Combining the Living Lab (LL) and Farmer's Field Schools (FFS) approaches in a System of Rice Intensification (SRI): lessons learned and challenges in the Senegal River Valley (Podor)

Co-developing innovations for sustainable land management in West African smallholder farming systems (COINS)

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COMMUNICATION PLAN

1. Living Lab (LL) approach in COINS
2. Stakeholders engaged in the LL
3. SRI principles
4. FFS principles
5. FFS implementation process in SRI
6. Agronomic evaluation of SRI
7. Economic evaluation of SRI
8. Foresight exercise on SLM in the SRI with LL members
9. Lessons learned from experience
10. Recommendations

1. LIVING LAB APPROACH IN COINS

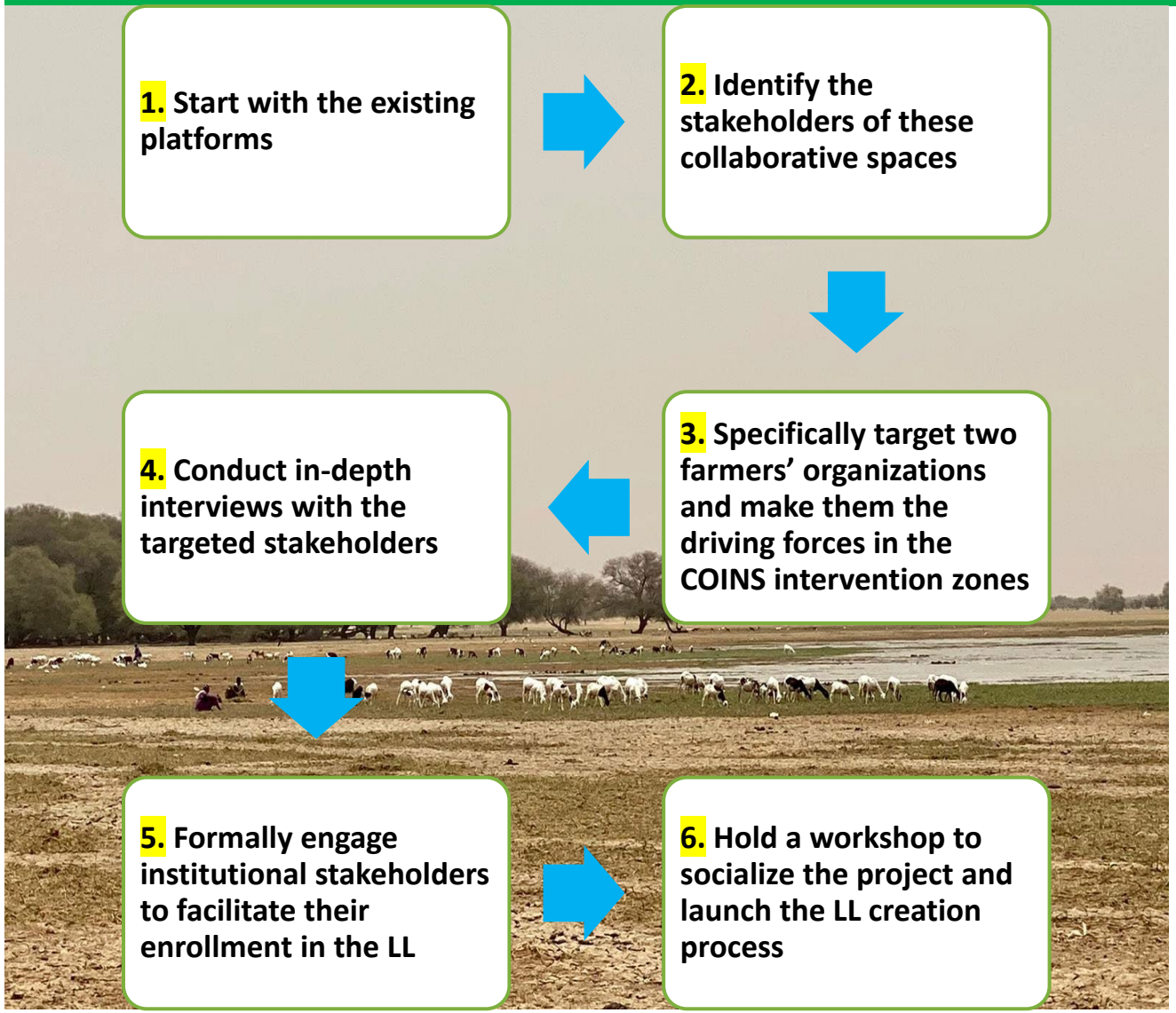
*"an **open innovation** research method that aims to develop **new products and services**. The approach promotes a process of co-creation with end-users in real-life conditions and relies on an ecosystem of public-private-citizen **partnerships**"* (Dubé et al, 2014).

