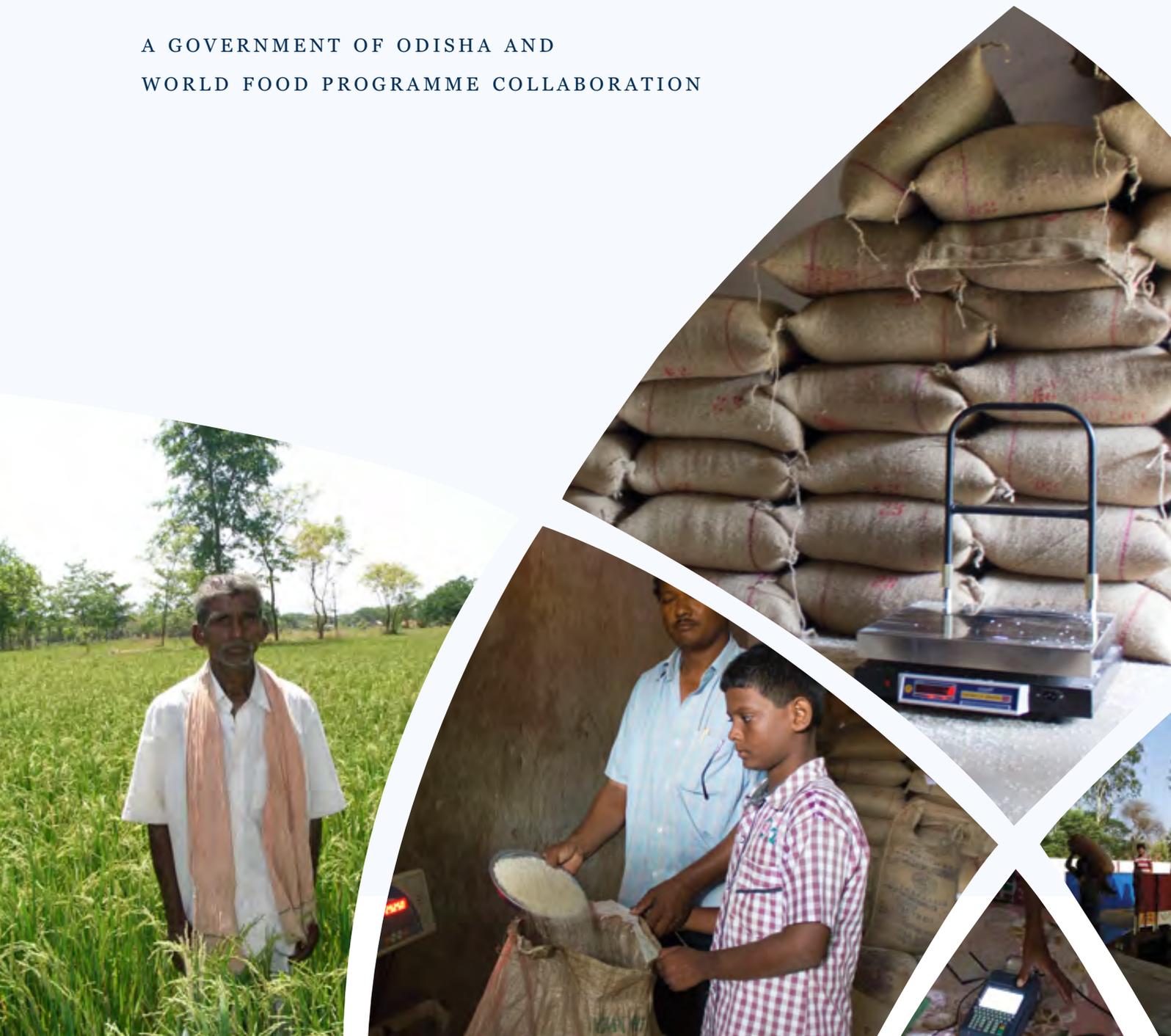




Building Efficient Paddy Procurement and Supply Chain Systems for the Targeted Public Distribution System in Odisha

A GOVERNMENT OF ODISHA AND
WORLD FOOD PROGRAMME COLLABORATION



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Annexure 6 of this document has been recreated based on WFP's Warehouse Management Manual. The images created for the document are for illustrative purposes only.

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The WFP mission would like to thank the Government of Odisha for the invitation to participate in the Paddy Procurement and Supply Chain Assessment.

An opportunity to understand and review a food-based safety net of this magnitude has been invaluable to WFP. We would like to particularly thank Mr. P.K. Mohapatra, IAS, Principal Secretary, Government of Odisha for his strategic guidance through the planning, implementation and follow-up of the mission.

We also thank the invaluable inputs and support from the Department of Food and Public Distribution, Ministry of Consumer Affairs, Food and Public Distribution, Ministry of Agriculture and Farmers Welfare and Food Corporation of India.

It has been a pleasure for WFP to be a part of the mission, and we look forward to continued collaboration to further strengthen the food systems in Odisha. WFP would also like to express its deep gratitude to the Government of Odisha for the support and hospitality extended to all the mission members.

We also extend our sincere gratitude to HELP Logistics, a programme of the Kuehne Foundation, for their close collaboration with the mission, and their valuable insight in assessing the logistics operations of the Paddy Procurement and Supply Chain System.

New Delhi
20 June, 2017

Foreword

Mr. P. K. Mohapatra, IAS

Principal Secretary to Government



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FOREWORD

Government of Odisha is committed to enhancing the income of its farmers' community and ensuring the access to food for all. Among many other initiatives, the ongoing efforts of transformation of Targeted Public Distribution System (TPDS) and automation of paddy procurement systems are the two key pathways in this regard. A mission of experts from United Nations World Food Programme (WFP), a longstanding partner of choice of the State Government in its endeavor for eradication of hunger and malnutrition, on the request of Food Supplies & Consumer Welfare Department critically studied the two systems - Paddy Procurement Automation System and Automation of System of Supply Chain in TPDS in April 2017. As parts of their diagnostic study, the mission, during their interaction with the stakeholders and field visit, firmed up the potential areas that needed enhancement in the functionalities of the systems. The observation and recommendations of the mission are placed in this report.

This report provides a snapshot of our efforts and areas to be strengthened on the systems of paddy procurement from farmers and supply chain of food grains dealt in Targeted Public Distribution System. The recommendations in the report, upon their implementation, aim to improve the lives and future prospects of farming and vulnerable food insecure families in Odisha.

We need more determined progress towards eliminating poverty and hunger. I count on WFP's sustained collaboration and technical assistance to work on the gaps that have been identified in this report. For our part, the Food Supplies & Consumer Welfare Department, Government of Odisha will do the utmost to make efforts more effective and efficient so that it can deliver coherent support on the ground. Together, we can make the full, transformative ambition of Hunger Free Odisha a reality for all.

The continued efforts and support of World Food Programme in the collective journey with Food Supplies & Consumer Welfare Department, Government of Odisha to leave no one behind is highly appreciated.

Sri P. K. Mohapatra, IAS

Preface



The United Nations World Food Programme (WFP) has been collaborating with the state of Odisha since the establishment of WFP in India in 1963. Evolving with the needs of the state, WFP started off as a food aid agency, and over the last decade, WFP has become a development partner to the state, engaging at policy level, as well as providing technical support on food and nutrition security. Specifically, we have supported the state of Odisha implement the National Food Security Act, 2013, and transform its Targeted Public Distribution System (TPDS). Our collaboration has seen the strengthening of food safety nets and more importantly, the building of trust between beneficiaries and government systems.

It is with pride, I share that the Government of Odisha has gone beyond the mandate of the end-to-end computerization of the TPDS, and has taken the bold initiative to automate their paddy procurement systems as well. This initiative is testament to the state government's commitment towards improving efficiencies to the entire value chain from procurement to distribution, by building convenient, transparent and accountable systems and policies that support effective governance and service delivery.

Taking our collaboration further, the Government of Odisha invited WFP to offer its expertise on the Government's paddy procurement and TPDS supply chain management systems. WFP undertook a field mission to understand the current systems and recommend enhancements in-line with the objectives of the Government of Odisha as well as international standards. This report not only captures the recommendations for enhancement of the systems, but also offers a detailed breakdown of the entire paddy procurement and supply chain process.

The recommendations of this report will inform the Government of Odisha and WFP to jointly formulate its policies and programmes geared towards reducing post-harvest and grain storage losses, and strengthen procurement and supply chain systems. Moving further, I firmly believe that this report will strengthen the long-term partnership between WFP and the Government of Odisha that focuses on providing technical support to the state in matters of food security – from the farm to the fork.

Hameed Nuru
Representative and Country Director
World Food Programme, India

*Table of
Abbreviations*



Abbreviation	Description
AWC	Anganwadi Centre
BPR	Business Process Review
CMR	Custom Milled Rice
CWC	Central Warehousing Corporation
DC	Delivery Certificate
DCCB	District Central Cooperative Bank
DEO	Data Entry Operator
DFID	Department for International Development
DSM	Dry Skimmed Milk
DS&ME	Department of School and Mass Education
FAQ	Fair Average Quality
FCI	Food Corporation of India
FIFO	First in First Out
FO	Farmers' Organisation
FPS	Fair Price Shop
FSCW	Food Supplies and Consumer Welfare Department
GMP	Good Manufacturing Practices
GoO	Government of Odisha
GP	Gram Panchayat
HACCP	Hazard Analysis and Critical Control Point
KMS	Kharif Marketing Season
MDM	Mid-Day Meal
MI	Marketing Inspector
MSP	Minimum Support Price
NFSA	National Food Security Act '2013
OMEGA	Odisha Modernising Economy Governance and Administration
OSCSC	Odisha State Civil Supplies Corporation
OSWC	Odisha State Warehousing Corporation
PACS	Primary Agriculture Cooperative Society
PDS	Public Distribution System
PEG	Public Enterprise Guarantee
PI	Procurement Inspector
PoS	Point of Sale
PP	Pani Panchayat
P-PAS	Paddy Procurement Automation System
PPC	Paddy Purchase Centre



Abbreviation	Description
QC	Quality Control
RCMS	Ration Card Management System
RMC	Regulated Market Committee
RRC	Rice Receiving Centre
RRC-cum-DSC	Rice Receiving Centre-cum-Departmental Storage Centre
SCMS	Supply Chain Management System
SHF	Small Holder Farmers
WFP	World Food Programme

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Conversion Table

1 Metric Tonne = 10 Quintals

1 Quintal = 100 kg

1 Million= 10 Lakhs

1 USD is ~Rs 65

1 hectare= 2.5 acres



WFP/Ankit Sood

1

Executive Summary



The Government of Odisha has made remarkable progress and enhancements to the Targeted Public Distribution System (TPDS) of the state since the adoption of the National Food Security Act '2013 (NFSA) and in the implementation of End-to-End (EtE) Computerisation. Under the plan scheme of EtE Computerisation: a new accurate beneficiary list was established and a robust beneficiary management system has been developed, Aadhaar seeding and de-duplication is ongoing; a supply chain management system (SCMS) has been developed and deployed; biometric enabled Point of Sale (PoS) devices for Fair Price Shops are being deployed; and a Grievance Redressal (GR) system is also being developed. In addition, over and above the mandate, the state government has also taken steps to automate the paddy procurement system through development and deployment of the Farmer Registration and Paddy Procurement Automation System (P-PAS) in all procurement centres.

In an endeavour to make the procurement and distribution systems more efficient, accountable and transparent, the Government of Odisha requested WFP to review the Paddy Procurement Automation System (P-PAS) and the Supply Chain Management System (SCMS). WFP organised a mission from 17th to 28th of April 2017, comprising of Procurement, Supply Chain/Logistics experts from WFP headquarters (HQ) in Rome and Regional Bureau in Bangkok (RBB), a logistics expert from Kuehne Foundation and Systems experts from the India country office. The mission travelled to 6 districts and undertook discussions with various stakeholders across the supply chain, including farmers, Primary Agriculture Credit Societies (PACS), Rice Receiving Centres (RRC) and warehouses,

Anganwadi's, schools, millers, government stakeholders at all levels, and transport service providers. As part of the scope, the team also studied the business processes embedded in the P-PAS and SCMS systems to understand the systematic proceedings.

The mission observed that the entire supply chain operation comprises of two major components, the procurement module and the distribution/supply chain module, which are not appropriately integrated. This results in fragmented planning and execution of supply and demand, and may result in overstocking, delays, deterioration of quality, and other factors that affect the supply of commodities. Furthermore, there are quality controls and infrastructure challenges at all levels, which are faced alike by farmers, millers, warehouses and FPSs. Traceability also surfaced as a recurring issue, as commodities are not traceable to farmers or millers after a certain point in the supply chain. Transport, storage standards and milling practices were also identified as key areas for improvement. The software systems i.e. P-PAS and SCMS although operating at a satisfactory level, also need further enhancements to reduce duplication of effort, operational inefficiencies as well as implement greater transparency that promotes decision making.

The core recommendations include a comprehensive business process review and a supply chain optimisation of P-PAS and SCMS to draw up on required enhancements and prepare a plan for integration of the two systems. The report also suggests stringent measures to improve quality control, introduction of requisite infrastructure at PACS/PPCs, introduction and adherence to Good Manufacturing Practices (GMP) at



mills and improvement in warehouse management at RRC's. This report provides recommendations to each of the observations in line with the objectives of the supply chain systems.

