



Appendix 7: Illustrative Details from the Project Business Plan

Background

The Dual Storage and Finance Challenge in Francophone West Africa

Smallholder farmers are often unable to maximize their harvest incomes due to limited ability to store to obtain high prices and inability to access credit, two issues that could be solved by warehouse storage schemes.

The Storage Challenge

Pest and weather risks cause significant volumes of post-harvest loss among West African smallholder farmers. Farmers require effective storage solutions for the following reasons:

- Effective storage can increase value captured by smallholders by mitigating post-harvest losses (see below).
- Storage availability can reduce the artificial depression of farmgate prices during the harvest season, reducing overall price volatility and allowing farmers using storage to take advantage of higher, lean-season prices.

Senegal maize dry-weight loss estimates	
Storage Loss	5.1%
Total Post-Harvest Loss	15.6%



The Gates-funded APLIS project estimates that **a 5% dry-weight loss could cause smallholder farmers to lose 25% of the value of their crops.**

The Finance Challenge

Storage solutions alone often do not allay harvest-time financial pressure faced by smallholder farmers, who sell their crops during harvest to meet seasonal financial obligations such as school fees. Storage-based finance would introduce the following benefits:

- Increasing access to finance during the harvest can allow smallholder farmers to pursue income gains through storage without sacrificing harvest-time liquidity.
- Accessing finance can allow smallholder farmers to invest in productivity-increasing inputs and other enterprises, leading to further income gains.

Access to finance challenges are especially acute for women, who often lack real collateral (e.g., land ownership) and are perceived as riskier.

4% Percentage of women in Senegal with access to formal loans from financial institutions, compared to 14% of men.

28% Percentage of women farmers in Senegal who own land, compared to 65% of men.



Size of World Bank-estimated credit gap for women-owned enterprises in Sub-Saharan Africa.

Storage-based finance schemes could solve the dual storage and finance challenges for smallholders if they reach scale.

The Solution: Storage-Based Finance

Although examples of storage-based finance schemes exist in francophone West Africa, they have not yet been able to scale. Increasing the accessibility of storage-based finance to smallholder farmers would allow for more opportunities to increase incomes across value chains.

Why is Storage-Based Finance Useful?

Storage-based finance schemes allow farmers to store their crops safely and wait to sell crops until prices rise. Storage also allows farmers who lack conventional forms of collateral to use their crops as collateral for loans.



Warehouse Storage Impacts

Access to Financial Institutions

- Warehouse schemes provide SHFs access to financial institutions that provide agricultural credit at lower interest rates.
- Access to credit increases the ability of farmers to invest in innovative technologies and alternate income-generating activities, while maximizing harvest incomes.

Higher Income Opportunities

- Credit access and use of effective warehouses allow SHFs to take advantage of price seasonality across crop value chains and store crops until prices are most favorable.
- In the long-term, storage-based finance can reduce price volatility, increasing the reliability of end-markets for farmers.

Access to Premium Markets

- Some private sector actors can connect smallholder farmers to third-party actors or markets that are willing to purchase high-quality crops at a premium price after harvest.
- Aggregation of crops also allows farm cooperatives to increase their price bargaining power.

Gender Impact

- A project in the Sahel showed that women accounted for 57% of participation in warrantage and that cowpea and groundnuts comprised over 60% of stocks in warehouses.*
- Warehouse schemes in these value chains could put women-led coops in a new position of power.

*IITA

Emergent Factors Enabling Storage-Based Finance

Despite current barriers, it is an opportune time to invest in a storage-based finance project design due to a number of factors:



Supportive Government Regulations

- In July 2017, the Government of Senegal instituted a law regarding the Warehouse Receipt System that outlines the responsibilities and obligations of each actor and puts in place the general infrastructure needed to develop WRS schemes.
- The Ministry of Commerce is currently finalizing the regulatory body that will license warehouses for participation in WRS. This regulatory body is expected to be up and running by early 2021.



Successful Pilots with Key Guiding Lessons

- To amplify impact results, the AgResults prize can leverage lessons learned from the IFC project in the Senegal rice value chain: investigate price trends to identify value chains with the highest post-harvest arbitrage opportunities, design storage-based finance schemes with low transaction costs, and incentivize warehouses located near production.
- The Strengthening African Rural Smallholders (STARS) project developed a warehouse system in partnership with three MFIs. In Louga, cowpea was sold at the price equal to \$.36/kg at the beginning of warehousing and at \$1.07 after 6 months of storage.



Value Chain Actor Interest due to Success of Similar Programs

- The USAID Nataal Mbay project (2015-2019) in the Senegal River Valley rice value chain developed a response to financial institutions' hesitation to lend to rice farmers due to a perceived high risk and lack of available collateral. The project worked with rice processors and financial institutions to broker an alternative financial contracting arrangement using third-party collateral managers to monitor rice paddy stocks as collateral, increasing trust and transparency amongst actors.
- Due to the success of this project, key rice value chain actors—such as La Banque Agricole, the insurance company CNAAS, and private collateral manager companies—have expressed interest in pursuing further storage-based finance schemes.



Existing Business Models

- The AgResults team spoke with a number of cooperatives, unions, and collateral managers who are already engaged in modest level of storage-based finance.
- A prize competition could allow these market actors to scale the models most beneficial to smallholders.

Storage-Based Finance Schemes Overview

Within the scope of the prize competition, AgResults anticipates the prize primarily incentivizing Warehouse Receipt Systems, with two other potential responses to the requirement of developing storage-based finance schemes.

Warehouse Receipt System

- Farmers or, more commonly, farmers' groups store crops in a warehouse owned by producers' organizations or private sector actors.
- Warehouses are managed by third-party collateral managers who provide receipts that the farmers use to obtain loans from financial institutions.
- Farmers pay interest and storage fees after selling crops during the dry season.

Most likely model

Warrantage

- Farmers obtain loans by depositing their crops in warehouses managed by producers' organizations who coordinate with banks and monitor crops.
- Warrantage users often store their crops for consumption rather than commercialization, but benefit from the ability to finance other income-generating activities.

Other allowable models

Group-Storage Financing

- Producers organization obtains a line of credit from a financial institution to purchase farmers' crops at an above-market price and aggregates productions in a warehouse it manages.
- Farmers group stores crops until optimal market prices.
- Smallholders benefit via sales at higher prices to farmers group, cooperative finance, and producer group dividends.

Summary of Rationale for Including These Schemes:

- In parts of Senegal, market actors suggested that the inability to access finance is the main factor that prevents them from storing their crops for a longer time. A scheme without a financial component may have low adoption.
- Though WRS is the most likely scheme to be used by those obtaining WRS licenses, farmers groups that already have existing credit lines with financial institutions could use the schemes more appropriate for other value chains.
- Storage-based finance scheme users have a vested interest to carefully record and monitor transactions on behalf of financial institutions, decreasing the verification burden.

Storage Solutions Deep Dive: Warehouse Receipt Systems

What is WRS? The most sophisticated storage solution. In Warehouse Receipt Systems (WRS), private sector actors allow farmers to store their crops or seeds, disbursing receipts that farmers can then take to the bank to access finance. To guarantee the crops as collateral, farmers pay third-party collateral manager fees to monitor crops or seeds. Farmers sell their individual crops or seeds and use the dividends to pay interest on loans.

WRS Prize Considerations

Challenges

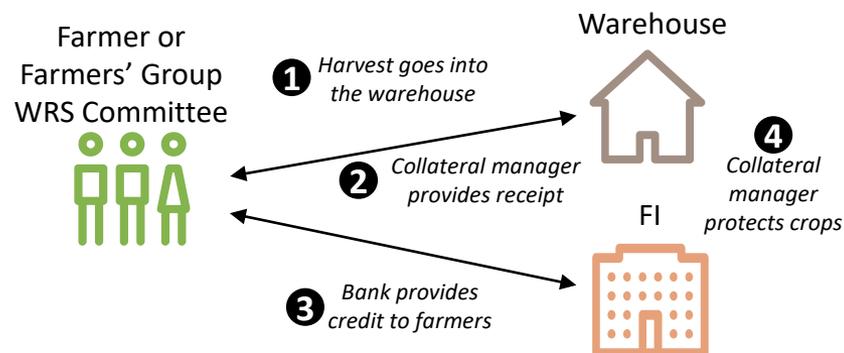
- **Collateral Managers:** WRS requires hiring of collateral managers as professional third-parties to ensure proper storage practices.
- **Regulatory Frameworks:** WRS systems hinge on regulation that allows for conflict resolution between parties.
- **Cost:** WRS costs more than other storage-based finance methods because of the additional cost of a third-party collateral manager as well as transportation of crops to warehouses. Thus, WRS schemes are most appropriate at the farmers' group level and large warehouses storing high volumes.