Form: *"physical regions, virtual realities, or interaction spaces in which stakeholders in a **partnership** of companies, public agencies, universities, users, and others **collaborate** to create, prototype, validate, and test **new technologies, services, products, and systems** in real-world settings"* (Zara et al, 2016).

Key principles:

- *Openness*
- *Participation*
- *Inclusion*
- *Flexibility*
- *Innovation*
- *Co-creation*
- *Experimentation*
- *Governance*

1. LIVING LAB APPROACH IN COINS



1. Start with the existing platforms

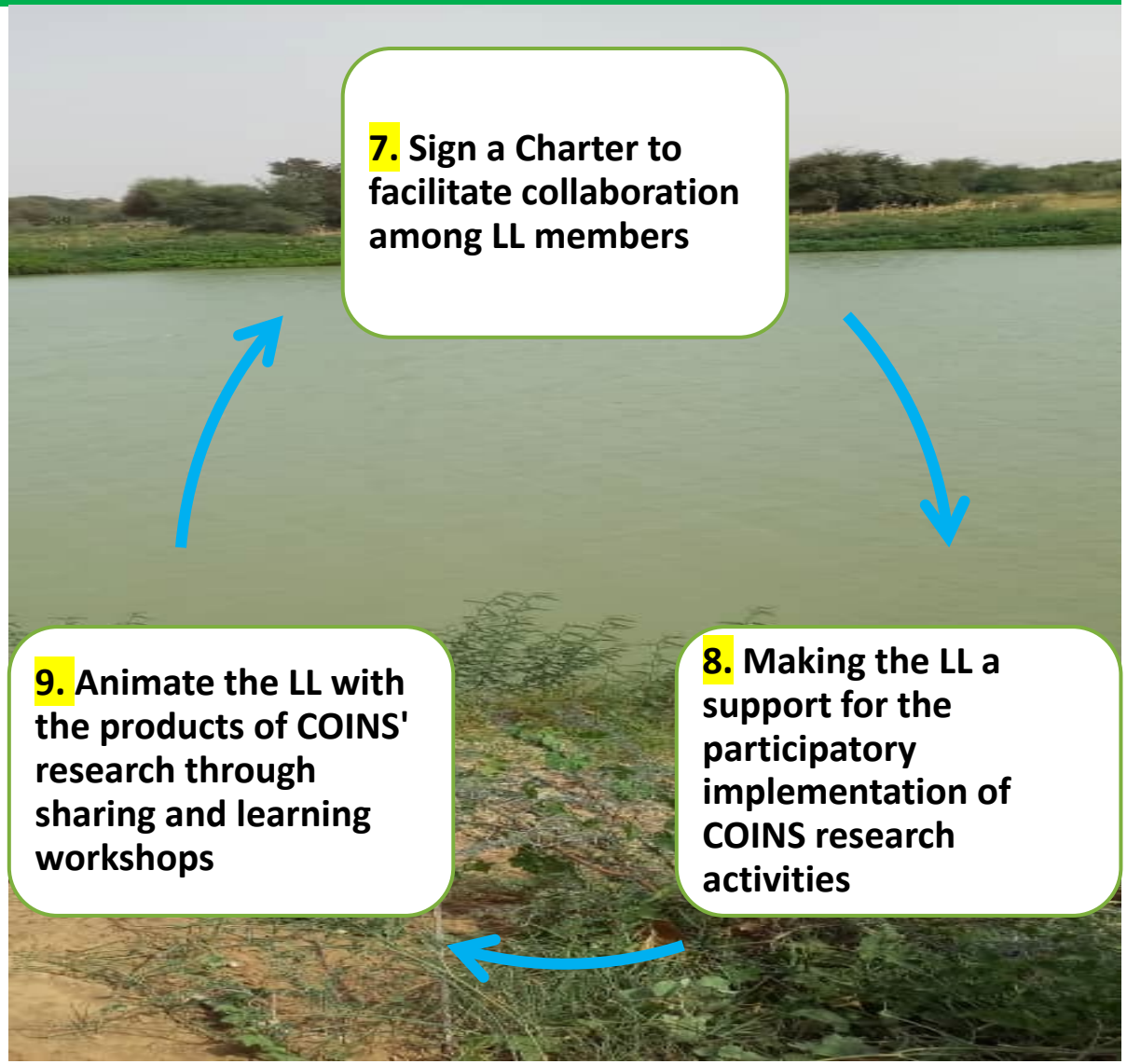
2. Identify the stakeholders of these collaborative spaces

