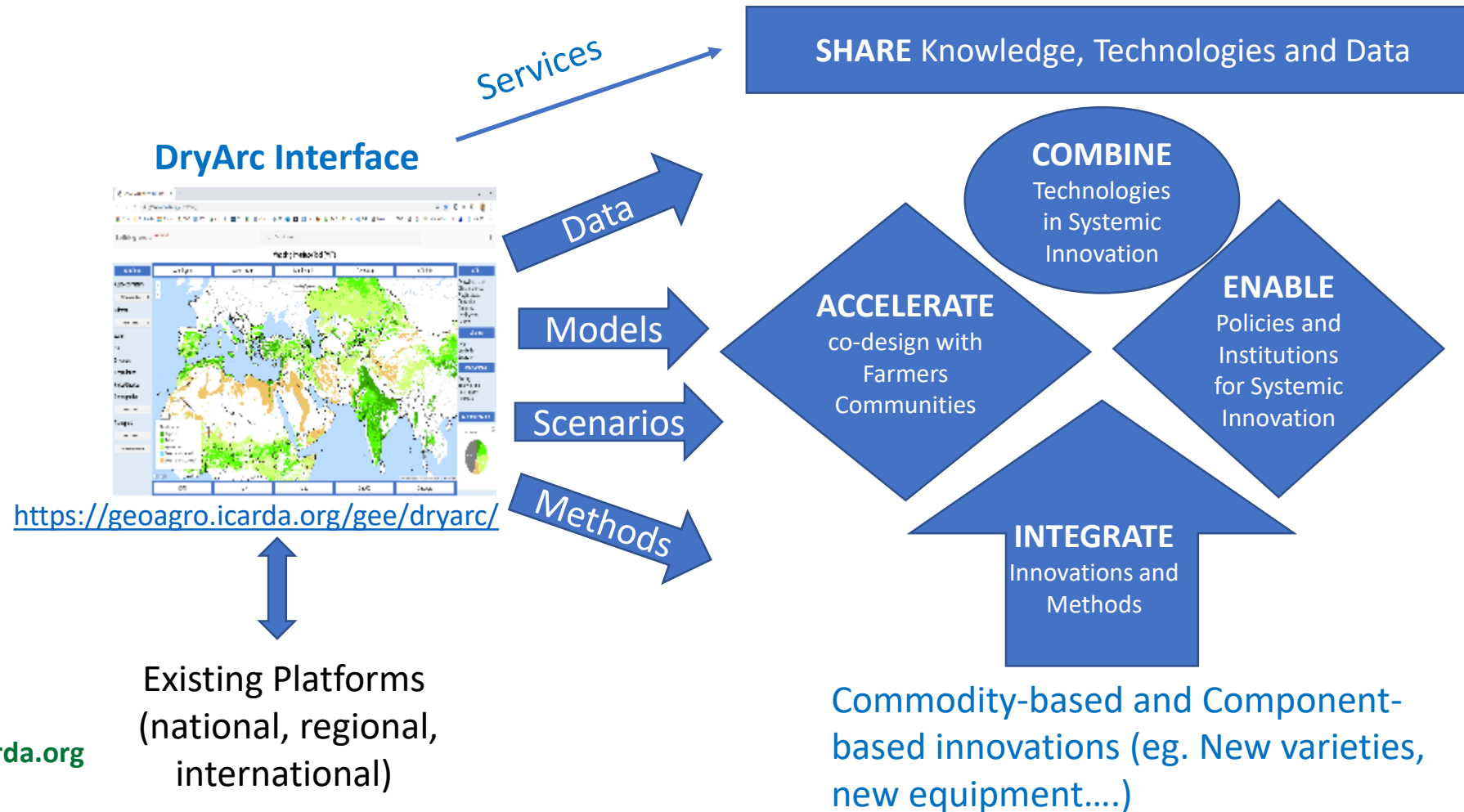
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A CGIAR Research Center