Benefits

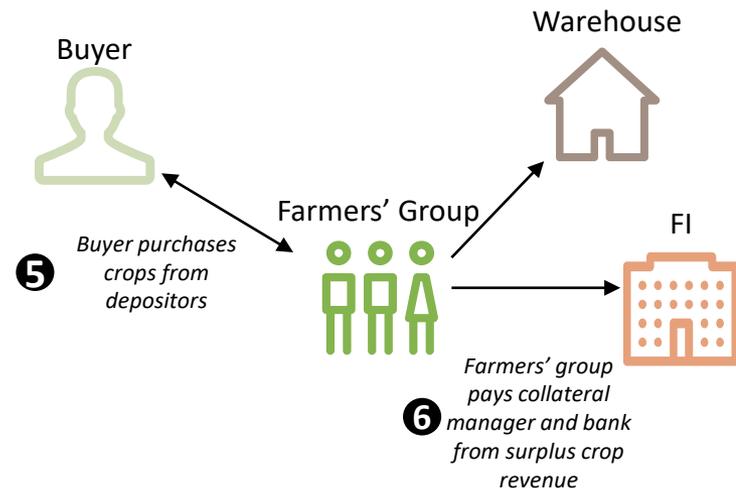
- **Private Sector Sustainability:** As long as they are regulated, WRS systems are likely the most sustainable storage-based finance schemes, because there are solid profit motives for all actors.
- **Verification and Administration:** Warehouse receipts (especially digital receipts) allow for easy validation and auditing of collateral.
- **Financial Institution (FI) Buy-In:** Financial institutions are most likely willing to participate in WRS because of the third-party collateral manager's presence.

Structure

Harvest Season



Off-Season



Storage Solutions Deep Dive: Warrantage

What is Warrantage? Warrantage has been practiced in West Africa since 2000. In warrantage, individual farmers store their crops in a warehouse managed by a producers' organization. The warehouse has two locks: one held by the producers and one by the bank. Unlike WRS, warrantage does not include a private sector collateral manager. Warrantage schemes are more likely to occur in value chains where price differentials and production volumes are not high enough to warrant the collateral manager cost; however, they are only possible if the warehouse managers have guarantees in place with financial institutions.

Warrantage Prize Considerations

Challenges

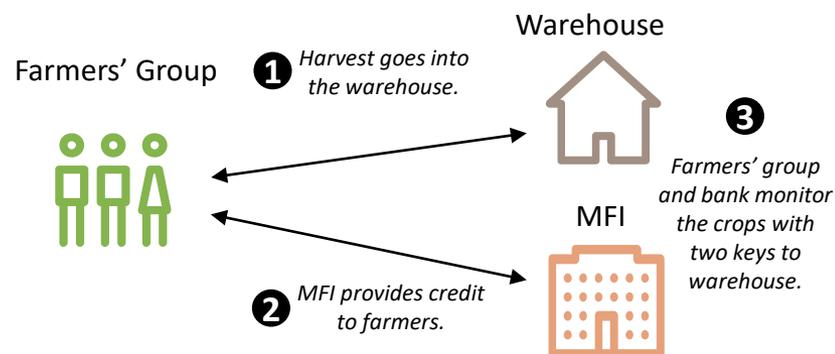
- **Verification:** Without a professional collateral manager, it may be harder to follow the paper trail in a warrantage transaction.
- **Financial Institution Buy-In:** Financial institutions are less likely to buy into warrantage systems without professional collateral managers. For this reason, finance in warrantage is usually provided by higher-interest microfinance institutions (MFIs) and may include NGO intermediaries.
- **Sustainability:** Because of the lack of commercial bank buy-in, warrantage schemes have sometimes collapsed without NGO support. Farmers' networks/cooperatives could overcome this challenge by acting in the intermediary role.

Benefits

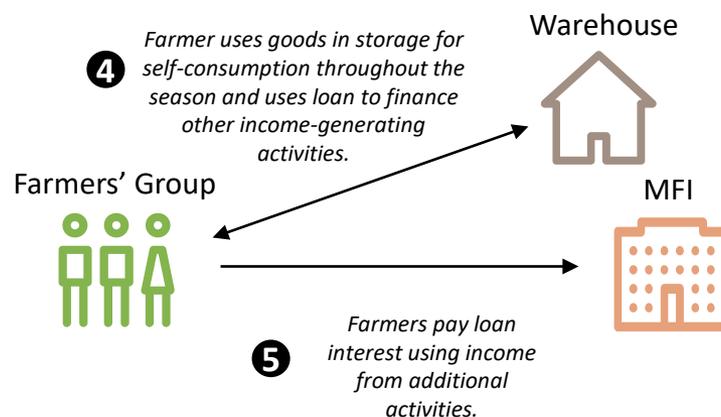
- **Cost:** Without paying a professional manager's fee, depositor smallholders are more likely to take home a larger share of crop surpluses.
- **Food security:** Because of lower transaction costs, smallholders can use warrantage to store their crops even if they intend to consume their harvest later rather than selling it.

Structure

Harvest Season



Off-Season



Storage Solutions Deep Dive: Group-Storage Financing

What is Group-Storage Financing? This scheme involves banks releasing additional finance to producers organizations so that they can buy crops from farmers at elevated prices at harvest and store the aggregated crops in a warehouse. Similar to warrantage, the aggregated crops are collateralized, allowing for the bank to provide finance to the farmers' group. The finance is supported by a contract between the producers' organization and buyers, ensuring that the buyers purchase the crops at higher-than-interest prices. The farmers benefit through organization dividends, credit, and price negotiation power.

Group-Storage Financing Prize Considerations Challenges

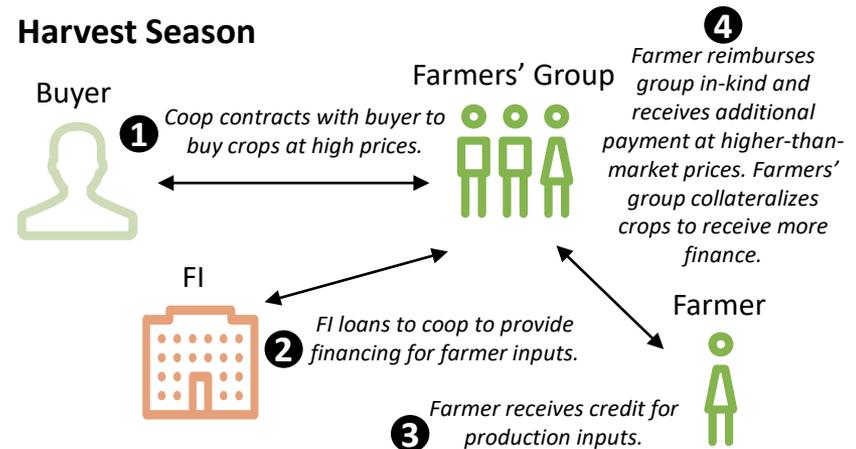
- **Income gains:** Individual farmers could experience lower income gains in this scheme than in others by selling their crops during the harvest season, as they would lose some of the value increases coming with price seasonality.
- **Verification:** Without a professional collateral manager, it may be more difficult to follow the paper trail in smallholder-cooperative transactions.