In addition to the above, the mission also provides alternative cross-cutting recommendations (**Section 5**) such as

migrating the PPC operations done by PACS to the mill premises and thereby reducing the need for improving separate infrastructure facilities at the PACS. Furthermore, a study to access the overall supply chain including farmers, PACS, mills, warehouses and FPS's from an operation research perspective to optimise the entire network is also recommended.

Summary of Observations and Recommendations		
ENTITY	KEY OBSERVATIONS	RECOMMENDATIONS
FARMER	Paddy which is below FAQ norms is not procured. As farmers are usually not willing to take back the paddy, informally there is value negotiation with the farmer and sometimes a flat 5-6 kg per quintal is taken from the farmer to compensate for the higher moisture and impurities.	<ul style="list-style-type: none"> • Improve facilities at PACS/PPC to support farmers and reduce post-harvest losses. PACS need to be equipped with drying and cleaning equipment. • Losses need to be recorded in the system and negotiation activities with the farmers need to be checked through independent inspection units, spot checks, and GR systems etc.
	Planning and forecasting of the marketable surplus is done based on the records of land ownership multiplied by the pre-defined yield/acre.	<ul style="list-style-type: none"> • The forecasting and planning has to be improved and should be done on the actual capacities of farmers, PPCs, mills, transporters and warehouses as well as yield per acre and the district profile.
PACS	There is no traceability of the paddy from the farmer to the mill and the resultant rice from the mill to the beneficiaries.	<ul style="list-style-type: none"> • P-PAS should be enhanced to enable traceability of grains right from the farmer to the mills. • Additionally, for traceability from mill to the FPS, barcoding of bags can be done with miller identification, quantity, season etc., on the cloth tag with the above information. The barcodes can then be scanned at the FPS for traceability.
	The storage and infrastructure at PPC's is below acceptable standards.	<ul style="list-style-type: none"> • Improvements in storage facilities and staging area for procurement by developing protocols, policies and adherence to good warehouse management practices. (Attached in Annexure 6) • As an alternative, the PPCs/PACS activities could be done at the miller's location thereby avoiding intermediaries, double transportation, handling, storage, quality control linked issues.
	Quality control seems to be a persistent and cross cutting issue. None of the PPCs visited by the mission fully implemented and practiced quality control. At times weightment was not done at the time of procurement and weighing scales were not calibrated.	<ul style="list-style-type: none"> • Independent quality assurance team, at least 2 person for PPC, should be created to ensure that the process as guided by policy in force is followed, and if possible quality control should be done by private/independent agencies.
MILLS	Some of the mills visited were of low capacity and operate under inefficient conditions (one shift only, low usage of installed capacity etc.).	<ul style="list-style-type: none"> • Contracting of mills should be done on the basis of their actual capacity, quality and adherence to Good Manufacturing Practices (GMP). (Attached in Annexure 4)



Summary of Observations and Recommendations		
ENTITY	KEY OBSERVATIONS	RECOMMENDATIONS
MILLS	The quality control mechanism at the mills was not up to standards, there was a lot of spillage and the mills at most times were not very well maintained.	<ul style="list-style-type: none"> Mills need to move towards adhering to GMP/ Hazard Analysis and Critical Control Point (HACCP). (Attached in Annexure 4)
FARMER REGISTRATION AND P-PAS	Needs to be integrated fully with the SCMS and other components of the PDS computerised system	<ul style="list-style-type: none"> Business Process Review should be undertaken to devise the most efficient work flow of the system. The enhancements in the system should be done based on the results of the BPR.
	The implemented system does not seem to support any decision making based on the reports generated by the system	<ul style="list-style-type: none"> Create a dashboard for reporting key data and improve reporting formats. Data Analytics for informed decision making.
RRC-cum-DSC	Low utilization of rented storage by the OSCSC in a CWC warehouse leading to losses for the state government at some places.	<ul style="list-style-type: none"> Conduct an in-depth supply chain and route optimization study of the Government (central and Odisha state-level) structure related to warehousing and transport network.
	Quality control of the rice received in the depots needs to be improved and better enforced. The mission observed underutilization of quality control equipment as well as free flying insects, birds, and traces of aluminum phosphate on bags.	<ul style="list-style-type: none"> Introduce Good Warehouse Management procedures. (Attached in Annexure 6)
	The transporters responsible for delivering rice from Depots to FPSs are contracted at the block level. The prices vary from block to block and the mission observed that the commercial rate is usually much lower than the rate paid by the government	<p>The transport network requires optimisation, to take into consideration:</p> <ul style="list-style-type: none"> Clustering destinations to maximize payload and minimize travel distances; Delivering directly from mills to FPS; Combining grains for different food subsidy schemes
FPS	Newly installed PoS devices are not yet working as intended and there is still a lack of understanding of the FPS owners of its use. The PoS devices still operate in English and most of the FPS owners operate by just knowing which section of the screen to click on.	<ul style="list-style-type: none"> Training needs to be improved for FPS owners and other stakeholders to be well versed with the system as the deployment of PoS devices is improved. Technically competent staff to be deployed on regular basis in the districts for trouble shooting and handholding support to FPS owners and concerned district level officials.
	Some beneficiaries are unaware of any grievance redressal mechanisms existing in the state.	<ul style="list-style-type: none"> Robust IEC mechanisms need to be implemented to improve the level of Aadhaar seeding, other available authentication mechanisms as well as grievance redressal mechanisms.
SCMS	The complete supply chain system does not work as one system but is a collection of different modules, portals and some manual processes.	<ul style="list-style-type: none"> Integrate all backend databases and ensure that there is a single window to cater to all processes.
	The system does not allow to view the complete planning and execution plan, thereby making it difficult for decision makers to monitor and make adjustments.	<ul style="list-style-type: none"> All aspects of planning and execution should be implemented in the system. The system should be able to generate an end to end plan for complete planning and execution cycles. Introduce dashboard and data analytics to provide decision making support to higher officials.

Table 1: Summary of Observations & Recommendations.



2

Detailed Report



The Targeted Public Distribution System (TPDS) is one of the government's most important instruments of policy aimed at food security, inclusive growth and public satisfaction. It delivers a minimum requirement of food grains and other essential items at highly subsidised prices to the poor. As one of the oldest welfare-oriented schemes, it is also perhaps the most extensive, providing food security to 67 percent of the citizens. The program is now under the National Food Security Act¹ 2013 (NFSA), and aims to cover around 800 million people with assured subsidized monthly household ration consisting of rice/wheat/millet at a prescribed price of US cents 5/3/1.5 (or Rs. 3/2/1) per kg.

The TPDS is operated under the joint responsibility of the central and state governments, with the former responsible for procurement, storage, transportation (up to the district headquarters) and bulk allocation of food grains. The State Governments are further responsible for distributing these food grains from the Food Corporation of India (FCI) warehouses (owned and operated by central government) in the state to beneficiaries via last mile retail outlets called Fair Price Shops (FPS) through a network of state owned warehouses. In addition, there are 15 states/UT's which have decentralized procurement¹, whereby the State Government itself undertakes direct purchase of paddy and wheat on behalf of Government of India, and also stores and distributes these food grains under TPDS and other welfare schemes. The central government covers the expense incurred for procurement and transport by the state until they reach the FCI godowns and reviews the quality of food grains procured.

¹www.dfpd.nic.in/decentralisedprocurement

Post implementation of NFSA, Odisha has taken steps to automate the end-to-end operation of TPDS which includes digitization of Beneficiary Database- following a fresh survey and de-duplication using Aadhaar (Unique ID); Automation of Procurement (P-PAS) and Supply Chain Systems (SCMS); FPS Automation; and establishment of a Grievance Redressal System and a Transparency Portal. The State began implementing NFSA in 2015 and hopes to be fully compliant by 2017.

WFP has been requested to review two critical components of TPDS in Odisha, the Paddy Procurement Automation System (P-PAS) and the Supply Chain Management System (SCMS). Both these systems have been automated through software applications, developed, with financial support from DFID, by OMEGA (Odisha Modernising Economy, Governance and Administration), which is an independent state agency. The basic premise of automating these systems is to enhance transparency and accountability, reduce leakages, and pilferages, which have plagued TPDS since its inception.

2.1 Paddy-Procurement Automation System (P-PAS)

As a "Decentralised Procurement State", Odisha procures Paddy during two seasons- Kharif (monsoon crop) and Rabi (winter crop) Marketing Season. Govt. of Odisha (GoO) prepares the Food & Procurement Policy before the start of the marketing session. This policy is further implemented by the State Food Supplies and Consumer Welfare



Department (FS&CW). Different agencies are appointed by the department with targets for each district given to them based on analysing the previous years' paddy procurement volume and current year's paddy production. The entire operations for Paddy procurement are now implemented electronically using an application called the Paddy Procurement Automation System (P-PAS) which has been in operation since 2014. District level Paddy Procurement Committee is formed under the chairmanship of Collector, which decides to open the Paddy Purchase Centres (PPC) in the district at different locations which are convenient for the farmers to come and sell their paddy. The farmers registers, at the start of the season, with the PACS to sell the paddy, which is then procured from them at the Paddy Purchase Centres in the presence of Millers' representatives². These listed agencies are tagged to custom millers to mill rice from procured paddy after the district administration enters into agreement with them and as per the decision of the collector. The details of the farmers are entered in the Purchase Register of the P-PAS. Paddy sampling is done at the PPC before acceptance of Paddy. Once, the paddy is accepted, it is weighed and Paddy Purchase Register & Vendor Receipt is maintained in P-PAS with the quantity and amount of paddy procured. All payments to farmers account are done through electronic mode. Payments to the farmers are made directly from Odisha State Cooperative Bank account to the farmers account after authentication. **Figure 1** provides an overview of Paddy Procurement in Odisha³.

The P-PAS system also prepares Paddy Acceptance Notes and Transit Passes. Paddy Acceptance Note is maintained by the application and transit pass is issued to the Millers to take the paddy from the PPC to their Mills. At the PPC, stock register and cash books are also maintained in the P-PAS application. On a particular day, if excess paddy is procured beyond the intake capacity of the millers, the balance paddy is sent to storage godowns for temporary storage.

In heavy procurement blocks, the Regulated Market Committee⁴ sets up temporary market yards which play the role of PPC's for facilitating procurement operations by OSCSC Ltd and receives 2 percent commission on Minimum Support Price (MSP) for conducting paddy procurement operations. Post Milling, the millers deliver the Custom Milled Rice to various District Storage Centres, to which they are attached.



Quality analysis during paddy procurement
WFP/Djordje Vdovic

²OSCSC Operational Guidelines for KMS 2016-2017, Accessed at : [http://oscsc.in/doc/2016 OPERATIONAL%20GUIDELINES%20FOR%20KMS%202016-17.pdf](http://oscsc.in/doc/2016%20OPERATIONAL%20GUIDELINES%20FOR%20KMS%202016-17.pdf)

³Omega for Department of Food Supplies and Consumer Welfare, Government of Odisha.

⁴http://www.osamboard.org/about_us.aspx

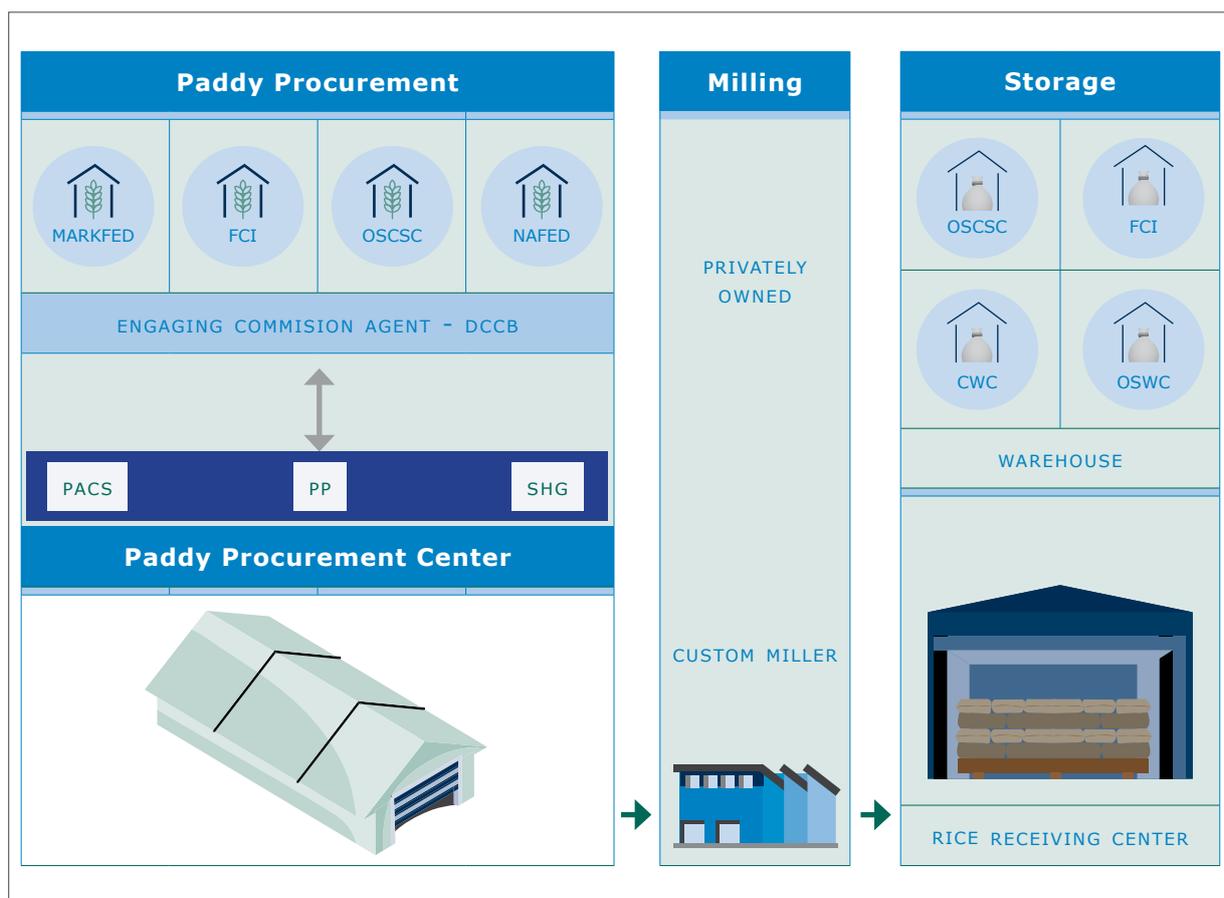


Figure 1: Overview of Paddy Procurement in Odisha.