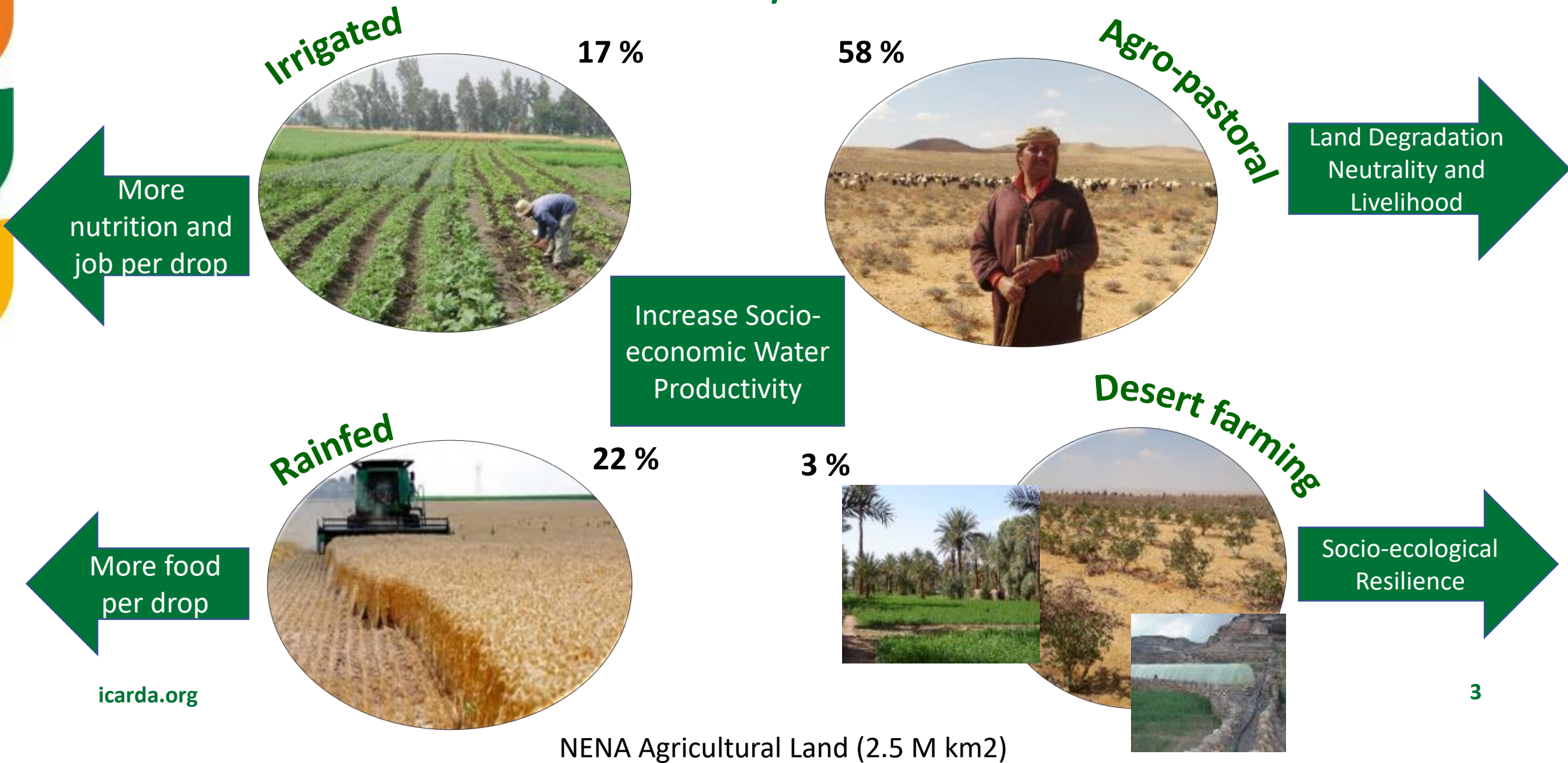
# We need a Framework for Scaling Systemic Innovation rather than Component Innovation

Five MODULES supported by a Digital Interface to Design and Manage R4D Projects for  
Systemic Transformation of Dryland Agri-food systems



A framework  
in discussion  
with FAO and  
countries  
(NARS,  
Australia...)