Benefits

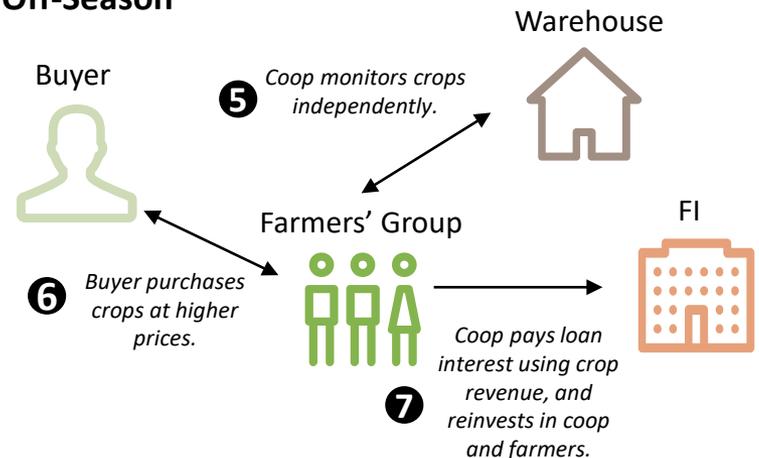
- **Cost Savings:** Since cooperatives are the sole depositor of the aggregated crops, smallholders would avoid having to potentially pay a professional manager's fee.
- **Risk:** This scheme lowers risk for individual farmers, who receive payment for their crops at harvest instead of depending on price seasonality for revenues.
- **Financial Institution Buy-In and Sustainability:** Pieces of this scheme currently exist (e.g., inputs financing; step #3), due to farmer groups' current relationships with banks, but a complementary step (#4) to aggregating and collateralizing the smallholders' crops can provide additional income benefits for the smallholder and cooperative.

Structure

Harvest Season

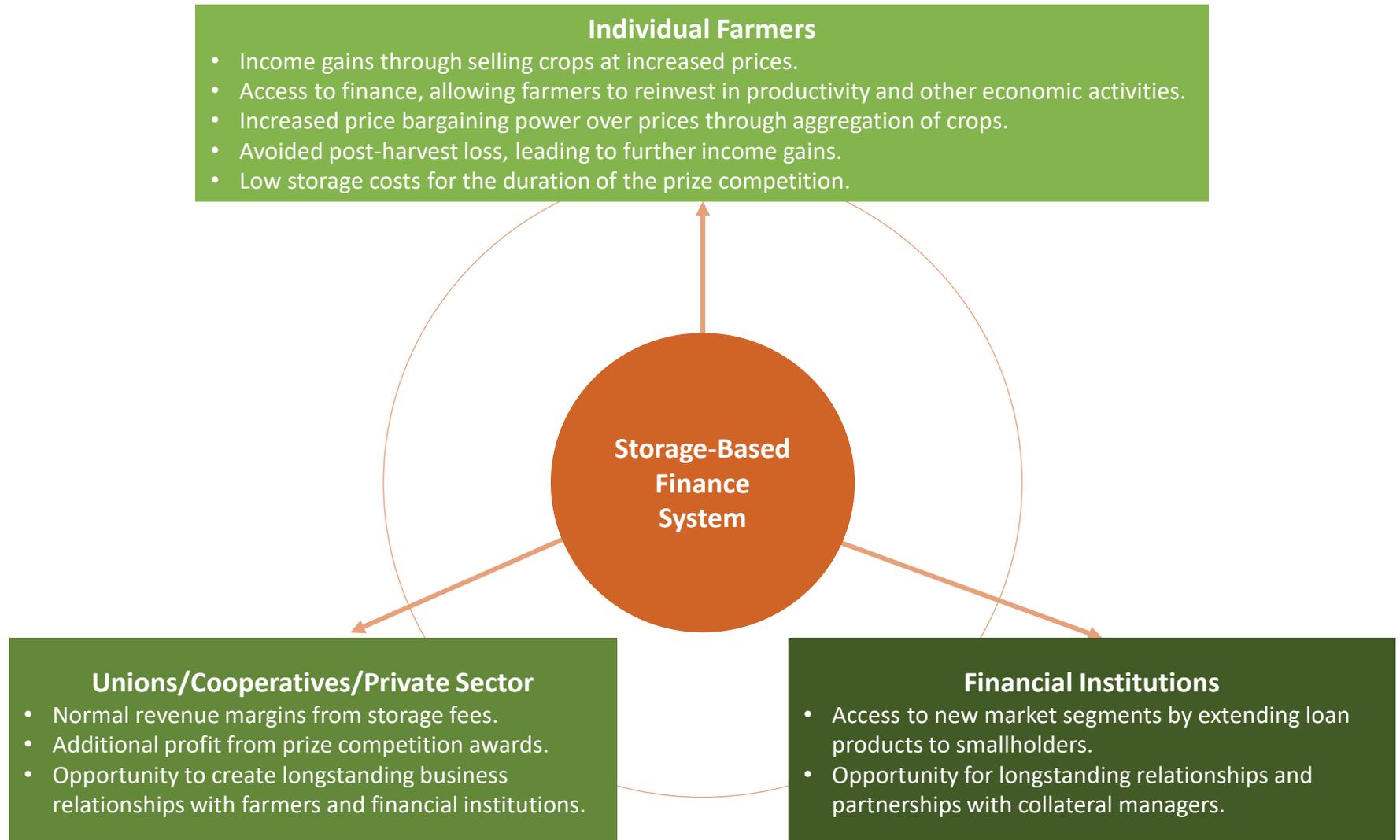


Off-Season



Actor Profit Motives

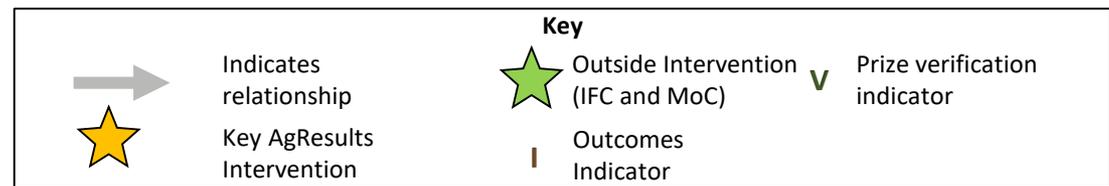
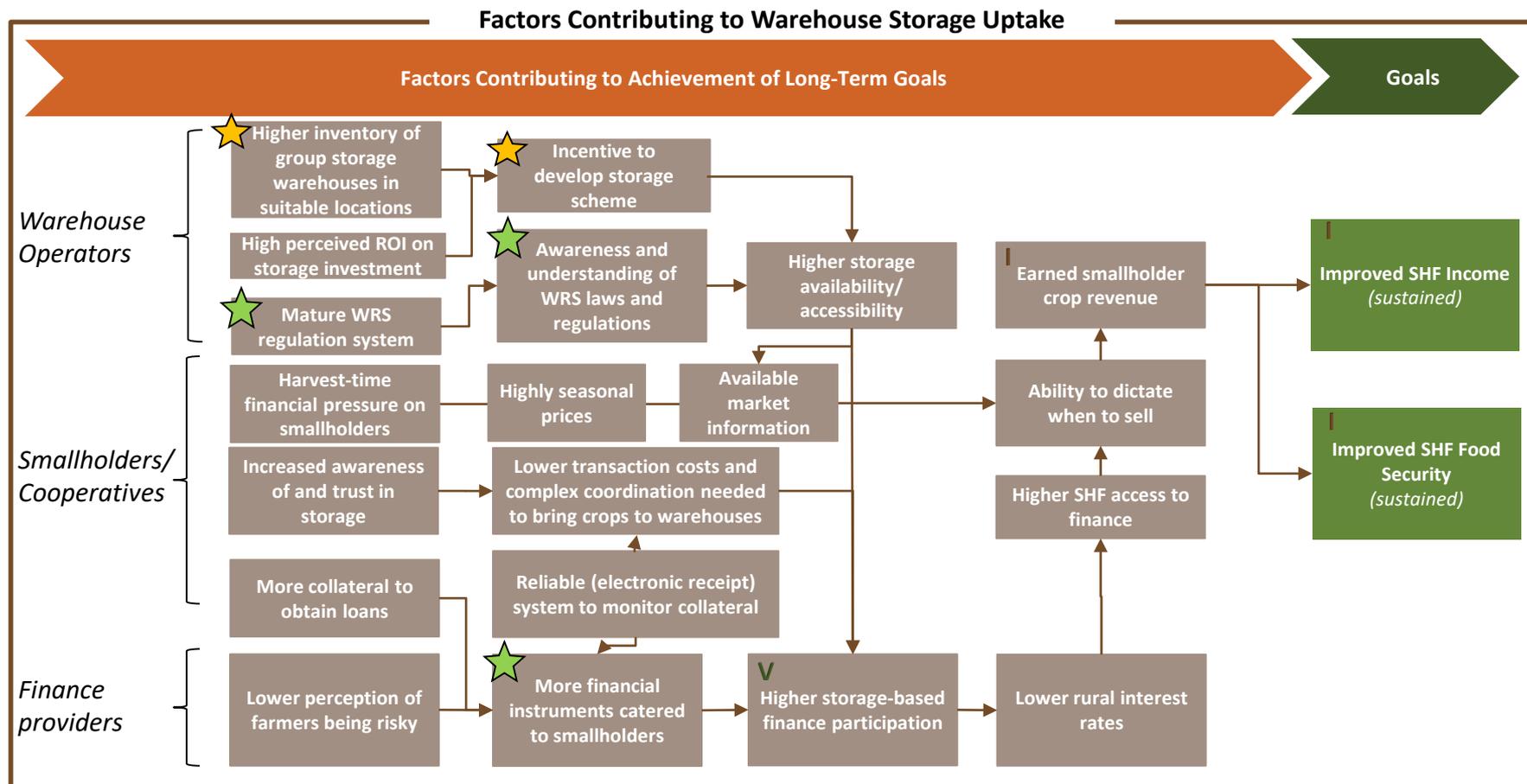
A fully functioning storage-based finance scheme would provide economic benefits to farmers, competitors, and financial institutions.