2.2 Supply Chain Management System (SCMS)

Under the mandate of the NFSA and order of the Supreme Court of India, the State Governments are required to implement "Door Step Delivery" for TPDS operations. This implies that it is the responsibility of the state to lift food grains from FCI / State/Private godowns in the State, and



deliver them to the final distribution point i.e. the Fair Price Shops (FPS).

The existing system **Figure 2** meets the basic requirements to help automate the end-to end supply chain processes within the state. The system supports key functions of stock accounting at the depot, quality analysis of grain, accounting of collections from depot, notifications to FPS owners, beneficiaries and key stakeholders, data auditing, handling of transport contractors and also reporting and analysis. The vision for this system is to be able to optimise the use of existing resources- warehouses, truckloads etc., which eventually leads to reduction in wastage, and enhanced transparency, accountability and integration both outward with other schemes and inwards with other automated systems for TPDS.

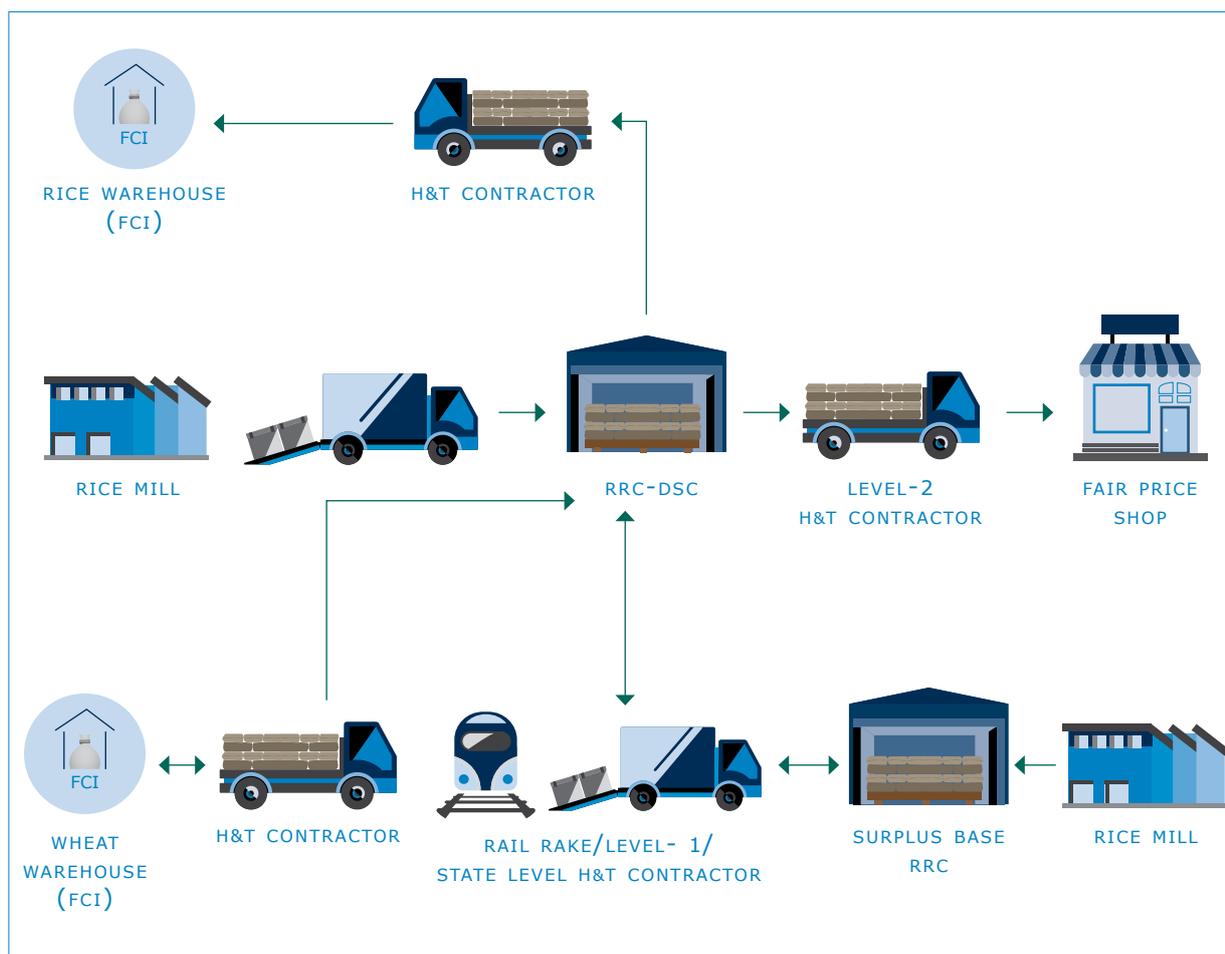


Figure 2: Overview of Supply Chain Management System.

Overall Process:

**Miller ▶ RRC-cum-DSC/FCI ▶
FPS/FCI ▶ Beneficiary**

1. The mills are responsible for transporting milled rice to the tagged warehouses in the state.
2. There are two major types of storage centres in Odisha: Rice Receiving Centre (RRC)-cum-DSC (Departmental Storage Centre) and RRCs. Transportation of physical grains between these storage centres, rice mills, RRC/DSC/FCI, and FPS is done through a system of contracting to 3 types of handling & transport (H&T) contractors.
 - State level contractors – For transportation of CMR by road
3. All the storage centres have an online cum offline application (two separate software components have been designed) installed, which automate the generation of orders, receipts, delivery certificates, receipts and notifications. The records of the movement of grains along with the associated documents are recorded in the systems at the various storage centres.
 - Level 1 contractors-Between FCI, Base RRC and RRC-cum DSC.
 - Level 2 contractors – Between RRC-cum-DSC and FPS.



4. System of receipts and challans (official forms) which are auto recorded by the system allow for checks and transparency of the operations. Challans, contractor performance, commodity wise stocks list along with detailed reports can be generated using the software solution.
5. The flow of information is coordinated in the states using the district level and state level lifting plans, which are made at the beginning of the distribution cycle using the rice and wheat stock reports in the district.
6. Movement from FCI and rice mills within the district and between districts is coordinated based on the lifting plans.
7. System receipts are supplemented with physical copies at each step to provide for extra verification by the operators.
8. The tagged mill delivers Custom Milled Rice (CMR) to the warehouses based on their paddy allocation, targets, security deposits and distance.
9. Based on First in First out (FIFO) principle, the inventory from the warehouse is released to the attached FPS for distribution on monthly basis.



WFP/Esha Singh

3

Review of the Current Systems



The entire supply chain includes both procurement of paddy from the farmers as well as delivery of custom milled rice and wheat to the end beneficiaries of the state through a network of Odisha State Civil Supplies Corporation and FCI warehouses. The procurement process is completed as per the season (Kharif or Rabi) with farmers registering at the Primary Agriculture Cooperative Society (PACS) before the beginning of the procurement season to sell their paddy at the attached Paddy Procurement Centre (PPC). The procured paddy is then sent to the miller(s) attached to the PACS. Post milling, rice is delivered to the attached RRC-cum-DSC. The delivery and pick of rice and paddy respectively to the RRC-cum-DSC and from the PACS is managed by the miller. For the next level a transport contractor (commonly referred as L2) is contracted on an annual basis to complete deliveries to the attached FPS/ Gram Panchayats (GPs). The beneficiaries attached to the respective FPSs can then procure food grains during specified periods of the month.

The procurement and supply chain in the state of Odisha was also reviewed keeping in mind the concepts of “food systems”, with the underlying principle of coordination, collaboration, and integration of various actors in food value chains, which – once in place and optimized – bring efficiencies and effectiveness to each of the building links.

Figure 3: In simple terms, a food system is the path that the food travels from the field to family meals. It is a complex network involved in producing food, transforming it, and ensuring it reaches people. A food system involves the farmers growing their agriculture products and cows providing milk, along with traders, transporters, millers,

bakers and other food processors that transform these raw materials into foods such as rice, bread and yoghurt. These processes depend on structures such as roads, warehouses, trucks, processing plants and markets that ensure that the same rice, bread and yoghurt ends up on people’s plates. It contains all elements of quality assurance systems established in between of its individual segments, so that the rice, bread and yoghurt maintain their nutrition characteristics and become good food for humans. It also leans on number of policies and partnerships that enable sustainable growth, continuously improving all elements of the system inclusive of climate considerations that can significantly affect the system, today or in future – where research and development is a critical chain. The food system as a whole is based on commercial principles, where all actors enter into partnerships (which can be purely commercial, inter-governmental or public-private partnerships) who communicate effectively through the information channels and media.

While observing/assessing a food system, it is important to understand the dynamic nature of interventions and recognize that whatever is done at any of the systems’ integral parts has an impact in all directions throughout the system. Therefore, it is imperative to consider influences of each change in order to prevent negative or undesirable effects.

The entire supply chain of Odisha is thus viewed from a food systems perspective which highlights the need for coordination, optimisation and integration to bring about efficiencies and effectiveness. Translated in the context of Odisha, **Figure 4** describes the procurement, supply and distribution

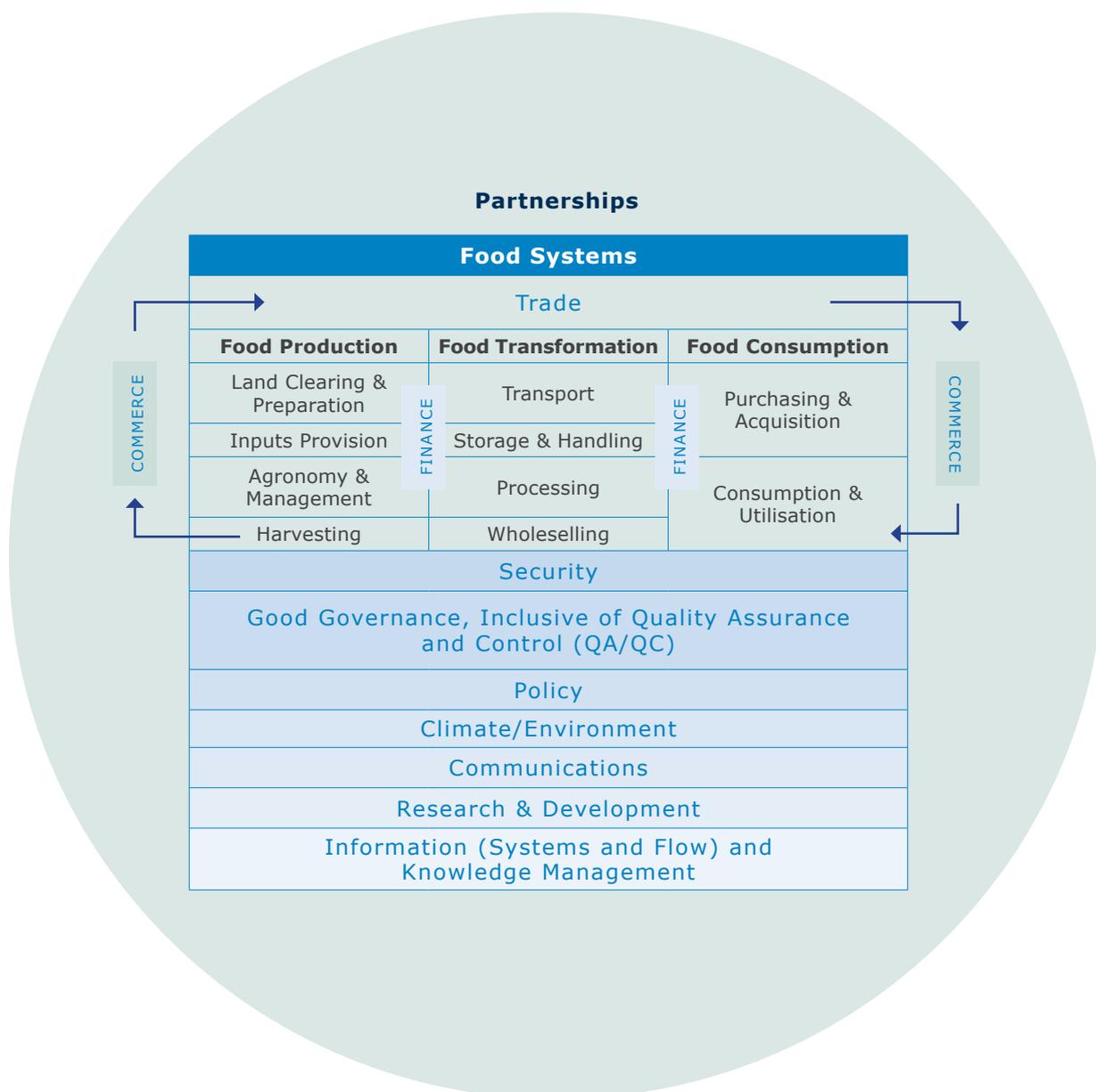


Figure 3: Overview of the Food System.

of food grains in the state (the three focus areas of the food system) of Odisha as one comprehensive and integrated supply chain.