3. Specifically target two farmers' organizations and make them the driving forces in the COINS intervention zones

4. Conduct in-depth interviews with the targeted stakeholders

5. Formally engage institutional stakeholders to facilitate their enrollment in the LL

6. Hold a workshop to socialize the project and launch the LL creation process



7. Sign a Charter to facilitate collaboration among LL members

8. Making the LL a support for the participatory implementation of COINS research activities

9. Animate the LL with the products of COINS' research through sharing and learning workshops

2. STAKEHOLDERS ENGAGED IN THE LIVING LAB IN THE SENEGAL RIVER VALLEY

Farmers' organizations

Union of Young Farmers of Koyli Wirndé

Interprofessional Committee of the Rice Sector

Galoya Union

Cooperative Fouta 1

Union of women transformers of the Podor department

Podor Department Breeders' House

Technical services

National Agricultural and Rural Consultancy Agency

National Institute of Soil Science

Departmental Rural Development Service

Departmental Livestock Service

Regional Development Agency

National Company for the Development and Exploitation of Land in the Senegal River Delta and the Senegal River and Falémé Valleys

Podor Water and Forestry Service

Podor Departmental Local Development Support Service

Non-Gouvernmental Organizations

Environment Development Action for the Natural Protection of Soils

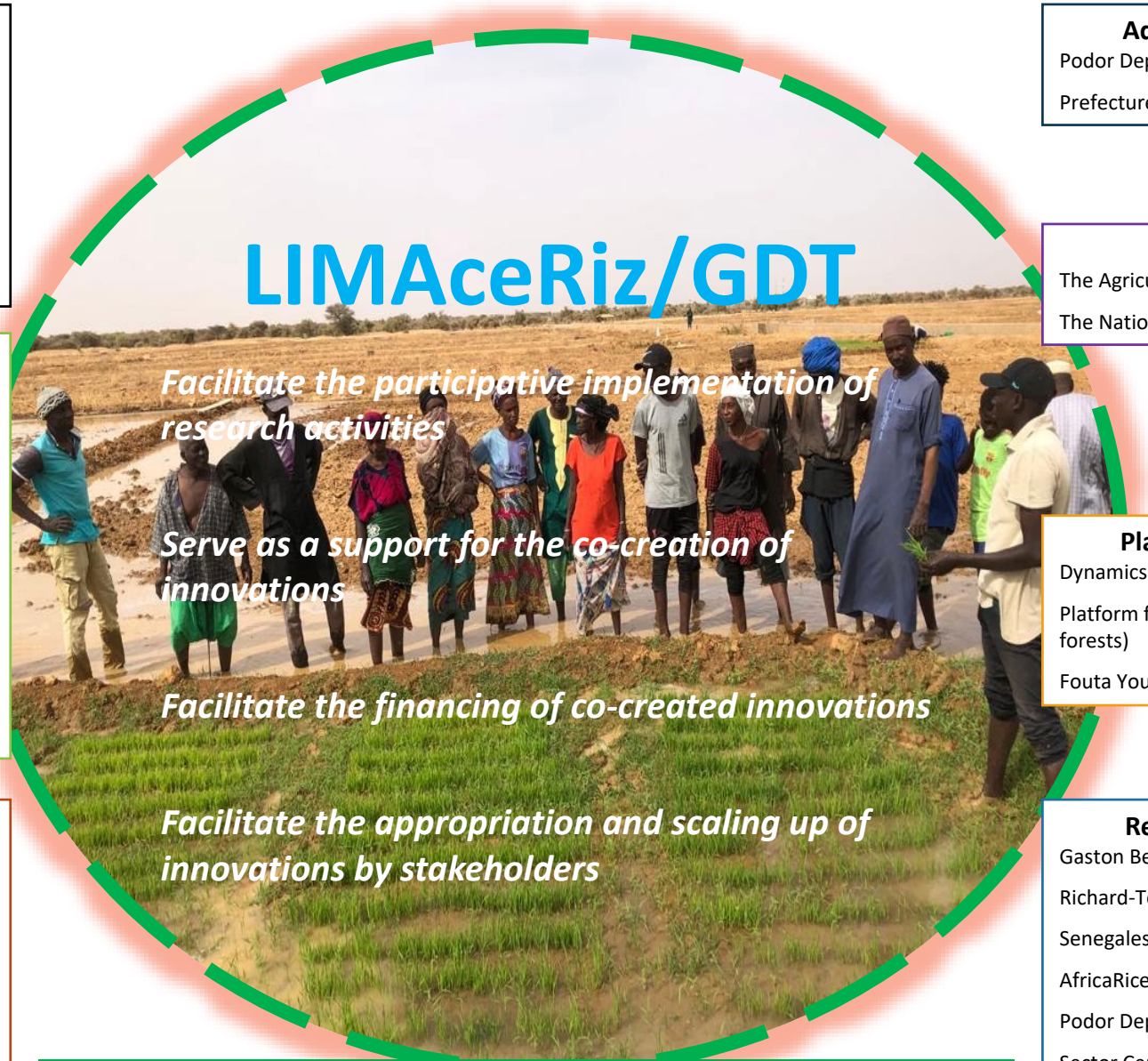
Environment Development Action for Energy