Prize Design

Theory of Change to Improve Uptake of Warehouse Storage

This graphic shows the key interventions along the value chain that should be targeted to achieve the project's desired outcomes.



Prize Overview

The Senegal storage-based finance prize will address two primary barriers: unsuitable storage infrastructure and the lack of awareness and coordination across key actors to provide smallholders financing.



Phase 1: Infrastructure Improvement

Phase 1 will award competitors for upgrading their warehouses to achieve quality standards so that banks are willing to lend against commodities stored in warehouses.

Competitor activities in this phase will include:

- Investing in warehouse upgrades.
- Engaging farmers and financial institutions to participate.

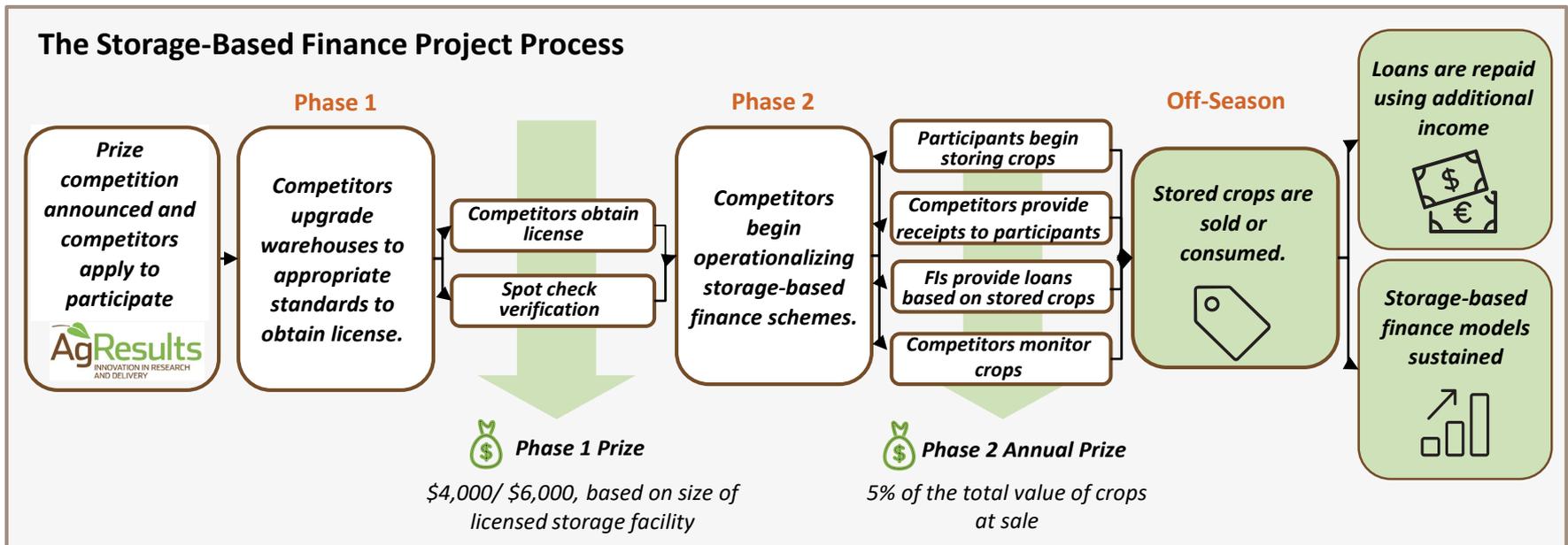


Phase 2: Storage-based finance operationalization

Phase 2 will incentivize competitors to implement storage-based finance schemes by engaging depositors and financial institutions. Competitor activities will include:

- Continued engagement with depositors and financial institutions to participate in the schemes.
- Storing and monitoring crops.
- Releasing storage receipts and reporting to the Verifier.

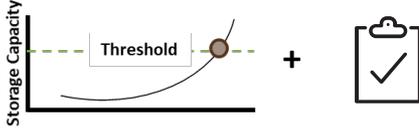
The Storage-Based Finance Project Process



Prize Structure

The prize will be segmented into two phases. The first phase will focus on improving warehouse infrastructure and will act as a gateway to the second phase, which will focus on storage.

Phase 1: Infrastructure Improvement and Smallholder Farmer Engagement

Structure	Trigger	Pay-on Indicator	Rules
 <p>Competitors must move through a gateway to access Phase 2. Achieving the Phase 1 rules will serve as a milestone that triggers payment.</p>		 <p>Competitors will be paid \$4,000 for each licensed warehouse under 200m², and \$6,000 for a licensed warehouse over 200m².</p>	<ol style="list-style-type: none"> 1. Warehouses must adhere to WRS licensing standards (even if they will use a different model). 2. Each competitor warehouse must have a minimum size of 100m², roughly equivalent to 120t+ of storage capacity. 3. Competitors must show evidence of intent to use warehouses in storage-based finance schemes.

Phase 2: Production Storage

Structure	Trigger	Pay-on Indicator	Rules
$\frac{\begin{matrix} \text{Value of stored crops} \\ \times \\ \text{Prize per CFA* of storage} \end{matrix}}{\text{Competitor Annual Prize}}$ <p>Competitors will receive an annual per-unit prize based on the sales value of stored crops.</p>		 <p>Competitors receive 5% of the total value of the crops at sale.</p>	<ol style="list-style-type: none"> 1. Maximum volume of 30 tons per household to encourage schemes to benefit smallholder farmers. 2. Crops must be stored for a minimum of one month to prevent gaming and ensure benefits for farmers.

Prize Partnership Models

The structure of the prize allows for multiple business models and partnerships between warehouse owners, collateral managers, and farmers' cooperatives.

1



2



3



Phase 1 Overview

Phase 1 of the prize competition will incentivize competitors—namely producer groups and warehouse owners—to upgrade warehouses to be suitable for a storage-based finance scheme.

Phase 1 Payment Indicators

Indicator	Description	Rationale
Acquisition of WRS License	<ul style="list-style-type: none"> To pass through the first gateway from Phase 1 to Phase 2, competitors must obtain a license from the Organe de Régulation du Système de Récépissé d'entrepôt. 	<ul style="list-style-type: none"> The license can serve as the standard adherence indicator for WRS and as a proxy for other schemes because WRS license standards ensure warehouses are safe for crops that can be collateralized. Phase 1 verification costs are mitigated by the government's participation in verification and licensing.
Warehouse Storage Intent	<ul style="list-style-type: none"> Phase 1 would require documented evidence that the actor is planning on managing storage-based finance schemes with smallholders and financial institutions. 	<ul style="list-style-type: none"> Documented evidence would minimize the likelihood that competitors would invest in warehouse upgrades without committing to Phase 2.

Phase 1 Prize Structure

Structure	Description	Rationale
<p>Gateway</p> 	<ul style="list-style-type: none"> Competitors become eligible for a prize only if they upgrade group warehouses to government standards. Competitors that pass the gateway will be eligible to move forward to Phase 2 at any time during the competition. 	<ul style="list-style-type: none"> The prize would provide an incentive to make significant infrastructure upgrades and reinvest winnings into setting up business models for Phase 2. A gateway threshold prize will allow only valid warehouses that meet warehouse condition requirements enter the Phase 2 competition.