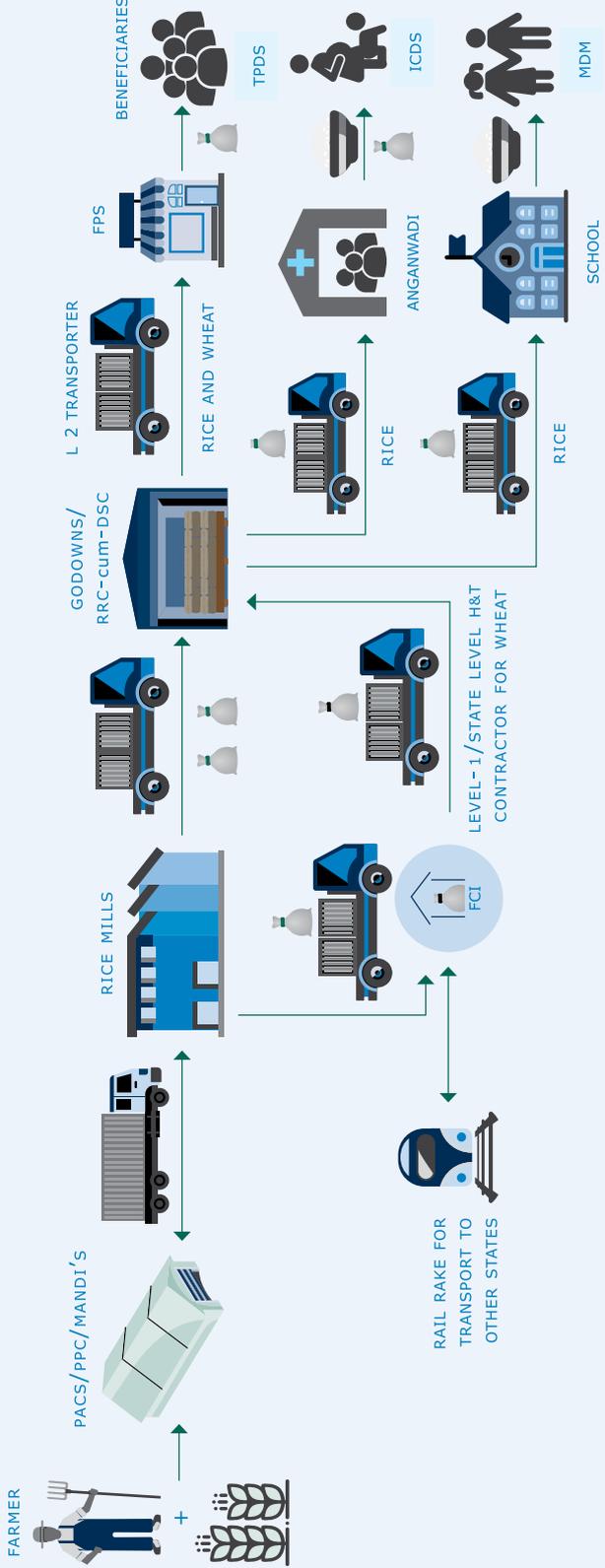
3.1. Objectives of the P-PAS and SCMS Systems

The mission reviewed the two systems against the below mentioned strategic and individual objectives⁵:

Overall Strategic Objectives:

1. To ensure an efficient, accountable and transparent system for procurement and distribution of grains to the beneficiaries.
2. To support farmers with MSP and to provide them a market to sell the marketable surplus paddy available with them.

⁵User Manual for Farmer's Registration and Paddy Procurement Automation System 2016-2017 and User Manual for Supply Chain Management System in PDS, 2015



ROLE					
FARMER	PACS/PPC/MANDI'S	RICE MILLS	GODOWNS/RRC-CUM-DSC	FPS/ANGANWADI/SCHOOL	BENEFICIARIES
<ul style="list-style-type: none"> • Kharif and Rabi season Paddy • Receives MSP Rs. 1550 per quintal for paddy 	<ul style="list-style-type: none"> • Procures Paddy at MSP • Provides Seeds, Fertilizers, Loans 	<ul style="list-style-type: none"> • Pickup, store and mill paddy from tagged PACS • Deliver CMR to warehouses 	<ul style="list-style-type: none"> • Store Paddy for upto 4 months (incl. buffer stock) • Receive wheat from FCI and deliver both CMR and wheat to FPS 	<ul style="list-style-type: none"> • Last mile retail shop for the beneficiaries • ~NFSA Beneficiaries receive Rice, Wheat 	<ul style="list-style-type: none"> • Receive subsidised Rice and Wheat at Re. 1 per kg. for each commodity.
SCALE					
FARMER	PACS/PPC/MANDI'S	RICE MILLS	GODOWNS/RRC-CUM-DSC	FPS/ANGANWADI/SCHOOL	BENEFICIARIES
<ul style="list-style-type: none"> • ~10 lakhs registered with the PACS • ~8 lakh sold paddy through PACS in 2015-16 	<ul style="list-style-type: none"> • ~2700 PACS in 30 districts of Odisha • ~50% taking loans at 2% from the PACS 	<ul style="list-style-type: none"> • ~1500 millers in the state • Largely Small millers 10 MT capacity 	<ul style="list-style-type: none"> • ~225 godown automated • Transport Contractors L1 per district and L2 per block 	<ul style="list-style-type: none"> • ~12720 FPS • ~71000 Anganwadi's • ~62708 Schools 	<ul style="list-style-type: none"> • 3.19 crore NFSA beneficiaries. • -PHH 5 Kg per member, AAY - 35 Kg per HH • ~52 lakhs children

Figure 4: TPDS, MDM and ICDS Supply Chains in Odisha.



Objectives of Farmer Registration System:

1. To streamline the procurement process of paddy from farmers.
2. To forecast and plan surplus paddy availability in the season.
3. To increase farmer participation and create an Aadhaar-linked database of farmers.
4. To ensure that only the rightful farmers participate.

Objectives of the Paddy-Procurement Automations System (P-PAS) and PACS/PPCs:

1. To ensure efficient procurement of marketable surplus from farmers and timely payment of MSP to the farmers.
2. To remove harassment of farmers by removing middlemen and providing a government run paddy procurement service.
3. To ensure that farmers have advance notification on their paddy delivering schedule to the purchase centres to avoid delays.
4. To automate all stages of transactions for paddy procurement, keep track of progress of procurement, records management and reconciliation of total paddy procured.
5. To provide agriculture extension services including loans, seeds, fertilizers etc. to the farmers.
6. To provide a common platform to all agencies procuring paddy in the state including OSCSC, MARKFED, NAFED, FCI etc.

Objectives of Supply Chain Management System (SCMS):

1. To have a reliable and accountable management system for allocation, storage and transportation of food grains.
2. To improve the efficiency of overall operations at the RRC-cum-DSC depots and provide transparency in records management and reporting.

3.2. Farmer Registration and Paddy Procurement System

The paddy procurement system was developed to support farmers with a minimum support price (MSP) and to provide them with a market place for the guaranteed sale of their surplus paddy. The P-PAS helped automate all the transactions including keeping track of procurement, farmer registration, maintain paddy quality parameters, miller records, PACS and Miller allocation, lifting of stocks by millers as well as payments to farmers.

Overall Process: Farmer ►PACS ► Miller

1. Before the start of each marketing or cultivation season the PACSs, managed by the Department of Co-operation, setup mandis or PPCs.
2. Before the start of the procurement season, the farmer registers/renews with the PACS using the Farmer Registration module.
3. The land holding records self-declared by the farmer are auto verified against the digitised land record (*bhulekh*) database (maintained by the Department of Revenue, Government of Odisha).

4. The farmers' bank details along with their Aadhaar as provided by the farmers at the time of registration are also entered in the system after validation/verification.
5. Post successful registration and during the operationalization of the procurement process, the farmers receive an advance token by visiting the PACS.
6. The advance token describes the date and quantity of paddy to be delivered by the farmer.
7. On the due date of delivery, the farmer brings paddy as per the declared quantity packaged in gunny bags provided by miller. These are non-standard bags and may range from 50 kg-80 kg.
8. The farmer's paddy is stacked in the storage after weighment and quality

check. The stacking is done per farmer and the weighment/quality check is done by the PACS quality personnel in the presence of the farmer, the PACS representative and the miller's representative.

9. Miller tagged to the PACS lifts the paddy based on communication from the secretary of the PACS within 1-3 days of delivery by farmers.(preferably on the same date)
10. The farmer's payment is credited to his bank account within 1-3 days of the miller's acceptance of the paddy in the P-PAS.

Figure 5 describes the architecture and the working of the P-PAS application. The P-PAS system operates in an offline and an online mode. Steps 0-3 define the exchange of information between the Food Odisha portal, Farmer Registration Module, the PACS which have the offline P-PAS application and the P-PAS Server.

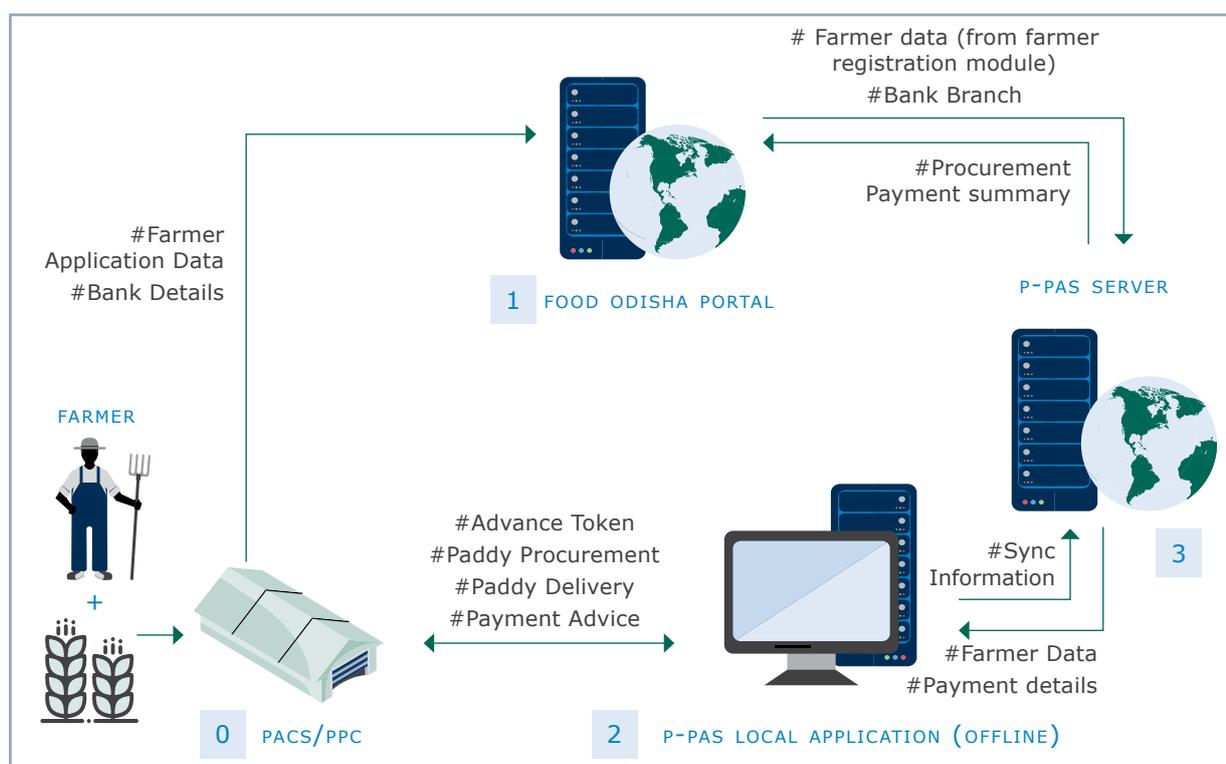


Figure 5: Overview of the P-PAS Module.



Key Statistics of the Paddy Procurement Process:

- 2700 PACS catering to 9,69,000 farmers registered in the system for the year 2016-2017.
- 7,12,000 farmers selling through PACS in the state for the Kharif marketing Season 2016-17.
- 93 percent land records auto-verified through "land record (*bhulekh*)" (the digitised land database of the state).
- The volume of paddy procured during KMS 2016-17 is 52 lakh MT, expected to reach 60 lakh MT during 2017-18.
- ~40 lakh MT of rice is the overall marketable surplus of the registered farmers in the state of which state requirement is of 20-21 lakh MT of rice for TPDS and other welfare schemes including ICDS, MDM, SC/ST welfare schemes, etc.
- 20 lakh MT of rice is sold to FCI and stored in district level FCI Godowns (warehouses) as well as CWC Godowns for transportation to other deficit states in India.
- Rice procurement is done at MSP (i.e. Rs. 15, 500 per MT paddy, equivalent to Rs. 22,540 per MT milled rice).