# A diversity of Challenges and Solutions in the Drylands





# 1. Plant breeding as the trigger of the innovation process but the innovation is a system

Rice-fallow system with pulse crops in South Asia (Bangladesh, India and Nepal)

**COMBINE**  
Technologies in  
Systemic  
Innovation

New variety



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Adapted Crop Management



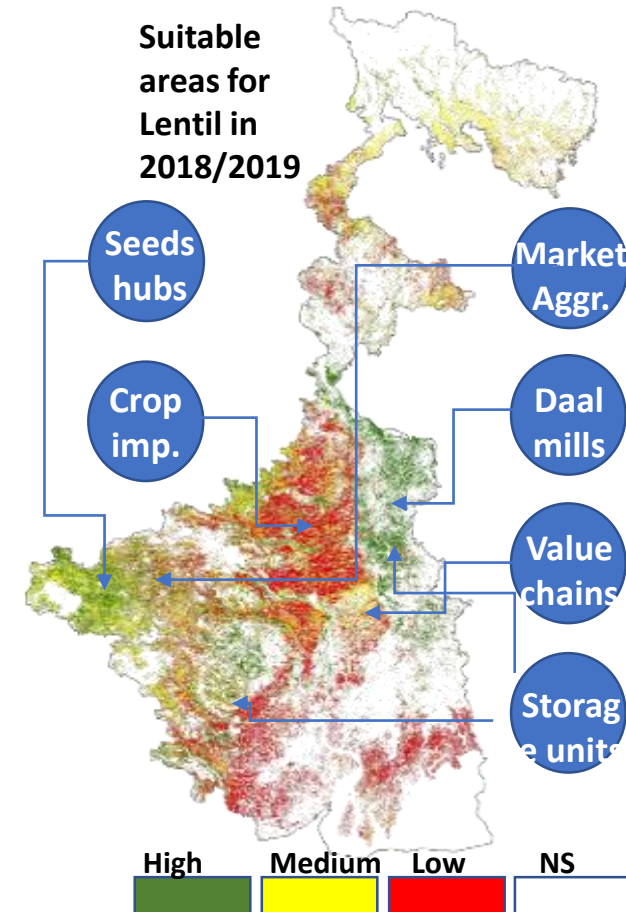
In a farm-household context



In a Value-chain



Digital Advisory Services for scaling



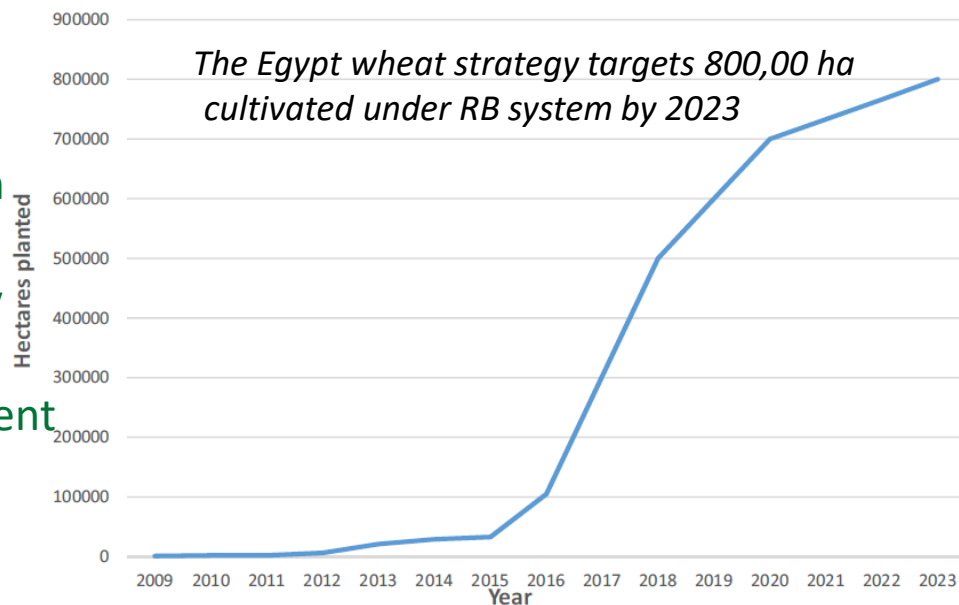
150 000  
farmers  
beneficiary

Same apply to small ruminants breeding

## 2. Systemic Innovation requires conducive policies and agri-business

Mechanized raised Bed and diversification in Egypt

National policies on wheat self sufficiency and water management



New Wheat varieties with adapted crop, water and soil management  