Warehouse Eligibility and Verification

There are two options for verification of refurbished warehouses in Phase 1—procuring Warehouse Receipt System licenses or, in the instance that Warehouse Receipt System licenses are not yet available, passing inspection and documenting storage-based finance participation intent.

Warehouse Eligibility and Verification

The option to pass Phase 1 by procuring WRS licenses will depend on the Ministry of Commerce operationalizing its WRS licensing body by the start of the prize competition. This body is expected to stand up by early 2021. While WRS license procurement serves as a proxy indicator for competitors developing storage-based finance schemes, AgResults will create a contingency plan if the government's licensing capacity is not developed in time.

Primary Option



WRS Licenses

- The Senegalese WRS regulation enforces the quality of warehousing in the country.
- Warehouses deemed suitable for the WRS meet a size threshold and quality standards, such as a maximum amount of moisture and regulation around the types of materials used in construction.
- License documentation is a requirement for competitors to receive the Phase 1 award.



Actor Intent

- Competitors must document their intent to store smallholder crops as collateral by documenting agreement with or between producers' organizations and financial institutions they intend to work with.
- The Project Manager will create an intent contract that can be used by competitors and other actors.
- Competitors will propose the scheme they will use and how it will benefit smallholders.

Backup Option – AgResults will only consider this option if it is clear that the government will not be able to administer WRS licenses by the start of the competition.



Inspection + Actor Intent

- The Project Manager will work with the Advisory Committee to create standards and conduct inspections and spot checks of warehouse to ensure they meet quality criteria.
- The team could consider using CNAAS insurance standards to show warehouses meet quality standards.
- This option would also include a requirement for competitors to document farmer and financial institution intent.

Phase 2 Overview

The second phase of the project will aim to incentivize potential competitors to create innovative business schemes that engage SHFs for crop storage as a means to take advantage of access to finance and seasonal price arbitrage.

Phase 2 Payment Indicators

Indicator	Description	Rationale
Value of Crop	<ul style="list-style-type: none"> Competitors are rewarded based on the total sales-time value of the crops that are stored in warehouses. 	<ul style="list-style-type: none"> Value of stored crops at sale is easily measurable because it is necessary for receipts and other documentation mechanisms. Aligns to the goal of increasing the amount of crops stored by SHF. Incentivizes storage of crops with most potential SHF income gains.

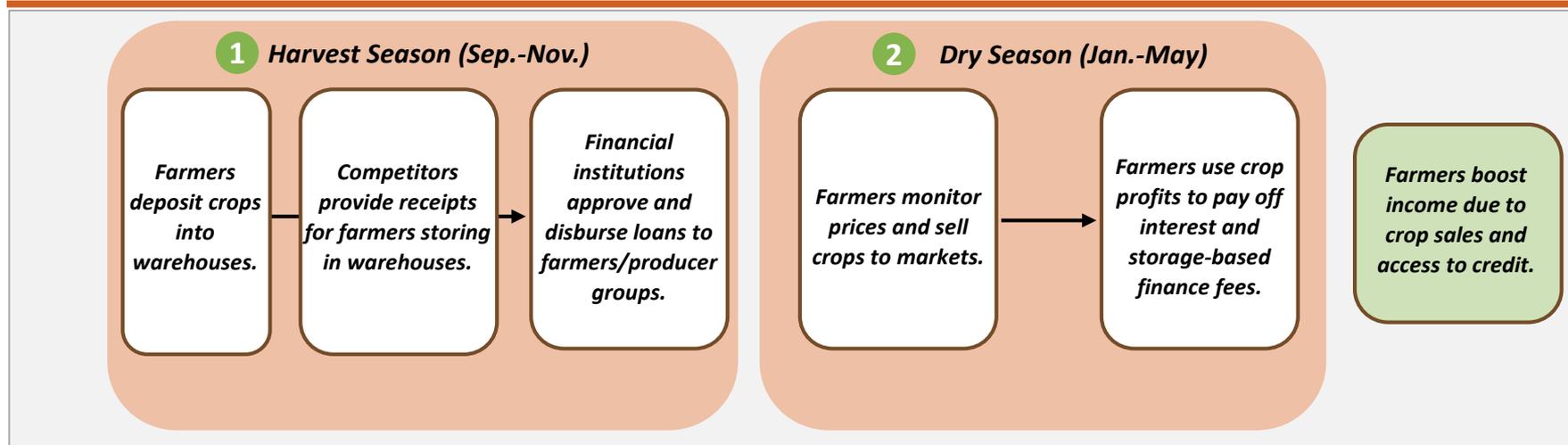
Phase 2 Prize Structure

Structure	Description	Rationale
Annual Per-Unit <div style="background-color: #76b82a; color: white; padding: 2px; border-radius: 5px; display: inline-block;">Value of stored crops</div> <div style="background-color: #76b82a; color: white; padding: 2px; border-radius: 5px; display: inline-block;">Prize per CFA of storage</div> X <div style="background-color: #e67e22; color: white; padding: 2px; border-radius: 5px; display: inline-block;">Competitor Annual Prize</div>	<ul style="list-style-type: none"> Warehouse managers or producers' organizations storing members' crops or seeds will receive a per-unit prize of 5% of the value of the stored crop at the time of sale. The Project could choose to lower the incentive to 3% in Years 4 and 5 of the prize competition – or adjust based on competitor type (i.e. private vs. cooperative). The prize will include a minimum storage time requirement of one month. The prize will include a maximum storage amount per farmer of 30 tons. 	<ul style="list-style-type: none"> Per-unit prizes are simple and easy to understand for competitors. The per-unit approach would require competitors to scale to maximize their prize amounts. The structure should not necessarily favor larger or smaller competitors.

Phase 2 Annual Schedule

AgResults will provide annual prizes for commodity storage leading to the release of finance.

Competition Annual Timeline*



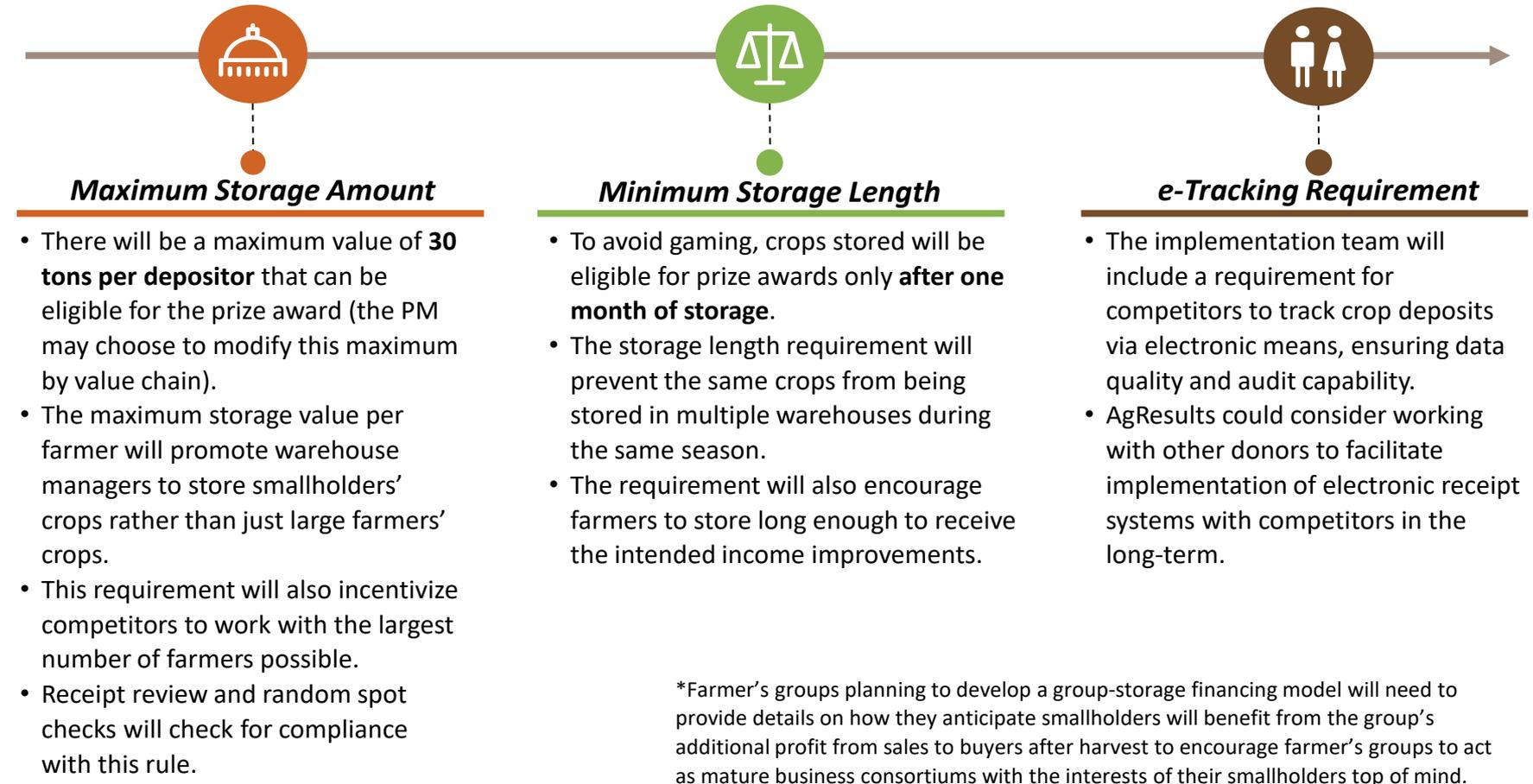
*Rice farmers may be able to plant and store for two seasons in one year and may receive maximum benefits from 2-3 months of storage.