- OSCSC sells the surplus rice to FCI at ~25,000 Rupees/MT and the final total cost to FCI is around 33,000 Rupees/MT, including warehouse, transport, overhead costs, etc.

3.2.1 Farmers

3.2.1.1. Overall Process: Farmer ► PACS/PPC

- The farmers desirous of selling their paddy to the GoO submit their duly filled registration form along with their Aadhaar Card, physical copies of their land records and bank account.
- The PACS enter the details in the farmer registration module on the Food Odisha Portal and match the land record information submitted by the farmer with the information in land record (*bhulekh*) database.
- This farmer registration data is then synced up to the P-PAS application using the Food Odisha Portal.
- Once the registration is complete, the farmer can receive the advance token within 7 days before the start of receipt at PPCs. Only registered farmers can bring their paddy to the PPCs.
- The farmer has to transport and unload (costing approx. Rs. 3-5 per 50 kg bag) his paddy to the PPC at his own cost. No transportation and handling charges are paid to the farmers.
- The payment of MSP to the farmer is triggered only after the miller accepts the paddy and is credited in their bank accounts within 1-2 days. In other words, while the paddy is stored at PPC (after being delivered by the farmer to the State), the system has



not yet reflected the passage of the title/ownership of the paddy, until the time that miller moves the paddy to the mill and records this transaction in the P-PAS. This creates a gap between the reality and the data captured by the system.

- As per the established quality control procedures, only paddy that meets Fair Average Quality (FAQ) will be accepted.
- There are cases of disputes/ grievances from the farmers e.g. 2 farmers cultivating the same land but disagree on the area cultivated by each, disagreement in the weighment or quality of the paddy etc. which at present are handled at the PACS level.

Key Statistics:

- 9.69 lakh farmers registered for the Kharif season 2016-2017.
- Almost 6.55 lakh registered farmers are small holder farmers i.e. have land less than 5 acres.
- 9.16 lakh verified against the land record (*bhulekh*) database.
- 54.46 Lakh MTs of surplus paddy has been generated.
- 43.09 lakh acres of land has been cultivated.
- The rejections (either for land records or at the payment from bank) have come down to 6.45 percent.
- Quantity of seeds provided to farmers at subsidized prices is 200 kg/farmer.
- Seeds requirement is 37.5 kg/acre (hybrid) or 62.5 kg/acre (traditional).

3.2.1.2 Observations from the field

Paddy Production:

1. The first drying process is conducted on the open air, whether or not the harvesting and threshing is done mechanically. It is a common practice that the paddy is spread with direct exposure to the soil (without using tarpaulins or concrete pavement). The spread is left for 3 - 5 days to be air-dried under the sun. This practice helps to reduce the moisture content in paddy from approx. 25 percent down to the FAQ specification of 17 percent or below during the dry season.
2. Traditional mostly manual techniques (harvesting, threshing, winnowing and especially drying) used by the farmers may be the source of large losses (academic literature estimates that some 10-15 percent of harvests may be lost in this way, and this percentage might be even higher at unfavourable weather conditions). Alavi et al. compiled data on postharvest losses in rice value chains from different studies conducted by the FAO and reported 10 percent–37 percent losses in rice in this region of the Asia continent⁶.

Farmer Participation in the System:

1. The farmer registration is only about 30 percent of the total estimated farmers in the state. Most of the left out small and marginal farmers who cultivate paddy may either not be aware of these schemes, may not be interested to participate or may not find it cost effective to participate in the paddy procurement process.

⁶Alavi H.R., Htenas A., Kopicki R., Shepherd A.W., Clarete R. Trusting Trade and the Private Sector for Food Security in Southeast Asia. World Bank Publications; Washington, DC, USA: 2012.



- Farmer may make up to 4 trips to the PACS in a season for seeds/loans/fertilizers; registration; advance token and for selling paddy.
- Although the system records the area cultivated by each farmer, thereby making it possible to identify small (holding between 2.5 acres to 5 acres) and marginalised farmers (less than 2.5 acres) but no special incentives or support is provided to them. These farmers are in greatest need of support, since they use manual labour for harvesting, and are forced to sell rice immediately to pay for all the costs potentially being exposed both to post-harvest (grain) and price (lowest seasonal price) losses.
- The current procurement system has successfully removed middlemen from the supply chain, and provided farmers with a direct and guaranteed selling option for their crops. However, the entry point for the farmers in the supply chain is through the societies, which are managed by the government. This means that they are still considered as individuals with minimum leverage power in the supply chain, and there is no facility to aggregate and deliver paddy in more efficient way.
- Small and marginalized farmers are not able to organize themselves into groups, and thus continue to operate as individuals, making it unviable for them to deliver paddy at the PPCs.
- Large and small farmers have access to exactly the same scheme (subsidized inputs and MSP selling price) although the latter needs it much more than the former.

- There seems to be a lack of awareness of their rights (SLAs of the various stakeholders).

Dispute/Grievance Redressal and Awareness:

- No dedicated, independent grievance/dispute Redressal mechanism exists.
- Disputes related to share cropping, oral leases and/or sub lease are handled at PACS without any official guidelines or policy.
- There are cases of disputes/ grievances from the farmers with no dedicated or adequate mechanisms in place to address those disputes.

Planning/Forecasting Marketable Surplus:

- Planning and forecasting of marketable surplus is calculated by multiplying the total land ownership as per the land records "Land record (*bhulekh*)" and the pre-defined yield/acre.
- In Odisha, the yield per acre is high and at times the farmers are left with surplus paddy which the GoO doesn't procure. This is due to the fact that the calculation of the maximum marketable surplus paddy for each farmer is calculated by multiplying the land holding with an average value of 18 quintal/acre (irrigated) or 12 quintals/acre (non-irrigated). This surplus is then sold to the millers/traders/middlemen in distress and price substantially lower than the MSP.
- Only registered farmers can bring their paddy to the PPC and occasionally, farmers have higher surplus as compared to the registered surplus, but they are not able to sell them to



the PACs due to fixed state/PAC/PPC level procurement targets.

Procurement:

1. As per the established quality control procedures, only FAQ paddy should be accepted. However in case the paddy is not as per FAQ norms, at times a value negotiation is done with the farmer e.g. if the paddy has 20 percent moisture then 3 kg per quintal is taken in excess or at times , in some places a flat 5-6 kg per quintal is taken from the farmer. This excess is not recorded in the system and remains unaccounted for rrepresenting a "safety margin" in order to pre-empt handling, storage and distribution losses and reduction in weight for the loss of humidity.
2. As the storage at the PPC is limited, the farmer has to guard their own stock at the PPCs at their own expense and time until the stock is accepted at PPC and lifted by the miller.
3. The mission was informed that at times, the paddy is not offloaded in the PPC but after the necessary paperwork and entry in the P-PAS (without the QC and the weighment) is sent directly to the miller. This reportedly happens at the peak of the procurement season, when there is a lot of pressure from the farmers to deliver the paddy.
4. As per the defined process the paddy has to be unloaded in the PPC, checked for quality, weighed and bagged into 50 kg gunny bags. The small and marginalized farmer (that comprises of almost 75 percent of the registered farmers) may not be able to arrange

for their own transport to the mill, and in that case would have to wait for a period of 1-2 weeks at the PPC before their stock is lifted by the miller.

5. At times millers directly procure from the farmers or the farmer directly delivers to the miller, all on behalf of the PACS. The records are updated at the PACSs post factum which has the potential for misreporting.
6. There is no traceability of rice coming from small farm holders, in order to account for small farm holders at a later stage.

Transportation:

1. The farmer has to transport and unload (costing approx. Rs. 3-5 per 50kg bag) his paddy to the PPC at his own cost, and since there is a daily cap of 1000 quintals per day per PPC, the farmer may have to make multiple trips to the PPC. Transportation and handling expenses are borne by the farmer.
2. Some farmers did not deem it cost effective to deliver to the PPC, and hence decided not to enrol in the system.

Payment to the Farmers:

1. The payment to the farmer is done after the acceptance of paddy by the mills. However, the payment to farmers that are able to transport to the mill are processed immediately and is credited within 1-3 days, but in the case of small/marginalised farmer has to wait till the paddy is lifted by the mill, in which case the payment to the farmer may be delayed by 1-2 weeks after the delivery of paddy at the PPC. Therefore the farmers bear



the risk of storing the paddy at PPC even though they have no remedy to control and mitigate these risks.

3.2.2 PACS/PPCs

3.2.2.1 Overall Process:

Farmer ► PACS/PPC ◄► Millers

The PACS/PPC is integral to the overall procurement process. Apart from the provision of a market place facility to farmers to sell their marketable produce, they also ensure that small holder farmers (which comprise of 93 percent of the total registered farmers with PACSs) receive the minimum support price for their paddy. PACS serve as an intermediary between the millers and the farmers as well as a one stop shop for seeds, fertilizers, loans and other such extension services.

- The State on the eve of the marketing session creates a procurement policy and plan. The plan is later subdivided per district and finally by PACS.
- The PACS's organize the PPC's for procurement of paddy per marketing season. Multiple PPC's can be tagged to one PAC.
- The PACS are paid Rs. 32.50 per quintal for management and handling. In case the handling is not done by PACs, then the PACS receive Rs. 16.25 per quintal.
- Paddy intake from farmers is planned on daily basis. It is based on advance tokens issued to the farmers. Each PPC receives 1000 quintals per day. Farmer receives a system generated advance token at the PACS and sells his/her paddy at the PPC attached to the PACS on the allotted day.
- The paddy is weighed on a calibrated and sealed weighing scale/weighbridge

facility available at each PPC and a quality check is conducted before the grains are offloaded. Paddy that does not conform to the FAQ standards is rejected and the farmer needs to clean/dry the paddy as per FAQ norms and bring it back again. All the above operations are done in the presence of the farmers, government officials and a miller representative.

- The accepted paddy is stored in the PPC warehouse and stacked by each farmer.
- All the transactions for paddy procurement are recorded in the P-PAS system at the PACS.

3.2.2.2 Observations from the field

Planning:

1. There are some PPCs that issue local queue tickets upon arrival of farmers on site, instead of complying with the recommended process of issuing advance tokens to farmers, which results in long lines and farmers having to wait for long time for their produce to be received by PPC.
2. The system caps the maximum daily procurement to 1000 quintal per day per PACS. This does not account for the possible available surplus in that region or the storage capacity of the PPC nor the milling/transportation capacity of the millers.
3. Due to the lack of advance tokens, at times the farmers have to wait in queue for one or two days before they are able to offload the produce at PPCs.
4. There is no traceability of the paddy from the farmer to the mill and the resultant rice from the mill to the beneficiaries, thereby making it impossible to keep senior



managers informed on Government's performance in supporting small holder farmers (SHF); and to enable any corrective actions in case quality issues are discovered at a later stage.

Execution:

1. Execution and reconciliation of procurement operations seems to be working as per the business process.
2. Farmers bring paddy in non-standardized gunny bags resulting in the weight of the produce varying between 45 kg to 80 kg. As most of times weighing machines are not properly calibrated/weighing is not properly done, inconsistencies in weightment are exacerbated.
3. Some PACS accept paddy from farmers even if they do not bring their ID cards. This has potential to allow middlemen to sell paddy on the account of the farmer.
4. Accessibility of PPCs with 10 MT trucks is not always possible due to narrow roads.

Infrastructure:

1. The PACS at times do not stack paddy by farmer. This makes the traceability of the grains very difficult.

2. Storage conditions at most of the PPCs are below acceptable standards (the lack of infrastructure is a key concern stated by multiple stakeholders). Bags are not always kept under a shed, and are left out in the open, making it vulnerable to pests and rodents. It was noticeable that the bags were not stored properly. Furthermore, birds were seen in the storage area which leads to operational losses of grains, and contamination of commodities. At times, even the indoor storage areas are inadequate and/or they store items which are not allowable to be kept within the food stores.
3. It frequently happens that the miller offtakes the paddy the same day, which reduces the need for the storage, but increases a pressure on timely conduct of the quality and quantity check at PPC.
4. The PPCs organized by the PACSs do not have adequate infrastructure for storage or for cleaning and drying of paddy. At times the PPCs are organized under trees.
5. PPC warehouse infrastructure is usually inadequately small, considering that some stocks sit there for a week or longer. Losses due to spillage seem to be common as the workers are using hooks for loading and unloading. Pallets are not available, and other basic mechanization is missing.
6. Staging area for paddy was not adequate; no palettes, in direct sunlight; susceptible to animals and insects, no adequate perimeter fencing.

Quality Control and Weighment:

1. In theory, the grains are weighed on a calibrated and sealed weighbridge/





weighing-scale at each PPC and quality check is conducted before grains are offloaded at the PPC. Paddy that does not conform to the FAQ standards is returned and the farmer needs to clean/dry the paddy as per FAQ norms and bring it back again. However, in practice at some places neither the weightment nor the quality control is done at the PACS. The paddy is moved directly to the miller where the quality control and weightment happens. In case it is below FAQ norms, value or weight adjustment is done (i.e. farmers are either paid less, or the weight is reduced). All the above operations are done in the presence of the farmers, govt. officials and a miller representative.

2. Some weighbridges do not seem to be accurate. Tolerance rate of the weighbridges is usually above internationally accepted rate of: 0.02 – 0.04 percent. However, we have also observed some weighbridges were well calibrated and sealed.
3. Effectiveness of quality control seems to be a persistent and cross cutting issue. None of the PPCs visited by the mission fully implemented and practiced quality control and/or weightment procedures. All involved parties complained about the low quality of the received product.
4. No clear areas were allocated for administrative activities as well (i.e. quality control area, weighing area etc.).