[icarda.org](http://icarda.org)



Revised policies on N fertilizers and Nutrition

Adaptation to legume crops in rotation



(Funded by EU, Germany)

**ENABLE**  
Policies and Institutions for Systemic Innovation

Private companies investing in R&D



# 3. Co-design with local communities is key for success

The agro-sylvo-pastoral systems in Jordan and Tunisia

Upstream land and water management



Biodiversity conservation



**ACCELERATE**  
co-design with  
Farmers  
Communities

DECEMBER 2019

BRIEF SERIES 00

Collective management of grazing



A flexible approach to the restoration of degraded rangelands

Downstream management of dual-purpose crops and forages

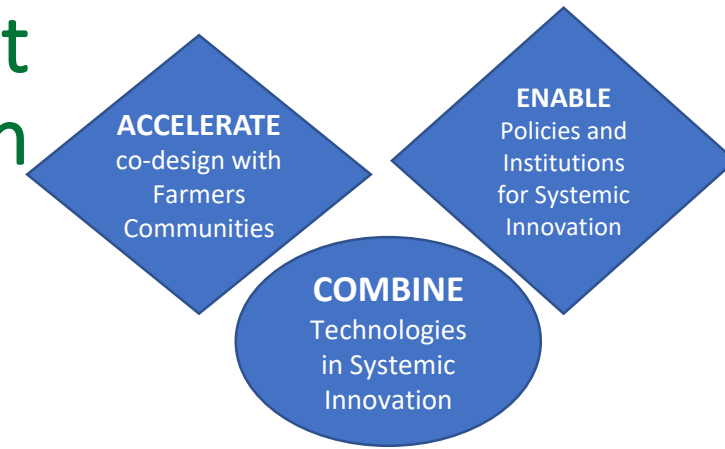
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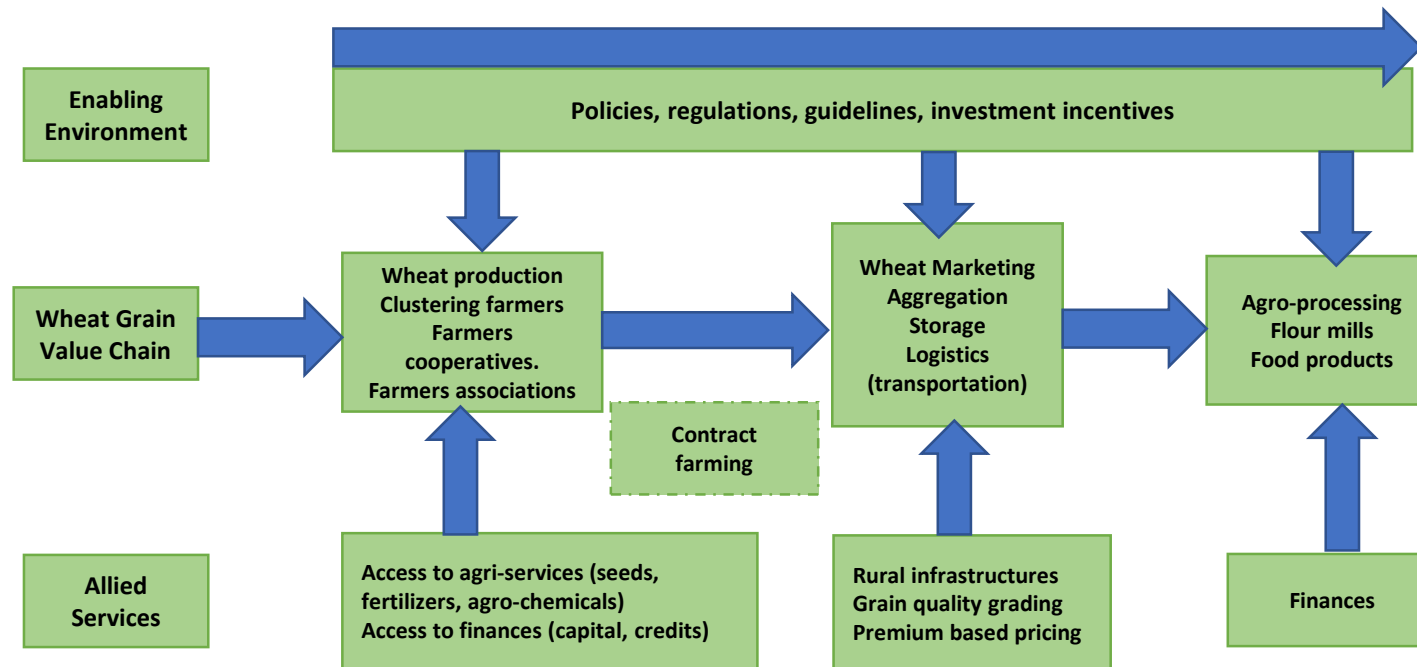
Value-chain for local products 6