NGO Democracy-Human rights-Development

NGO Union for Solidarity and Mutual Aid /Podor Integrated Programme

Federation of Non-Governmental Organizations of Senegal

Syngenta Foundation for Sustainable Agriculture



COINS Consortium

Administration and local authorities

Podor Departmental Council

Prefecture of Podor department

Financial sector and insurance

The Agricultural Bank

The National Agricultural Insurance Fund of Senegal

Platforms for dialogue and advocacy

Dynamics for a local agro-ecological transition in Podor

Platform for governance of natural resources (land, water, forests)

Fouta Young Agripreneurs Innovation Platform

Research and training organisations

Gaston Berger University of St-Louis

Richard-Toll Higher Institute for Professional Training

Senegalese Institute for Agricultural Research of St-Louis

AfricaRice

Podor Department Professional Training Centre

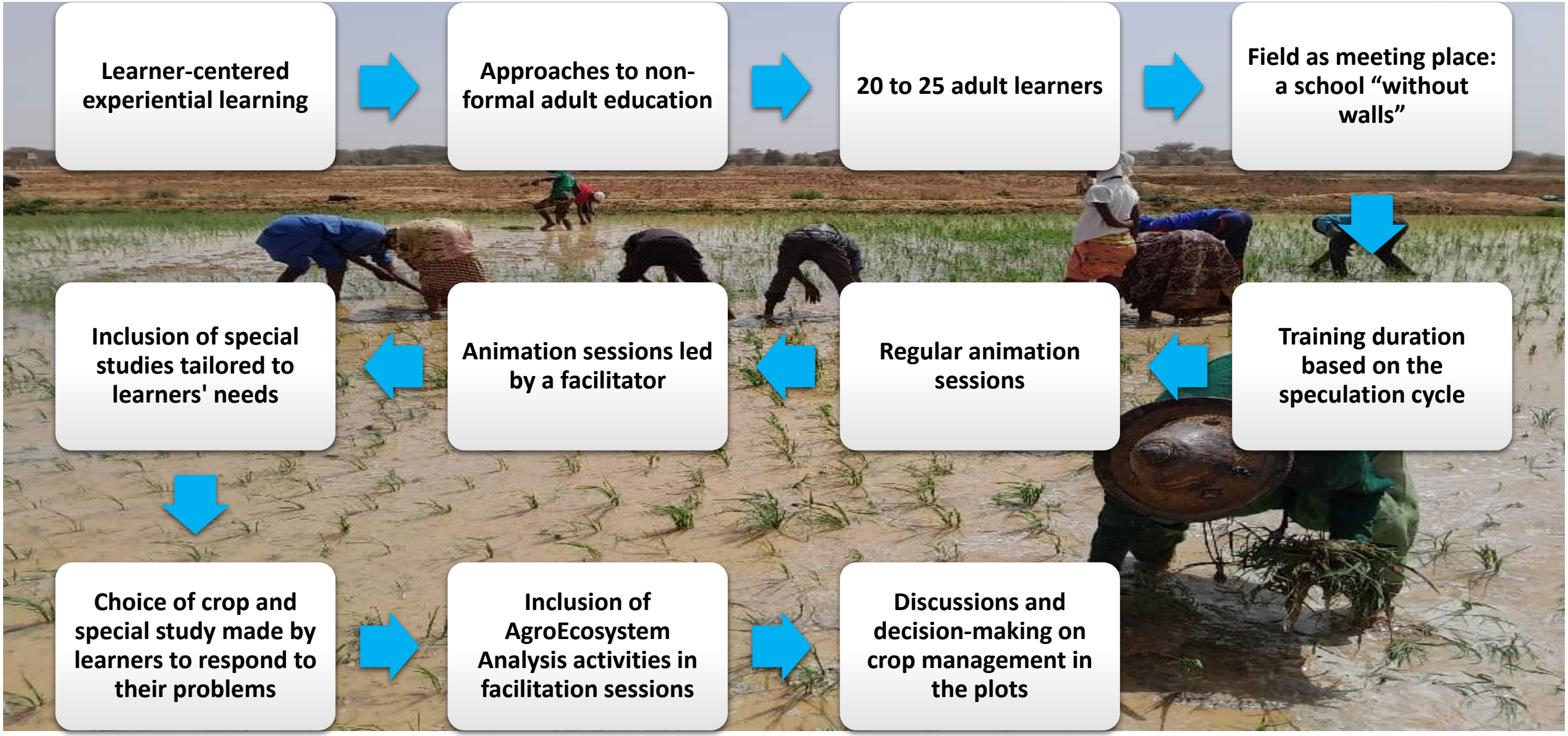
Sector Centre for Professional Training in Mechanics and Powered Equipment of Diama