3.2.3 Mills

3.2.3.1 Overall Process: PACS ◀ Mills ▶ RRC-cum-DSC

- Millers are allotted contracts based on their performance records,

milling capacity, security deposit and acceptance to the terms and conditions of working for PDS to deliver milled rice at the rate of 68 percent of total allocated paddy quantity as per FAQ norms

- Millers are allocated up to paddy worth 3 to 10 times their security deposit.
- The millers are tagged to the either one or multiple PACS and are given their allocation plan called Miller Authority Slip (MAS) for each marketing season by the district administration.
- Based on the advance token issued by the PACS, the millers bring their trucks to the PPCs. The millers are informed through phone/SMS by PACS of the paddy arrival schedule.
- The miller is responsible for transportation and handling of paddy from PPCs and transportation and handling of milled rice at the RRC. The miller is paid transportation and handling charges, milling charges, gunny depreciation etc. This amount totals to about Rs. 80 per quintal of paddy.
- The miller accepts the paddy using the “miller app”.
- The rice delivery target of the miller (68 percent) is defined assuming a flat 17 percent moisture content in the procured paddy.
- The milled rice is bagged in OSCSC provided and stencilled gunny bags. These are standardized to 50 kg per bag at the mills



- For delivery to RRCs, the millers visit the CSO office and obtain one or multiple delivery certificates.
- The RRCs based on the DCs, creates a delivery schedule for the millers and communicates to them via SMS.
- The miller, along with his authorized representative, brings the milled rice to the RRC along with a transit slip.
- The miller cannot undertake any commercial activities till the commitment to the OSCSC is fulfilled.
- Millers report that the service fee paid by the government is about 1/3 of normal market value (Rs. 22 per quintal vs. Rs. 60 per quintal). On the other hand, under contracts with the government they keep all by products that leads to an additional revenue of around Rs. 150 per quintal. Typical mass balance and market value are as follows:
 - a. 67 percent raw rice (68 percent in case of parboiled rice)
 - b. 20 percent husks (boiler fuel or sold @ 0.5 Rs per kg)
 - c. 5 percent bran (sold @ 18.5 Rs per kg)
 - d. 3 percent broken (sold @ 14 Rs per kg)
 - e. 4-5 percent foreign matter (no market value)

3.2.3.2 Observations from the field

Milling Process:

1. The miller is contractually bound to provide 68 percent of milled rice as

per FAQ norms per quintal of paddy procured. This is calculated at 17 percent moisture content. However, it has been observed that the average moisture content in paddy is around 13-15 percent especially during the Kharif (summer season). This could lead to loss of revenue for farmer and the GoO.

2. All the millers that the mission met during the mission have shared that they are never able to obtain 68 percent rice due to inferior quality of paddy. They are able to obtain around 65-66 percent of rice only and they have to compensate for the loss from their own pocket.
3. The millers get 5 percent bran per quintal of paddy which is then converted into bran oil and sold in the market for around Rs. 1850 per quintal. The millers also get ~20 percent husk per quintal of paddy. This husk is either sold in the market or used as cattle fodder. One miller in particular was using the husk to generate electricity that run the whole mill.
4. The mills have their own sources of water. Arsenic contamination originating from the water used for the steam is very relevant risk to the parboiled rice, but there may be other compounds and heat resistant microorganisms that can contaminate the rice through the application of the steam. Poor sanitary conditions (related to personal hygiene and cleaning of the mill) are exacerbated if the source of water is contaminated.
5. Millers are socially pressured to receive paddy from farmers, regardless of quality.



6. The milling price has not changed over the last 2 decades whereas their operational costs have increased.
7. Some of the visited mills were of low capacity and operate under inefficient conditions (one shift only, low usage of installed capacity etc.).



Quality Control:

1. The quality control mechanism at the mills was not up to standards. There was a lot of spillage and dust;

the husk was kept in an open air and there was a smell of fermentation and rotting after the husk being soaked with rain; and the mills at most times were not very well maintained and cleaned, resulting in a thick layer of rice dust all over the place; which with environmental humidity creates excessive opportunities for microbiological contamination.

2. Whilst the equipment is in place, most of the mills are poorly managed and maintained. The guidelines for acceptable standards of manufacturing practices were not being followed stringently.

Storage:

1. Some mills have sufficient storage capacity for the paddy as per their allotment and usually around 5000 MTs for milled rice. The other mills are really small and have no imminent plans for expansion, making them very congested and in dire need for reorganization.
2. It was also observed that some of the millers storage space was not sufficient/ upto storage standards, and not well maintained.

Transportation:

1. Millers uplift the paddy from PPCs as a part of their agreement with the District Administration. The government, pays the millers Rs. 15 per quintal in a 10 km range, plus Rs. 0.5 per quintal/km thereafter. However, according to farmers the commercial price is Rs. 18 in the range of 10 km and Rs. 0.6 per Quintal/km. On the other hand, the prices achieved by the RRC on their tenders is above Rs. 23 per Quintal for a 10 km range.



2. At times the millers have to store milled rice over a period of 1-2 months due to the unavailability of storage space at the RRCs. This affects their efficiency and at times mills remain closed for 2-4 months.

Planning:

1. Even though the tagging of mills to PACS takes into account the least distance, millers still have to travel farther than other millers to pick up paddy. This may indicate less than optimised use of resources.
2. There seems to be some discrepancies in the expected procurement volume from tagged PACSs and the maximum uplift quantity that the mills can handle. This highlights the need for better planning in the overall process.
3. At times there are also differences between the expected volume of paddy to be procured and the maximum paddy to be delivered to the mill. This has potential to affect the planning and procurement of mills.

Section 5 provides recommendations for an operational research assessment of supply chains of the food based safety nets in Odisha.

3.2.4 Farmer Registration and P-PAS System (software system)

3.2.4.1 Description of the System

Farmers deposit the filled up the Farmer Registration Form, along with a photo copy of the ID proof and bank passbook and land particulars at PACS.

- During entry at the PACS level, land details of the farmer will be auto verified from land record (*bhulekh*). If the land details are not available in land record (*bhulekh*) then it will be sent to the concerned Revenue Officials (Revenue Inspectors) for physical verification.
 - After successful registration a confirmatory SMS is sent to the farmer's registered mobile number.
 - Farmer provided bank account details and non-land record (*bhulekh*) land will be updated at CSO's level.
 - After verification of the land and bank account details, marketable surplus will be generated.
 - PPC wise farmer list is generated and transferred to P-PAS through web services.
 - Farmers come to the paddy procurement centres (PPC) with their identity documents and request for an advance token. In the P-PAS systems, farmer information is retrieved using identity details and advance token is issued considering marketable surplus quantity, already sold quantity and issued token quantity.
 - Farmers' arrival at the PPC for selling of paddy is recorded on a register referred to as Advance Token Register. Approximate quantity of paddy (No of bags) to be brought by the farmer is recorded in the system. The system generates an acknowledgement slip with queuing number which is issued to the farmer.
 - Quality of paddy is assessed by staff of PACS in the presence of the farmer, and the representative of miller on the
- Data Entry Operator of the PACS register the Farmer Details in Farmer Registration Portal.



basis of prescribed FAQ or common grade parameters prescribed by Government of India. Paddy type, quality (Common FAQ) and rate are also recorded in the system.

- After entering quality analysis details and weighing details in the P-PAS system the number of bags, gross weight, packing material weight and net weight are recorded. This leads to the generation of a vendor receipt.
- Purchase Register is also automatically generated on basis of all vendor receipts prepared on a daily basis for record keeping.
- Millers, tagged to the Society/ Agency for lifting paddy for milling, are enlisted in the system from the beginning of the marketing season. Millers send their representatives with vehicle to the PPC/PPC.
- On arrival of vehicle from the miller, information such as the date and time of arrival, miller's name, name of miller's representative, vehicle number, load carrying capacity of the vehicle is recorded in the system.
- The paddy purchased from farmers is loaded onto the vehicle of the miller. Total quantity of paddy loaded is derived by the system summing up quantity of paddy of each farmer loaded on to the vehicle.
- For generation of Transit Pass for the miller truck, multiple vendor receipts are selected based on total capacity of trucks, number of bags received etc. In case, a part of a purchase transaction (Vendor Receipt) is to be loaded, modification in the loading information is done. A transit pass is generated as an output of the process

and copies are handed over to the miller representative.

- There could be multiple truck load of paddy handed over to a mill in a day by a Society/ Agency. The system thus automatically generates a Paddy Acceptance Note at the end of a day for each miller which has taken paddy from a PPC/ PPC based on the 'Transit Passes' issued during the day for the movement of paddy.
- Based on the paddy acceptance triggered by the miller, payment to the farmer is completed.

3.2.4.2 Impression of the System

The system seems to be robust and sufficient for the current operations, but it gives an impression that the system has been designed to replicate the existing manual process. Noting that the systems were built to replicate the pre-existing manual processes, it is necessary to explore which processes/ steps are irrelevant since the inception of the systems to avoid unnecessary efforts. The system also seems to be user friendly and most of the staff in the field seem to be able to use the system well. Some challenges that were observed could also be attributed to hardware issues and in some cases poor connectivity.

3.2.4.3 Challenges in the System

- Reconciliation at district up to the state level and/or between PPC/Mills etc. seems to be challenging and tedious.
- Duplication of data entry can be an issue, as is the lack of consistency checks e.g. same DC certificate can be entered multiple times.
- The P-PAS systems to be fully integrated with the SCM system and other components of the PDS



computerised system (RCMS, FPS Automation and the transparency portal). Does not provide mechanism for planning and forecasting. The state level end to end view of the planning and subsequently execution is missing.

- Some of the entries can be automated e.g. date, grain accepted or not (based on the quality values) etc.
- Lack of IT hardware support and maintenance. At some locations low powered PCs were being used which often hang. Data entry if lost in between had to be redone all over again.
- Manual registers for all activities are maintained alongside the system, leading to duplication of efforts and provides room for manipulation.
- The role of an independent verifier in the system has not been defined.
- Advance token number generated is a serial number which cannot be linked to the farmer. Farmer code from the farmer registration module may be used.
- The farmer data which is required for documentation and to eliminate fake purchases takes months to compile even after close of a marketing season.
- Farmers are never sure as to when they can sell their paddy to their society.
- Inadequate capacity of the PACS/GPs/PPCs to handle paddy procurement operations causes problems for farmers.
- The implemented system does not seem to support any decision making based on the existing reports generated by the system.

- Farmer identification by way of assigning each of them to a plot of land is an issue as several persons can be attributed to the plot of land when crop-sharing, especially if the agreement between the land owner and a tenant is verbal.

3.2.4.4 Observations on the System

1. Reconciliation, real time monitoring, end to end planning and execution in the system seem to be time consuming and tedious.
2. It is not clear how the irrigated or high yield land vs. low yield land is registered. It seems registration is done according to self-declared data.
3. The process of splitting the land between different family members of the farmer and subsequent registration of each member as a separate farmer is not clear and not catered to by the system.
4. In case of no connectivity, obtaining of the information from land record system is impossible and the registration is usually delayed or done manually, this increases chance of misreporting and hence loopholes.
5. Transparency in the system that support decision making by officials needs to be improved.
6. Loopholes exist in the system due to the absence of complete automation, integration, consistency checks etc.
7. Allocation, farmer registration, creation of D.C. etc. do not use the same application.
8. Manual registers for all activities are maintained alongside the system, this



is duplication of efforts and since most of the records are entered retroactive, it provides room for manipulation.

9. There is no mechanism for independent verification of the processes and guidelines.

3.2.5 Summary of Observations for the Procurement System

3.2.5.1 Merits of the System

- The system implemented by the state of Odisha is unique by design and scale of implementation.
- The GoO has successfully managed to provide farmers access to markets.
- Farmer registration system works for most of the cases.
- Automation of the procurement and supply chain systems is a good step towards transparency, better management and accountability.
- Paddy procurement system has drastically improved the previous manual process. All required documents are generated and maintained in the system.
- The staff at the PACS is trained to handle all the basic functions of the IT systems implemented.

3.2.5.2 Areas of Improvement

Farmers:

1. Farm level paddy management techniques require significant improvement, to avoid substantial losses.
2. Farmers are not organized (especially small and marginalized) and since

they operate as individuals, it makes it unviable for them to deliver paddy at the PPCs.

3. Dispute settlement takes longer in case of sharecropper and needs to be resolved.
4. The payment to the farmer is done after the acceptance of paddy by the mills. In case of small/marginalised farmers, sometimes paddy is not lifted immediately and the payment is effective after 1-3 weeks of delivery of paddy at the PPC. This is an additional burden for the farmers.
5. Although farmers deal with PACS for farm inputs such as fertilizers, seeds etc. and for selling the paddy, both systems are not integrated. Stronger coordination between production and procurement within the PACS would optimize the annual registration process and reduce the 4 visits farmers need to make in every crop season.
6. Implement policies that prioritize SHFs in terms of purchasing and inputs subsidy.

Targeting and Traceability for Small Farm Holders:

1. More focused targeting to small scale farmers is required both for inputs and purchasing process.
2. More efforts to be invested in organizing small scale farmers into associations.
3. Traceability of farmers', especially small holder farmers throughout the process needs to be improved. This is a requirement related to the quality assurance systems as well as improvement of farmers' livelihoods.