Annual Stage	Activities
1 Harvest Season Storage	<ul style="list-style-type: none"> • Each competition year, competitors who store SHFs' crops will track receipts for all smallholder storage. • Receipts eligible for compensation will be those that fall below the maximum allotment per farmer household. • The PM will monitor whether loans are disbursed to smallholders (via spot checks) and coordinate with financial institutions to ensure that they are willing to lend against WRS licenses.
2 Dry Season Sales	<ul style="list-style-type: none"> • Depending on business models, the farmers will monitor prices and sell crops when appropriate (after a minimum of one month's storage). • The PM will monitor profits of farmers (via receipts) and rate of loans serviced.
3 Verification and Prizes (Ongoing)	<ul style="list-style-type: none"> • Throughout the process, the Verifier will track adherence to Phase 2 rules. • Based on the verified amount of crops stored and sold, competitors will receive an annual prize.

Phase 2 Eligibility and Verification

A set of rules will require competitors who have entered Phase 2 to engage in practices that lead to loan disbursement and smallholder income impacts.

Phase 2 Award Eligibility and Verification



Value Chain Considerations

Priority Value Chains for Storage-Based Finance Prize

While the prize competition will be held countrywide, the Project Manager can target potential value chains with the greatest probability of success and potential impact. Value chains in Senegal vary in their appropriateness for a storage-based finance prize, their potential competitors, and anticipated business models.

Value Chain	Likely Uptake	Women's Involvement	Price Volatility	Competitors	Likely Business Models
Ground-nuts	High	Low-Medium	Medium-High	<ul style="list-style-type: none"> High-capacity producer groups 	<ul style="list-style-type: none"> Group-storage financing system where production is stored and marketed by producer group on behalf of members. Seed storage WRS system (most likely producer group-led) with seed producers as depositors.
Cashews	High	Medium	Medium-High	<ul style="list-style-type: none"> Private sector actors 	<ul style="list-style-type: none"> WRS system
Rice	Med - High	High	Low	<ul style="list-style-type: none"> High-capacity producer groups (coops and unions) Existing private companies that could expand 	<ul style="list-style-type: none"> Warrantage system where producer groups/unions use existing infrastructure to act as warehouse manager for their members. Group-storage financing system where production is stored and marketed by producer group on behalf of members. Seed storage WRS system (most likely producer group-led) with seed producers as depositors.
Onions	Med	Medium	High	<ul style="list-style-type: none"> Private sector actors 	<ul style="list-style-type: none"> WRS system Group-storage financing system where production is stored and marketed by producer group on behalf of members.
Cowpeas	Med	High	High	<ul style="list-style-type: none"> Producer groups 	<ul style="list-style-type: none"> Warrantage system whereby producer groups/unions use existing infrastructure to act as warehouse manager for their members.
Maize/Millet	Low-Med	Low	Medium	<ul style="list-style-type: none"> Producer groups 	<ul style="list-style-type: none"> Group-storage financing system whereby production is stored and marketed by producer group on behalf of members.

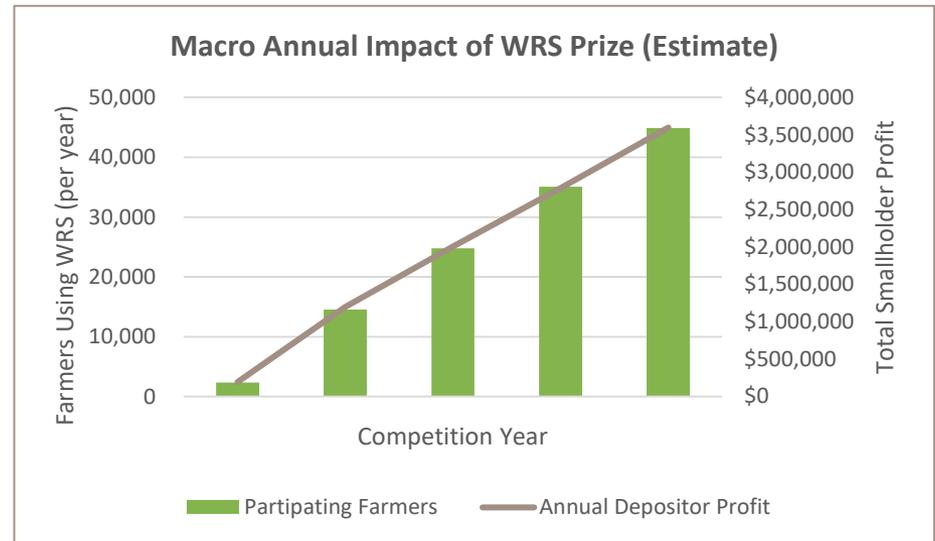
Project Impact Estimates

Macro Impact Estimates of a Storage-Based Finance Prize

An estimated 44,862 farmers would receive an additional \$9M in profit and \$35M in financing

Prize budget and warehouses/farmers reached

Total Adoption (across 5-year prize lifespan)	Phase 1 Prize Purse	\$0.52M
	Phase 2 Prize Purse	\$2.83M
	Warehouses Upgraded	100
	Crops Stored (t)	121,578
	Farmers using storage schemes ¹	44,862
	Total SHF Profit²	\$9.78M
	Total Finance Accessed³	\$35.4M



¹The model assumes a 2% market penetration and that each year, depositors each store one ton of a single commodity.

²SHF profit is calculated as the difference between the sales price minus storage value and storage costs.

³Total finance accessed is representative of 80% of the value of crops stored in warehouses based on rates established by La Banque Agricole.

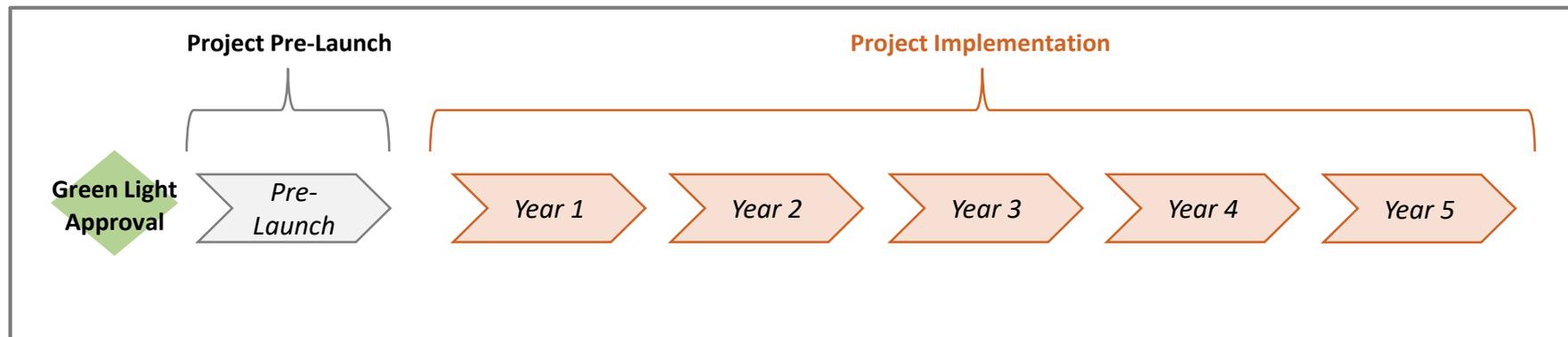
Total profit and finance access estimates

	Year 1	Year 2	Year 3	Year 4	Year 5
New Warehouses Entering Competition	10	50	30	10	0
Total SHF Profit	\$195,062	\$1,198,235	\$2,006,347	\$2,786,593	\$3,594,705
Total Finance Accessed	\$706,160	\$4,337,840	\$7,263,360	\$10,088,000	\$13,013,520

Project Management Overview

Project Management Overview

The Project Manager will coordinate all activities ahead of the competition launch and oversee project implementation over the 5-year duration of the project.