3. SRI PRINCIPLES

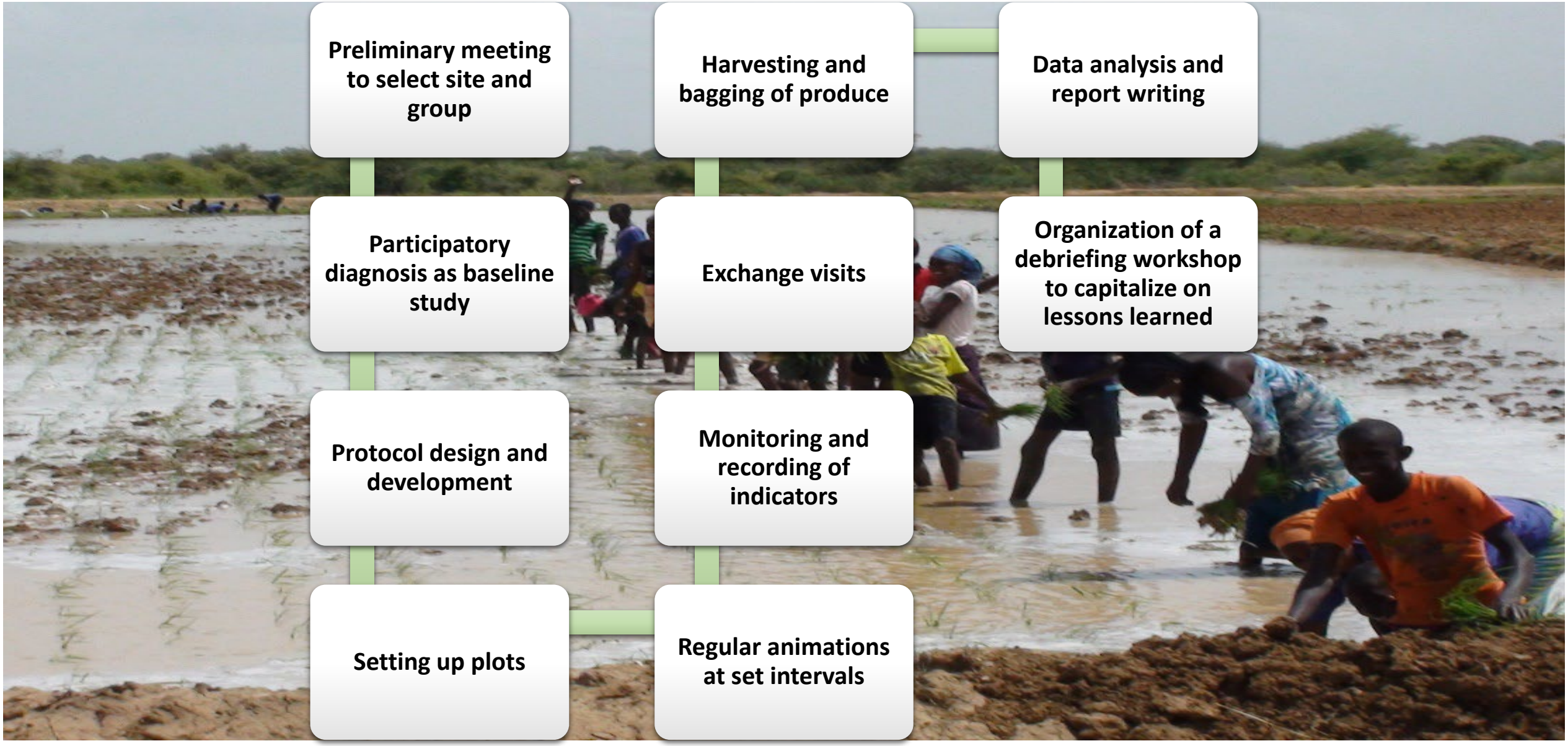
Farming Practices in the Valley	*Agricultural practices*	*System of Rice Intensification*
Crossed offset in the absence of deep ploughing	***Soil preparation***	Crossed offset in the absence of deep ploughing Levelling/Plot layout
100 to 150 kg/ha	***Seeds***	10 to 20 kg/ha
25 to 30 days	***Nurseries***	8 to 15 days
25 to 30 days Broadcast sowing Several plants per hole	***Transplanting***	8 to 15 days Spacing 25 cm x 25 cm 1 plant per hole
Less organic matter DAP at bottom with 100 T/ha Urea cover of 300 to 350 kg/ha	***Fertilization***	More organic matter of 10 to 15T/ha Urea of 100 to 150 kg/ha
Permanent flooding	***Irrigation***	Alternating flooding and drying Permanent surface water during reproductive stage Well-aerated soil
Manual weeding Excessive use of herbicides (Wendol; 2,4-D; Propanil)	***Crop management***	Mechanical weeding 3 to 4 weeding operations

SRI: create harmonious conditions between soil, water, plant and light to enable the plant to express all its potential to the full.