PPC/PACS:

1. The system caps the maximum daily procurement to 1000 quintal per day per PACS, and hence farmers have to wait for days to sell paddy.
2. Traceability of the paddy from the farmer to the mill is missing, thereby making it impossible to inform on Government's performance in supporting small holder farmers and to enable any corrective actions in case of issues in quality.
3. PPC warehouse infrastructure is inadequately small, considering that some stocks sit there for a week or longer. Losses due to spillage seem to be common as the workers are using hooks. Pallets are not available, conveyor belts and other basic mechanization is missing.
4. Quality control is a persistent and cross cutting issue. None of the PPCs visited by us fully implemented and practiced quality control and/or weighment procedures. Quality Control at all nodal points needs to be improved.

Milling Process:

1. The miller is contractually bound to provide 68 percent of milled rice as per FAQ norms per quintal of paddy procured. This is calculated at 17 percent moisture content. However, it has been observed that the average moisture content in paddy is around 13 percent-15 percent especially during the Kharif (summer season). These discrepancies are never recorded in the system.
2. There are indications that some farmers are asked to discount up to

10 percent of the paddy supplied to account for any future losses (i.e. humidity, cleanliness, spillage, etc.).

3. Some of the visited mills were of low capacity and operate under inefficient conditions: a) technical (one shift only, low usage of installed capacity; inadequate installations and small storage spaces; poor maintenance; etc.) and b) quality standards (GMP; internal losses; etc.) which is not cost effective.
4. Millers often complain of the low quality of paddy received from the PACS.
5. Paddy is assigned for each miller by society, but the dynamic decision process is not well defined.

P-PAS and Farmer Registration:

1. The P-PAS and the SCMS systems are not integrated
2. Duplication of data entry and not enough consistency checks e.g. same DC certificate can be entered multiple times.
3. Manual registers for all activities are maintained alongside the system, leading to duplication of efforts and provides room for manipulation.
4. The implemented system does not seem to support any decision making based on the reports generated by the system.

3.3 Supply Chain Management System

Odisha has 216 RRC-cum-DSC operated by OSCSC, where custom milled rice is stored. Of the 216 locations, 211 utilize the Supply Chain Management System (SCMS). The depots could be owned by OSCSC, rented from Central Warehouse Corporation (CWC)/State Warehousing



Corporation (OSWC) or constructed/managed under the central/state government Public Enterprise Guarantee (PEG) scheme. Some 1,500 mills serve the RRC warehouses, who in turn serve some 14,229 Fair Price Shops (FPS). There is a very complex, and sometimes duplicated, scheme of Government bodies at central and state level that are engaged in storage. As a result, some warehouses are only utilized for 10 percent of their capacity, in spite of a generally high utilization level of 82 percent.

The Handling and Transport (H&T) Level One (L1) transport contractors provide transportation between FCI and base RRC-cum-DSC as well as to other RRC-cum-DSC within the same and other districts, while H&T Level Two (L2) transport contractors provide transportation between the RRC-cum-DSC and the attached FPS/Gram Panchayats. Contracting of Level 2 H&T transporter is delegated to the districts, and the contracting is done per block, using unified rate for each block in quintal/km. There are 30 districts and 314 blocks in Odisha, with some 2,700 PACS and 3,600 Paddy Procurement Centres (PPCs) scattered around the state to serve ~1,500 mills engaged under the TPDS scheme.

The volume of this operation is about 60 lakh tonnes of paddy produced in Odisha state alone, 40 lakh tonnes are procured by the state (19 lakh tonnes move directly further to L2 level, for TPDS, and 2 lakh to MDM, ICDS and other welfare schemes and 19 lakh tonnes is handed over to the FCI for central level programs.

3.3.1 RRCs/Depots/RRCs-cum-DSCs/ Base RRCs

3.3.1.1 Overall Process: Miller ► RRC-cum-DSC/FCI ► FPS

- The supply chain system operates through a network of warehouses of FCI, OSWC, OSCSC and CWC. These warehouses are categorised as Rice Receiving Centres (RRC) or Departmental Storage Centre (DSC).
- Each mill is tagged to one or multiple warehouses.
- Based on the Delivery Certificate, each warehouse plans the quantity and date of delivery of rice from the mills. Informal systems like SMS and WhatsApp are used to communicate the daily delivery schedule to the mills.
- The mills organise their own transport and deliver rice in lots to the warehouse along with a transit slip.
- The rice required for food safety schemes like PDS, ICDS and MDM in a district are sent to the DSCs and the surplus is sent to the RRCs.
- Rice is also received from other districts to either cater to the requirements of the district or to utilise the storage spaces. The Level 1 H&T contractor is responsible for the inter-district movement of grains.
- The state surplus rice is sent to FCI and CWC warehouses, which is then moved to deficit states of the country.
- Rice from the DSC is "Door Step Delivered" to the tagged FPS through the Level 2 H&T contractor, based on the allotment of the FPS and the payment by the FPS owner.



- Storage capacity is planned for more than 4 months of inflow of grains at any time.
- The handling of rice is at times organized by the warehouses while at the FPS the H&T companies need to bring their own labour for offloading the trucks.

Tariff Structure of various Storage Agencies:

Storage Tariff:

- Rs. 3.70-4.70 per bag including fumigation, preservation, and maintenance costs--- rent for state level warehouses.
- Commercial rates
- Low rated godowns - Rs. 12.45 / sq. ft.
- High Rated godowns - Rs. 15.24 / sq. ft.

Transport and Handling:

- At CWC: Loading and unloading at Rs. 9.15/ qtl.
- At RRC-cum-DSC, OSWC- Rs. 4.60 per bag for loading and unloading.
- Workable rate calculated by district manager based on maximum distance of FPS/GP's from RRC-cum-DSC's. The same is then floated in the tender and transporters are hired based on the cost quoted below the workable rate.

3.3.1.2 Observations from the Field

Warehouse Management:

1. Officials in most warehouses are trained in stacking and stack planning, quality analysis etc. as well as in functional knowledge of SCMS software.
2. Traces of powder-like substances have been found on various points on stacks (on the bags themselves). The quality control personnel confirmed these traces are residues from the aluminium-phosphine tablets used for fumigation. The tablets are simply placed on the bags and stacks covered with the sheets, which are sealed then with the sand-snakes.
3. Free-flying insects, birds have been observed to roam in a number of warehouses – these may not be the primary source of infestation. Nevertheless, good food and warehouse management practices should prevent the presence of live insects in the stacks regardless of their origin.
4. Warehouse infestation with rodents must be very high, based on the: a) spillages originating from handling bags, and use of hooks; b) set-up of the warehouses (lash vegetation, open sewages and/or dense populated areas surrounding the warehouses).
5. All the depots are equipped with the appropriate equipment, but it seems that some equipment has never been used. However, most of the moisture meters were calibrated and had a calibration seal/sticker attached.
6. The handling and stacking process involves the use of hooks, which not only leads to bag tears resulting in immense losses during stacking and posterior transports, but also leaves the grain susceptible to infestation and deterioration of quality.
7. The mission also observed that bags are frequently damaged in handling (often by using hooks), and therefore the



empty bags cannot be effectively re-used – leading either to spillages/losses or high replacement costs. Reportedly the workers' unions are strong and they do not instruct their members to abstain from using of hooks.

8. The mission observed, low utilization of rented storage by the OSCSC in a CWC warehouse leading to losses for the state government at some places.
9. Currently, the stacks are assembled over a tarpaulin which is placed on the warehouse floor. While this may help reducing the moisture transfer from the concrete to the bags (in warehouses with poor hydro insulation), it definitely prevents ventilation of the bags, and makes pest control (fumigation) more difficult.



10. At times, stack cards were not used. This was more evident at locations with higher frequency of movement of stock.
11. Warehouses were not always scientific. At times, there were only doors on a single side of the structure, and due to the volume of commodities, they were not able to practice First-In-First-Out (FIFO) appropriately.
12. Longer storage of commodities and maximally high stacking leads to deterioration of rice quality and loss of moisture. This results in a loss to the depot.
13. The officials confirmed that mills issue bags with $+ / - 0.250$ kg variation. This in itself is 10 times more than the acceptable fluctuation (bags should not vary more than $+/- 0.025$ kg). Given inaccuracies of the weighing scales at the PPCs, there is a risk that the Government receives, systematically, 0.5 kg less per bag. If only one quarter of the bags are underweight, this could result in a loss of about 13,000 metric tons (MT) per year.
14. Depots are poorly equipped, have no pallets, not even simple mechanization such as conveyor belts and small forklifts. The bags are manually loaded on the trucks, making the whole process time consuming and inefficient.
15. Cleanliness of the surroundings of the warehouses is not standardised. At some place (newer warehouses and FCI-owned ones) the surroundings are superbly well managed. In other cases there is a very dense vegetation, debris of all kinds, and gutters full



of mud and grain residues, which all encourages pests.

Planning:

1. A key challenge identified by district officials is in recording of storage losses. As miller's delivery is from Jan-Sept, in the lean period the delivery to PDS is completely done from the state buffer stock. There is no liability fixed in the process to account for storage losses, which eventually get passed on to the end consumer.
2. Planning of miller delivery to RRC's is not part of the Supply Chain System. Informal methods of planning and communication (SMS) are used. We have seen some examples of "over planning" wherein some depots received more than the required quantity. The warehouse complained that due to poor planning in some cases the produce sits in the depots for three months and one depot mentioned even 10 months.
3. Complex structure of storage with many agencies with different levels of practices and enforcement. Also some are online and the operations of the rest are still recorded manually.

Contracting Transporters:

1. The transporters responsible for delivering rice from depots to FPSs are contracted at the block level, which is an administrative level under the district. The prices vary from block to block, however in discussion with transporters, the mission observed that the commercial rate is usually much lower than the rate paid by the

government. For similar deliveries government pays up to Rs. 23-27 per quintal whereas the prevalent commercial rate in that particular block is around Rs. 8-10 per quintal. This could be due to the fact that often transporters have to uplift partial truckloads and deliver to congested urban destinations.

3.3.2 Fair Price Shops

3.3.2.1 Overall Process: RRC-cum-DSC/FCI ► FPS ► Beneficiary

The FPS serves as a focal point for TPDS, as they are the interface to the people who are the ultimate intended beneficiaries. As has been well documented by a large number of reports over the years, there are significant inefficiencies faced in FPS operations related to leakage of food grains, poor quality of service to beneficiaries and lack of transparency of operations, all of which ultimately affect the beneficiaries. The state of Odisha showed undivided interest and determination to resolve these issues. A variety of solutions have been implemented over the years across states and geographies to address these issues and have seen varying degrees of success.

- The district allocation order is prepared by the state, which is then subdivided into Block allocation by district officials and finally into FPS wise allocation. Based on the allocation, the FPS dealer either submits a Demand Draft or pays at an Axis Bank outlet.
- Once the payment is received and recorded in the SCMS module, the delivery schedule is planned.



- The delivery schedule is communicated to the transporter 2-3 days ahead of time.
- The L2 transporter delivers rice to the FPS along with a transit-cum-acceptance note.
- The transporter is contracted per block through open tendering.
- At RRC, the transporter is asked to use and pay for the manual labour organized by the warehouses; at the same time, the transporter needs to have organised its own labour for offloading at the FPS.
- A subset of bags is supposed to be weighed in the presence of FPS owner and the transporter at the FPS and the acceptance note is signed by the FPS owner is delivered back to the RRC.
- With the availability of the PoS the details of the delivery note are entered into the PoS by the FPS owner.

3.3.2.2 Observations from the Field

Planning:

1. The mission has seen relatively good planning of supply of rice in the FPS. It seems that FPS can easily forecast their requirement (as the beneficiaries are attached to FPS). However, the planning will change should the beneficiary portability be introduced. This could prove difficult as the FPS owners will need to understand the situation better, plan and demand continuously and subsequently the supply chain will have to deliver.
2. The closing balance is not being pushed back to the SCMS.

Storage:

1. FPS capacities vary from location to location. Some are poorly managed, with bad storage, and ill-equipped. Some FPS did not even have electronic weighing machines. FPS having electronic weighing machines seem to be calibrated and well-tuned.
2. The storage of grains at the FPS is not proper and at times seems inadequate. At times stored with non-food items that may affect the commodities (e.g. oil)

Operations:

1. Some FPS are located in areas that are difficult to access using 10 MT trucks and even if accessible by road are restricted by regulation.
2. Grains are not weighed at the FPS and the acceptance note is merely signed by the FPS owner which is then delivered back to the RRC.
3. The newly installed PoS devices are not working as intended and there still is a lack of understanding of the FPS owners of its use. The PoS devices still operate in English and most of the FPS owners operate by just knowing which section of the screen to click on. Buffer PoS devices are not available in the district.
4. There is a major lapse in the support provided to the FPS owners in using PoS. All district officials complained about the incompetency of the technical resources provided at the district level and on the lack of training and handholding support.
5. FPS Owners also mentioned that the PoS devices at most times stop



working or do not work as intended. The technical helpline numbers provided by the vendor do not seem to work and most of complainants don't get notifications. Some FPS owners were asked by the vendor helpline to bring their devices to either the district headquarters or even to the state capital at their own expense.

6. Most of the transactions were not being done using Aadhaar. The beneficiary wise Aadhaar seeding remains a major challenge in making the whole system efficient.
7. Some beneficiaries complain about the quality of rice being sold at the FPS and at some FPS the rice was found to be of poor quality.
8. While the mission observed, in most of the cases that the FPS has put the communication posters up on visible places. Some beneficiaries are unaware of any grievance redressal mechanisms existing in the state. This is a serious concern and requires additional communication and behavioural change efforts.