# 4. Sustainability is in a transformative pathway not in a single solution

(Wheat in Africa)



Phase 1: a rapid transformation based on a priority crop



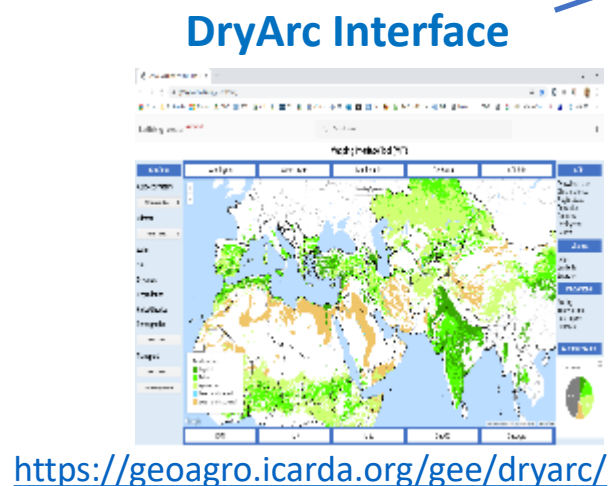
Wheat  
Income  
Jobs

Sustainability assessment

Phase 2: diversification and natural resources management

## 5. Digitalisation increases our transformative capacity if it provides the right services to each stakeholder

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Existing Platforms  
(national, regional,  
international)

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Services

**SHARE** Knowledge, Technologies and Data

Data

Models

Scenarios

Methods

**COMBINE**  
Technologies  
in Systemic  
Innovation

**ACCELERATE**  
co-design with  
Farmers  
Communities

**ENABLE**  
Policies and  
Institutions  
for Systemic  
Innovation

**INTEGRATE**  
Innovations and  
Methods

Commodity-based and Component-based innovations (eg. New varieties, new equipment....)

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(NARS, France,  
Australia) 8