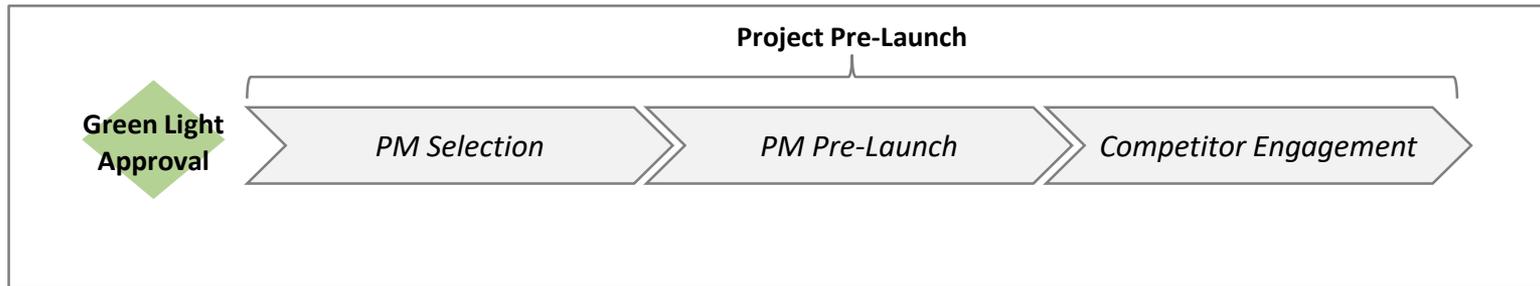


Project Management Overview

- AgResults will work to contract a Project Manager as soon as Green Light approval is received. The Project Manager will be expected to manage a distinct pre-launch phase and the 5-year duration of the competition.
- The **Project Manager will be based in Dakar** and will be expected to travel throughout the country periodically to coordinate activities with local government authorities and competitors as needed.
- The **Project Manager will be responsible for administrative, coordination, and technical tasks**, including advocacy, coordination with organizations supporting storage-based finance systems (e.g. MOC, IFC), outreach to competitors to encourage participation, coordination of application reviews, limited technical advisory work, and reporting on program progress to the Secretariat.
 - The Project Manager will coordinate with the government on the timing of WRS license processing capabilities.
 - The Project Manager will also work in sensitization efforts, including a “roadshow” with prominent producers’ organizations in key value chains and specific outreach to female-led producers’ organizations.
 - The Project Manager will facilitate discussions between producer groups and buyers to help increase demand for WRS.
- The Project Manager will coordinate with other storage- and finance-related projects currently being implemented to address compatibility and synergy between these initiatives and the AgResults prize competition.
- The **Project Manager will be supported by an Advisory Committee** (composed equally of male and female industry, regional, and academic experts), who will provide technical advisory support during rule finalization and competitor application reviews.

Project Management Activities During Pre-Launch

During the pre-launch period, the Project Manager will convene an Advisory Committee, finalize competition rules, seek formal government approval for project implementation, and engage industry stakeholders to drive interest in the competition.

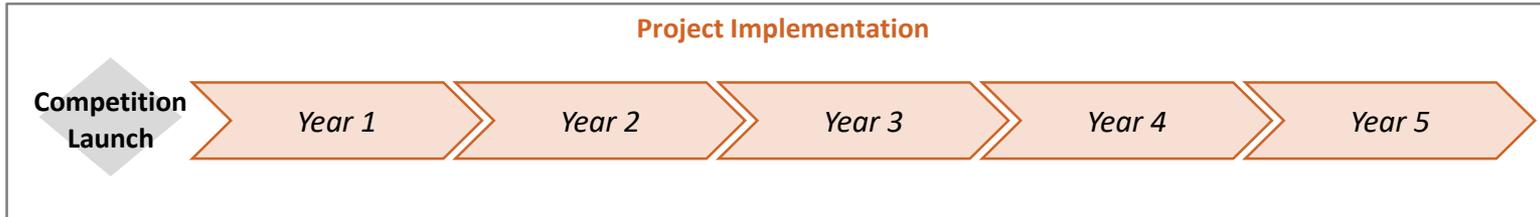


Project Manager Key Activities During Pre-Launch

Timeline	Activities
<i>PM Selection</i>	<ul style="list-style-type: none"> Engage in a competitive bid process to identify the appropriate PM to manage the Senegal Warehouse Storage Project throughout its duration.
<i>PM Pre-Launch</i>	<ul style="list-style-type: none"> Convene an Advisory Committee of relevant warehouse receipt system (WRS) and storage-based finance experts to assist in rules finalization. The Advisory Committee will seek to have equal male and female representation. Coordinate with Advisory Committee, selected Verifier, and AgResults to complete definition of contest rules. Coordinate in-country project approval process with relevant government ministries. Work with Ministry of Commerce to align project start date with launch of WRS licensing system. Conduct gender analysis to ensure that project rules are gender-sensitive and will have positive effect on women. Begin outreach to industry associations to generate awareness of and interest in the project. Propose a dispute resolution mechanism when disputes arise or competitor misconduct is suspected.
<i>Competitor Engagement</i>	<ul style="list-style-type: none"> Stage informational events informing possible competitors of prize competition and contest rules. During these events, the Project Manager should facilitate the development of competitor partnerships. Engage in sensitization efforts with prominent producers' organizations in key regions such as Saint Louis and Kaolack. In coordination with the Advisory Committee, develop competitor selection criteria. Issue request for EOIs from competitors to apply to participate in the project.
<i>Secretariat Engagement</i>	<ul style="list-style-type: none"> Support the Secretariat in selection of a Verifier. Provide ongoing updates to the Secretariat via quarterly reports and weekly telephone meetings.

Project Management Activities During Project Implementation

After the pre-launch period, the Project Manager will actively oversee project implementation including competitor recruitment, competitor assistance, dispute resolution, and issue mitigation.



Project Manager Key Activities During Project Implementation

Timeline	Activities
Year 1	<ul style="list-style-type: none"> Facilitate competitor participation using an RFA process to determine Phase 1 prizes and allow competitors to enter Phase 2 after initial warehouse improvements and successful WRS licensing.
Year 2	<ul style="list-style-type: none"> Enter into legal agreements, which include competition rules, with all participating competitors. Provide high level of administrative support and assistance to competitors as they begin upgrading warehouses to appropriate standards and incorporate a electronic receipting systems.
Year 3	<ul style="list-style-type: none"> Help coordinate between competitors and the Verifier to ensure that ongoing verification activities are proceeding.
Year 4	<ul style="list-style-type: none"> Coordinate results reporting by competitors and the Verifier and share with the Secretariat. Coordinate with the Secretariat and Advisory Committee in the event of verification disputes. Continue to engage in sensitization activities in priority value chains. Report any implementation roadblocks or challenges to the Secretariat and work to mitigate those challenges. Help coordination between interested parties in a manner that is fair and transparent across all competitors. Continue ongoing activities, including competitor recruitment, sensitization, dispute resolution, etc. Monitor changes in the regulatory and political environment.
Year 5	<ul style="list-style-type: none"> In addition to implementing the final year of the project, the Project Manager will lead the coordination of the project's closeout.

Verification Overview

Verification Overview

A key component of project success is verifying that implementation is occurring in a way that achieves the goals of the project. The project will use verification mechanisms supplied by a third-party Verifier across during both phases.

Verification Mechanisms

Phase 1:

- 1. WRS License Acquisition Verification:** Competitors accepted into the prize competition must show proof of receipt of the license administered by the WRS regulatory body under the Ministry of Commerce.
- 2. Actor Intent:** Competitors must document the intention to enter into business relationships with cooperatives and financial institutions.
- 3. Randomized Warehouse Spot Checks:** Spot checks will be used to ensure that licensed warehouses meet the WRS standards indicated by the regulatory body.