4. FFS PRINCIPLES

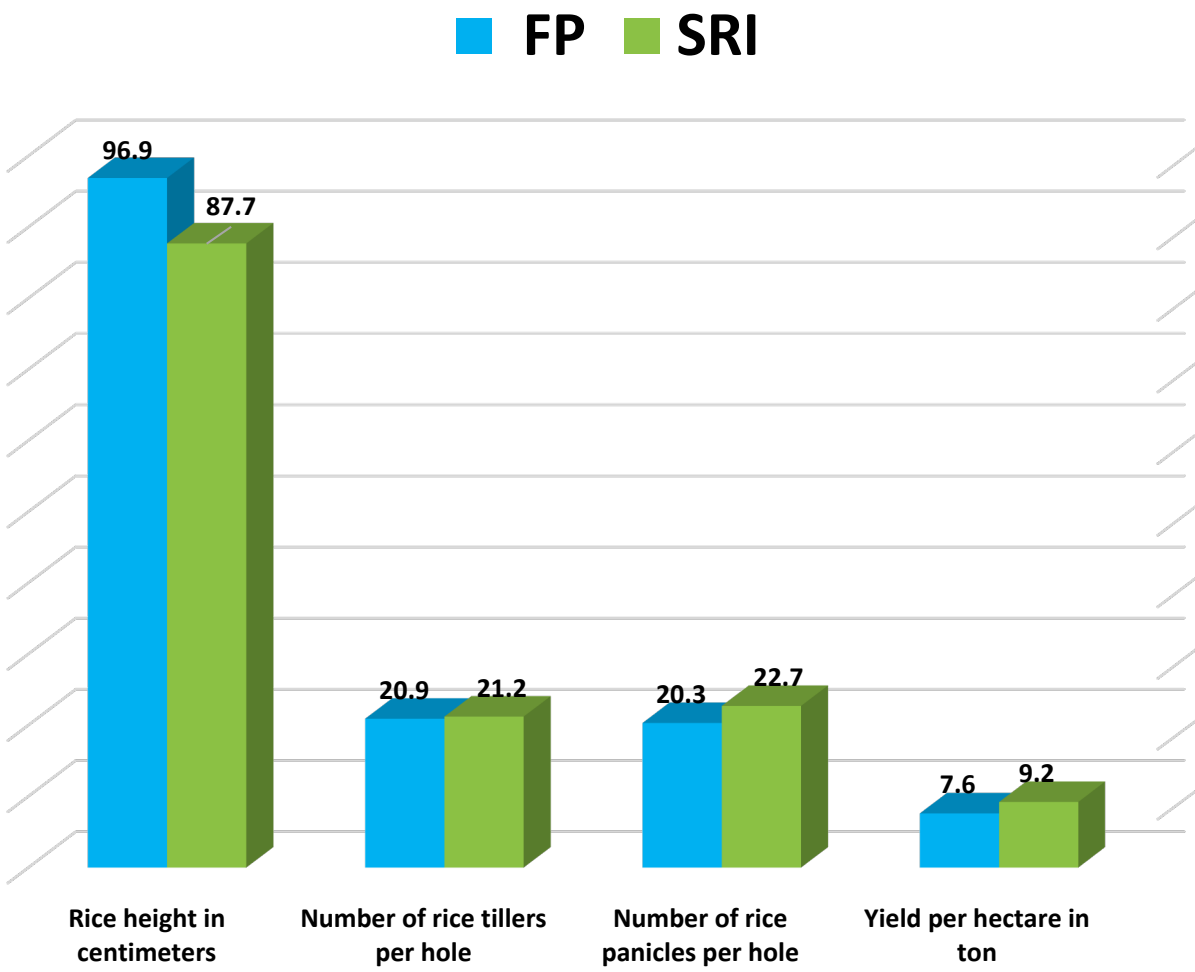


5. FFS IMPLEMENTATION PROCESS IN SRI

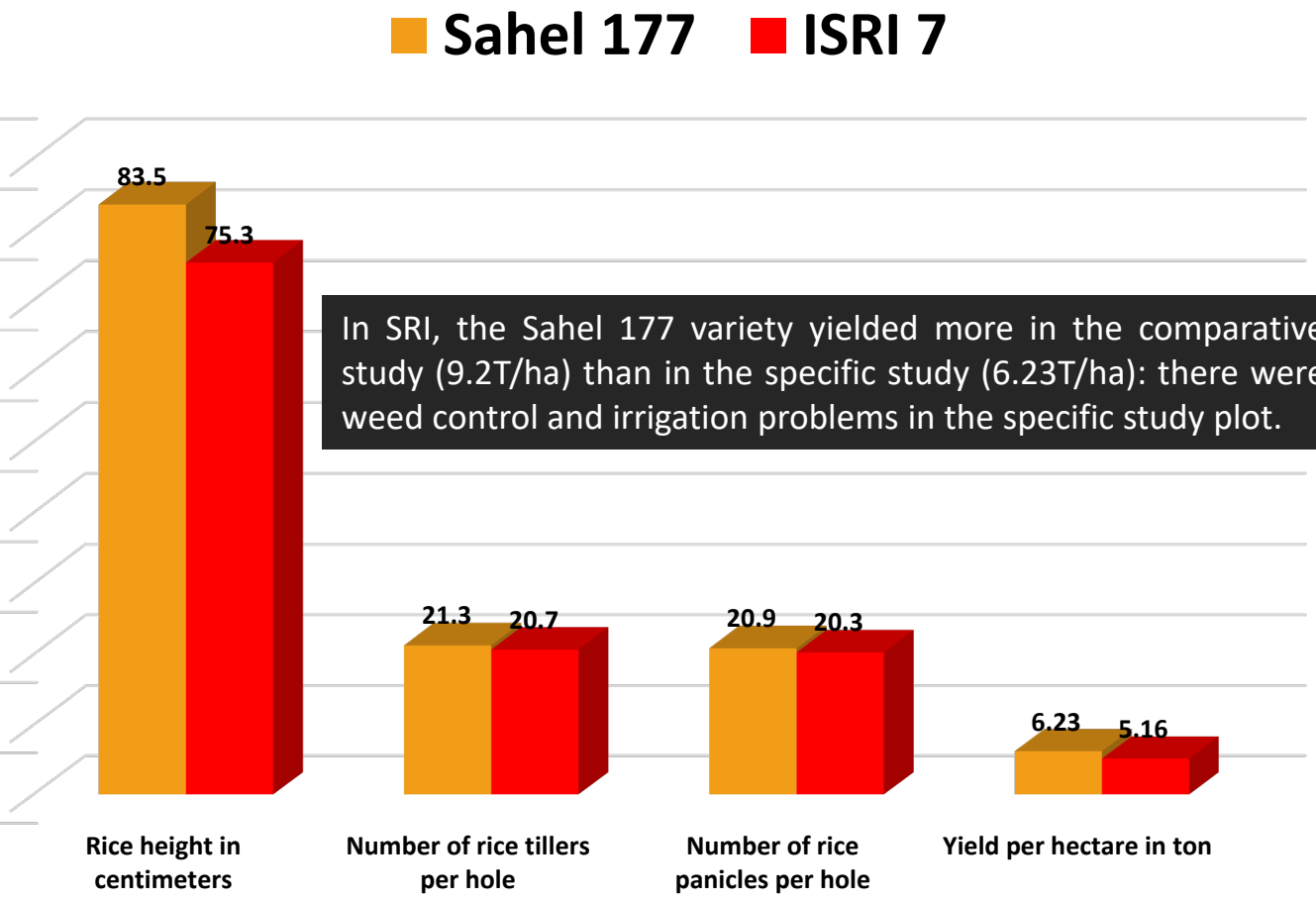


6. AGRONOMIC EVALUATION OF THILAMBOL'S FFS ON SRI

Comparative study between Farming Practices (FP) and System of Rice Intensification (SRI) with Sahel 177



Specific study of Sahel 177 and ISRI 7 varieties in SRI



In SRI, the Sahel 177 variety yielded more in the comparative study (9.2T/ha) than in the specific study (6.23T/ha): there were weed control and irrigation problems in the specific study plot.

7. ECONOMIC EVALUATION OF THILAMBOL'S FFS ON SRI

Designation	FP	SRI	Difference
Cost soil preparation (ploughing, planting, etc.) (FCFA)	7500	7500	-
Quantity of seed (Kg)	6	2	4
Cost of seed (FCFA)	2 100	700	1 400
Cost of irrigation (FCFA)	25 000	12 500	12 500
Quantity of DAP (Kg)	10	00	10
Quantity of urea (Kg)	35	10	25
Total cost of fertilizer (FCFA)	14 750	3500	11 250
Cost of plant protection products (FCFA)	1500	00	1500
Total cost of labor (sowing, weeding, fertilizer application, hoeing, etc.) (FCFA)	-	-	-
Other expenses (FCFA)	-	-	-
Total expenses (a) (FCFA)	50 850	24 200	-26 650
Production (Kg)	760	920	+160
Production value (b) (FCFA)	114 000	138 000	+24 000
Margin (FCFA) (= b - a)	**63 150**	**113 800**	**+50 650**

To know

Early replication of SRI principles in FP: boosting FP performance

Delayed irrigation of SRI at heading: yield affected

Don't forget the long-term environmental effects!