Phase 2:

- 1. Receipt Verification:** Warehouse managers participating in storage-based finance schemes will be required to incorporate a receipt system that will record key information, such as the date and time of crop drop-off, the amount and value of crops stored, as well as the owners of specific stored crops. These systems must be auditable and the records can be triangulated with the information that financial institutions are tracking.
- 2. Randomized Spot Checks:** Spot checks will be utilized as an additional layer of verification to ensure that information recorded via digital receipts is accurate and crops remain in the warehouses as indicated by the receipts.

Quality and Verification Roles

Verifier	<ul style="list-style-type: none">• Monitor receipt systems to track key information of crops stored in warehouses• Lead randomized warehouse spot checks<ul style="list-style-type: none">• Protocols for verification will be developed prior to competition launch by the Verifier• In addition to a 'core team' the firm will likely need to employ multiple staff to perform random spot checks with warehouses.
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Storage and Receipt Verification: Phase 1

In Phase 1, an external Verifier will ensure that WRS licenses and expressions of storage intent are legitimate.

Storage and Receipt Verification Deep-Dive

1. *Who*

- Verifier

2. *How*

- The Verifier will be responsible for monitoring warehouse upgrades to ensure that they adhere to Phase 1 rules and ensure that actor intent to participate in storage-based finance is legitimate. Actions include:
 - Collecting competitor documentation of initial warehouse state to ensure that warehouses do not already meet standards upon entering the competition.
 - Collecting and verifying competitor WRS license documentation with the Ministry of Commerce, including warehouse capacity.
 - Collecting storage-based finance intent documentation, and follow up with financial institutions and cooperatives to evaluate the legitimacy of intent.
- After confirming warehouse upgrades with the help of randomized spot checks, the Verifier will submit results indicating the size of the prize awarded per warehouse.

3. *When*

- Competitor documentation submission will occur on a rolling basis, with Verifier follow up occurring immediately after submission.
- Warehouse auditing should occur on a rolling basis while final payment should occur quarterly so that competitors can reinvest and begin Phase 2 as soon as possible.
- The Project Manager will coordinate with the Ministry of Commerce so that verification of WRS licensing is easily obtainable.

Storage and Receipt Verification: Phase 2

To monitor the accuracy of information recorded on receipts, AgResults will rely on an external Verifier to audit warehouse crop storage.

Storage & Receipt Verification Deep-Dive

1. *Who*

- Verifier

2. *How*

- The Verifier will require competitors and finance institutions to report all required data, allowing the Verifier to monitor the progress of a given competitor in engaging and storing smallholder crops and of financial institutions in providing loans to smallholders. Responsibilities include:
 - Reviewing competitor reports for the verification period.
 - Analyzing the storage and loan trends from one reporting period to the next to identify abnormal activities.
 - Aggregating storage of crops to individual farmers to determine overall composition of crops that are stored in the warehouse to specific farmers.
 - Conducting audit visits to ensure that crops are appropriately stored as verified by the electronic receipts and are not missing or tampered with in abnormal ways while ensuring that competitors are adhering to the minimum storage time requirement.
- After confirming results with the help of randomized spot checks, the Verifier will submit results, indicating the total value of crops stored in the warehouse and the payment amounts competitors should receive based on the preset price per CFA of storage.

3. *When*

- Warehouse auditing should occur on a rolling basis while final payment should occur on an annual basis.
- Verification will be in place prior to competition launch so that firm verification protocols are established.
- When disputes occur, additional dispute-based sales checks will be conducted with disputing competitors.

Gender Roles and Assessment of Project Impacts

Storage-Based Finance Gender Considerations

The Women's Empowerment in Agriculture Index (WEAI) is a survey-based index designed to measure the empowerment, agency, and inclusion of women in the agricultural sector. The WEAI assesses women's empowerment across five domains: production, resources, income, leadership, and time. AgResults will focus on the potential positive and negative impacts of the project across each of the domains.*

Women's Empowerment in Agriculture Index (WEAI) Domains of Empowerment



- Women generally do not make independent decisions with household income as men typically engage in most productive areas of income like groundnuts and hired labor.
- Women have more decision-making power over income when they are more involved with production, in value chains such as rice and cowpeas and in geographies such as the Senegal River Valley and Casamance.



- Women expected to take care of all household chores, rear children, and produce much of the subsistence crops, with a workday more than 50% longer than men on average..
- Carrying water, harvesting firewood, washing clothes takes significant time away from women.



- Women are concentrated in subsistence farming, producing more than 80% of all subsistence crops. Crops are heavily gendered. In the Senegal River Valley, women make up more than 70% of lowland rice producers.
- In major crop production, farming activities tend to be gender-specific, with men taking on high-intensity activities such as sowing. In the groundnut basin and Casamance, many women grow their own maize and rice.



- By law, men are legally the head of the household and thus own agricultural inputs and land. Equal constitutional land ownership rights for males and females are not enforced despite recent legislation promoting equal access.
- Access to fertilizer is four times lower than for men, and women do not have access to equipment.
- Women manage 16% of farms and only control 6% of the total land under cultivation.
- Lack of control of income and resources means women face extreme difficulty in accessing any type of finance.
- While 13% of male farmers report formal access to credit, less than 4% of female farmers have formal access.



- Hierarchical society in which women play subordinate roles in many cases.
- In farmers' groups, men tend to dominate leadership positions except in entirely-female organizations.

*Data from a 2016 WEAI conducted as part of USAID's Naatal Mbay project.

Potential Prize Impacts on Women

Given the difficulty that Senegalese women farmers face in accessing traditional forms of financing, increasing access to storage-based finance could have significant positive benefits for women whose only form of potential collateral is their production.

While men are dominant in most agricultural value chains in Senegal, women have comparatively more influence in the **cowpea and rice value chains**. These value chains are also key potential storage-based finance value chains. The project could have significant impact by prioritizing these value chains and targeting female-led cooperatives.

Potential Program Impacts Across Key Dimensions of the WEAI



Increased Income

- Receipts could allow women, especially rice growers and cowpea farmers, to obtain credit using their seasonal production as collateral.
- Receipts could also allow more control of household income.



Time

- A USAID study suggested that 27% of women are overworked in the rainy season, compared to 10.6% of men.
- Receipts could provide more income in the hands of women, giving them more flexibility and more control over their household obligations.



Resources

- Currently, lack of assets inhibits female access to credit, with only 4% of female farmers using formal bank loans.
- Credit from a receipts system would help women increase use of inputs that drive productivity increases.
- They can also use this credit to pay off financial obligations and invest in other income-generating activities.



Leadership

- Business models dependent on cooperative buy-in could put women-led coops in a new position of power.
- Women-led cooperative buy-in would create opportunities for leadership and expansion of women farmer groups.

Planned Gender Initiatives

The prize will specifically prioritize women's involvement, considering the disproportionately positive impact alternative finance could have on women. AgResults will engage in the following gender-specific activities:

- 1 Capture Farmer Information, Including Gender, for Better Analysis of Gender Outcomes**
AgResults will capture the gender of participating farmers through competitor reporting. This will allow AgResults to monitor storage, finance accessed, and potentially income increases, through a gender lens.
- 2 PM Outreach to Women's Cooperatives and Competitors**
The PM, as part of their competitor coordination and awareness building responsibilities, will be required to engage with women-led cooperatives and (potentially) women owned businesses to encourage their participation in the project.
- 3 Commitment to Equal Representation on the Advisory Committee**
The project's Advisory Committee will participate in determining the viability of warehouses and storage schemes. AgResults will require that there is equal male-female representation as well as a gender expert on the Advisory Committee.
- 4 Potential Inclusion of Smaller Warehouses**
The project can consider an exception to allow smaller warehouses (e.g., 200 tons) owned or operated by female-led cooperatives to participate in the competition.
- 5 Commitment to Gender Awareness in Selecting a PM and Verifier**
The Secretariat will consider gender representation during the selection of the PM and Verifier team and give preference to teams that include women as key personnel.
- 6 PM Gender Analysis**
The PM, as part of pre-launch activities, will conduct a gender analysis of the business plan and rules to make sure that the project allows for full women's inclusion at all levels of the project.