8. FORESIGHT EXERCISE ON SLM IN THE SRI

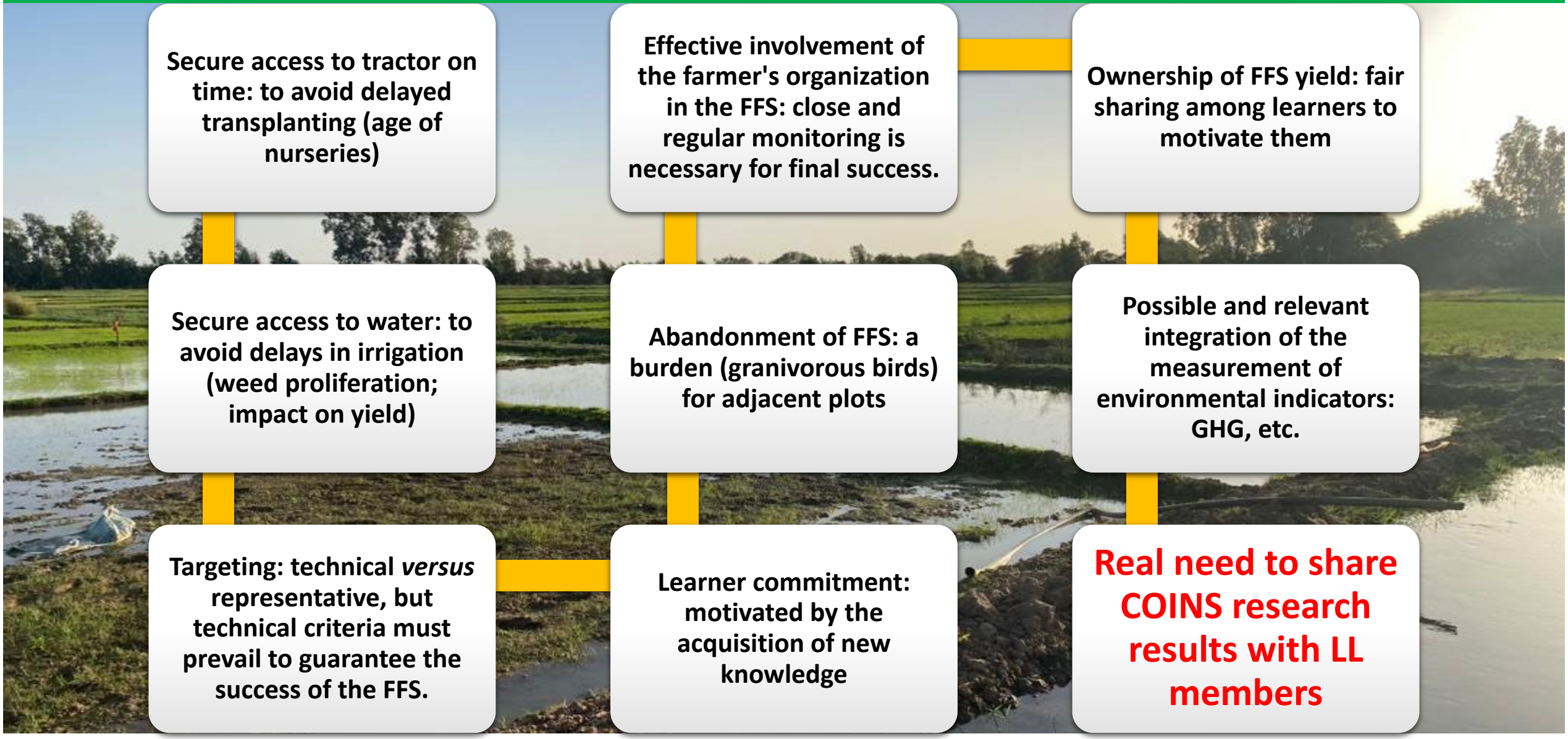
With foresight, 3 scenarios were collectively elaborated on SLM in the SRI in Podor department up to 2035

"Erosion of hopes in the SRI"	*"Semi-green horizon"*	*"Golden age of SLM in the SRI"*

Main driving variables influencing SLM in SRI

The accompanying measures facilitating secure access to production factors	The level of human, financial and technical resources available to technical structures	The human capital equipped and ready to bring about change through favorable public policies and incentives	The level of community awareness linked to their sensitization	The governance of farmers' organizations

9. LESSONS LEARNED FROM EXPERIENCE



Secure access to tractor on time: to avoid delayed transplanting (age of nurseries)

Effective involvement of the farmer's organization in the FFS: close and regular monitoring is necessary for final success.

Ownership of FFS yield: fair sharing among learners to motivate them

Secure access to water: to avoid delays in irrigation (weed proliferation; impact on yield)

Abandonment of FFS: a burden (granivorous birds) for adjacent plots

Possible and relevant integration of the measurement of environmental indicators: GHG, etc.

Targeting: technical *versus* representative, but technical criteria must prevail to guarantee the success of the FFS.

Learner commitment: motivated by the acquisition of new knowledge

Real need to share COINS research results with LL members

10. RECOMMENDATIONS

1. Carry out an environmental assessment of the Thilambol's FFS and share the results
2. Share results with farmers' organizations in the Senegal River Valley
3. Accompany the 25 learners in implementing SRI on their own farms
4. Turn the 25 SRI learners into relays for scaling up.
5. Promote mechanized transplanting and weeding in SRI
6. Promote soil-planning equipment
7. Build capacity in good rice-growing and irrigation practices
8. Support Senegal State which plans to develop SRI with the National plan for adapting the agricultural sector to climate change, horizon 2050
9. Launch an advocacy campaign based on the action plan leading to the advent of the *"Golden age of SLM in SRI"* scenario.

THANK YOU FOR LISTENING.

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