The PoS, through the mechanism of biometric authentication provides a single point of re-conciliation and accountability in the whole system. It was observed that the PoS at most places was still not functioning properly and, there was a laxity in the support provided to the FPS. Minimal transactions were based on Aadhaar, thereby defeating the purpose of deploying PoS. Installation of PoS is a great initiative, but unless it is fully implemented, there will be no proper use of PoS, and it would be almost impossible to bring accountability into the system,

and thereby creating the inability to control diversions and manage loopholes.

3.3.3 Supply Chain Management System (software system)

3.3.3.1 Description of the System

The state of Odisha has implemented a software solution which meets the basic requirements to help automate the end-to-end supply chain functions in the state. Initially the application was piloted in Sonapur district in February, 2012. Subsequently the system has been scaled up to all districts by March 2015. Currently, 211 depots of the 216 depots have the software application installed and operational.

The supply chain management system follows the following work flow:

1. Receipt of CMR from the Millers:
 - The system either captures the Delivery Certificate of the miller from the portal or has the capability of entering a new one.
 - Once the DC is entered, the SCMS operator at the warehouse then generates the transit challan and acceptance note. Before the generation of the acceptance note the weighment and the quality check is performed on the received lots. The quality control is done on a sample taken from the lot(s).
 - The net weight is calculated by subtracting the Tare weight and the weight of the packaging material from the Gross weight. The weight of the packaging material is calculated on the basis of 650 grams per rice bag.



2. Issue/Receipt of commodities:

- The system records the receipt of commodities from different entities i.e. from base RRC within the district, wheat/rice from FCI and rice from RRCs from other districts.
- The planning of inter-district movement is based on a lifting plan. This lifting plan is developed per district and contains information such as source depot, destination depot, quantity to be received and the priority.
- The transporters are then provided with a delivery plan, prepared by the district managers for the schedule of delivery to the warehouses.

3. Issue of commodity to FPS/Schools/Anganwadis:

- Based on the allotment order for each FPS, the FPS owners either submit a demand draft for the value of the allotment or pay through Axis Banks.
- After verifying the receipt of payment, the grains are loaded for transportation by the L2 H&T contractors.
- Weighment of the grains is done and recorded in the system before the truck leaves the warehouse along with an acceptance note.
- An automatic SMS is generated to the FPS owners and registered beneficiaries describing the truck and commodity details leaving the warehouses.

- The grains are accepted by the FPS owners and the duly signed acceptance note is then received at the warehouse. The recording of the acceptance note marks the completion of the transaction.

4. Day closing reports are available, through which the depot in charge can verify the transactions recorded by the data entry operators using their login id and password. The in-charge also has the authority to correct transactions and mark them audited.
5. A number of online registers including-stock, receipts, returns, performance, contractors can also be reviewed using this available functionality.

A few key features already implemented in the Supply Chain Management System of Odisha are:

- Stock accounting at the depot- Application supports recording of opening balance, day closing stock, stack position (on cut of dates) and stack completion information.
- Quality analysis- The system support the functionality to record the quality of grain received from millers. The entire quality analysis report can be updated in the system and the same can be reviewed to evaluate the performance of linked millers.
- Accounting of collections from depot- Book of accounts relating to collection and receipts from FPS's are automatically maintained by this application.
- Notifications to FPS Owners, beneficiaries and key stakeholders.



- Data auditing to restrict data modification and ensure correctness of data entered in the system.
- Handling of transport contractors- The depot in-charge can maintain a list of H&L contractors, and manually add, edit and delete contractors. All transporters are provided a unique ID which is also added to all notifications, challans and transit slips generated by the system to uniquely identify the transport in charge of delivery of specific good. Verification of bills can also be done using the transport ID of the contractors.
- Management Information System- The system generates reports including stock reports, audit and financial reports, performance reports of millers and H&T contractors.

3.3.3.2 Impression of the System

The system generally works fine. It is able to meet the basic functional requirements for the transactions. The mission felt that as the system was designed based on manual business process, some remote but possible scenarios were not looked at. By using this approach, the required digitisation and monitoring has been possible but fails to make the system effective, user friendly and devoid of known loopholes. Whilst planning of flow of commodities is part of the system, it lacks operational management especially where the reaction to the changes in demand/supply needs to be done, immediately or quickly. We haven't seen a report (dashboard) that would give an operational overview of the situation at any given time.

3.3.3.3 Challenges in the System

- The business process of the system and delegation of authorities needs to be better defined, hence the profiles with the different access rights of the users' needs to be defined and some planning features could be improved.
- The complete supply chain system does not work as one system but is a collection of different modules, portals and some manual processes.
- Good and stable connectivity needs to be provided.
- Traceability of the commodities from the source to beneficiary and back cannot be done.
- The system does not allow to view the complete planning and execution plan, thereby making it difficult for decision makers to monitor and make adjustments.
- All the responsibilities are segregated at district or block level and in some cases even solely at the warehouse level. Such segregation may lead to problems in reconciliation and thus hampers monitoring, planning and course correction.
- Critical documents such as DC, transit challans (waybills), lifting plans etc. have provisions to be entered or even modified. In a work flow based system, these documents or instructions should be available in the system and used. If in case of offline activity, while the transactions are uploaded at the end of a day, these documents should also be downloaded.
- The data is not automatically uploaded to the server and if the computer



crashes or switches off, RRC loses all the data entered after last upload. The system should upload the data to the server automatically.

- It seems that several transit slips and acceptance notes could be posted against one delivery note. The system needs to check the delivery and reject double posting attempts.

3.3.3.4 Observations from the Field

1. The system is the computerised version of the manual system and needs to undergo a thorough business process review.
2. Traceability of the commodities from the RRC to beneficiary and back cannot be done.
3. The system does not allow to view the complete planning and execution plan, thereby making it difficult for decision makers to monitor and make adjustments.
4. Planning is done outside of the system and due to the segregated activities, reconciliation is tedious.
5. All depots work in offline mode and data entry is done post factum, even though broadband connectivity is available at most warehouses.
6. The system needs to be seamlessly integrated with the other components like P-PAS, RCMS and FPS automation.

3.3.4 Summary of Observations for the Supply Chain Management System

3.3.4.1 Merits of the System:

1. Officials in most godowns are trained in stacking and stack planning, quality

analysis etc. as well as in functional knowledge of SCMS software.

2. The warehouses were equipped with all the appropriate equipment for quality control. These were mostly calibrated and sealed.
3. We have seen relatively good planning of supply of rice in the FPS. It seems that FPS can easily forecast their requirement (as the beneficiaries are attached to FPS).
4. The SCMS has been well adopted by all stakeholders and is being used. All the data is being captured in the system.

3.3.4.2 Areas of Improvement

Planning and Execution:

1. The forecasting, planning and execution has to be improved. Based on certain predefined criteria e.g. storage capacity of warehouse, distance, requirement of the district etc. the planning should automatically flow from the state level to the FPS level. The tracking of execution should be done based on this agreed plan.
2. Transport contracting and transport network requires revision preferably using a Supply Chain Optimization software due to large number of FPS/mills/warehouses.
3. The system seems to be designed exactly following the manual process. Some documents maybe duplicate, repetitive or may have even become obsolete.
4. Low utilisation of the available storage spaces has been observed. A complete supply chain optimisation activity should be undertaken to ensure that all the resources are efficiently utilised.



5. There is no liability fixed in the process to account for storage losses, which eventually get passed on to the farmer and/or the end consumer.
6. The transport contracting is currently being done at the block level and may not be the most optimal level for contracting both in terms of costs and efficiency.
7. Access to some FPS using large trucks (10 MTs) is not possible either due to the lack of infrastructure or due to regulation.

Warehouse Management:

1. Quality check and weighment before receipt and delivery of grains needs to improve and be better enforced.
2. Improvement in storage and management of rice/wheat at warehouses and consistency across various types of storage facilities is required.
3. Implementation of traceability of food grains from the input level till the last mile to the beneficiaries needs to be implemented.
4. Effective measures to be put in place to control free flying insects, rodents. Lush vegetation, open sewages around the warehouses should be removed.
5. Use of hooks and lack of mechanisation increases the losses and makes the loading/unloading/stacking a very time and labour intensive task.

IT Systems:

1. The systems needs to undergo a business process review to ensure

that the most efficient work flow is implemented in the IT systems.

2. The PoS system needs to improve. The use of Aadhaar has to be better enforced and the support to the FPS/ district officials needs to be drastically improved.
3. Post-factum entry of records needs to be avoided.
4. Integration with RCMS for demand planning and PoS for closing balance needs to be implemented. These multiple systems should work seamlessly as one solution.
5. The system should work as one fully online systems and all manual processes need to be removed.
6. Some beneficiaries are unaware of any grievance redressal mechanisms existing in the state.
7. The PoS system at the FPS needs to be improved and at present does not seem to be achieving its intended purpose.



WFP/ Esha Singh

4

Recommendations for Enhancements



4.1 Farmer Registration and Paddy Procurement System

4.1.1 Farmers

Post-harvest Management:

1. Farm level paddy management techniques require significant improvement, to avoid substantial losses. Specifically, the drying process is one of the critical processes for reduction of post-harvest losses, and should be done mechanically as much as possible.
2. Improve facilities at PACS/PPCs to support farmers and reduce post-harvest losses in terms of extension services. PACS need to be equipped with drying and cleaning equipment which would be at disposal to the farmers.

Farmer Participation in the System:

1. SHGs and/or other co-operatives should be promoted to organize the small farm holders; and to encourage them to obtain modern planting/harvesting/cleaning/drying mechanization through co-operatives.
2. Farmers' registration should not be limited to PACS only. It could be decentralised. CSCs may be involved. Farmers may register anywhere. This will save farmers from harassment and undue delays in registration at PACS.
3. Awareness among the farmers (on all aspects – registration, MSP, transportation modalities, storage, payment, etc.) needs to be increased and the information would be timely disseminated till the lowest level so that the knowledge would increase the bargaining power of the farmers.
4. Marginalized farmers could receive benefit of not having a ceiling of the

sale, so that they can take more land on lease and so benefit additionally from the system.

5. Reduce the quantity of inputs for each farmer, to ensure that there is overall cost reduction and further re-distribution of the expenses/inputs provided to SHF's.
6. Convert PACS into effective cooperatives, with farmers participating in the organization.
7. Government needs to invest in awareness/capacity development for community based systems (farmer associations) to help multiple small farmers organize themselves into groups – this would help both substantially reducing losses and to deliver farmers' produce to the last mile.
8. Robust IEC campaigns should be organized to enrol as many farmers as possible in the system and to make them aware of the schedules, rights and obligations.
9. Target enrolment of 100 percent small and marginalized farmers.

Dispute/Grievance Redressal:

1. An independent GR system and committee needs to be created with reporting lines directly to the senior management. In addition, a targeted communication and social campaign should be created to ensure all grievances are delivered and responded to.
2. The P-PAS system has to be made robust to handle such cases and a formal mechanism has to be set in place such that records are set in both P-PAS and 'land record (*bhulekh*)' database.



Planning/Forecasting of Marketable Surplus:

1. The forecasting and planning has to be improved and should be done on the actual capacities of farmers, the PPCs, mills, transporters and warehouses often referred as pipeline planning.
2. Allow flexibility in the system to allow selling of surplus from registered farmers.
3. Quantity ceiling should be based on maximum yield, instead of average yield.
4. Additional incentives should be introduced for small and marginalised farmers.

Procurement:

1. Value negotiation with farmers must be checked through independent inspection units, spot checks, through GR systems and should be better enforced.
2. Losses need to be recorded in the system and there needs to be provision of cleaning drying equipment at the PACS to increase the quality of paddy.
3. Payment to the farmer should be done when the stock is accepted at the PACS and not wait for millers acceptance.
4. Quality check process should be made more stringent and better enforced at the PACS to ensure that paddy accepted is of uniform quality.
5. Implement a reporting system in P-PAS that accounts for how much rice was sold by Small holder farmers.

Payment to the Farmers:

1. Validation of Bank A/Cs of farmers are given to CSOs. They do not have

adequate manpower. They even do not act prompt on this. It should be given to District Central Cooperative Banks (DCCB), which is in charge of funds disbursement. DCCB should take the responsibility to have the accounts validated from the concerned Banks.

4.1.2 PACS/PPCs

Planning:

1. Planning needs to be adjusted by the storage and receiving capacities of PPC's and average miller offtake.
2. Business process review (BPR) should be undertaken in order to streamline and simplify the process.
3. The system should be enhanced to enable traceability of grains right from the farmer to the beneficiary.
4. Integrate farmer's registration systems at PACS level, as currently the farmer need to register every season to get the inputs and then register again to sell his crops.

Execution:

1. There is scope for stakeholders to establish minimum requirements, guidelines for the PPCs to adhere. This should include improvement in the management, layout, and space requirements.
2. These guidelines and operations should be better enforced.
3. Alternatively, it is recommended to move PACS to Mills. (**Refer to Section 5**)
4. Implement a reporting system in P-PAS that accounts for how much rice was sold by small holder farmers.



Infrastructure:

1. There is scope for stakeholders to establish minimum requirements, guidelines for the PPCs to adhere. This should include improvement in the management, layout, and space requirements.
2. Investment in storage facilities as well as improvement of staging area for procurement needs to be completed.
3. As an alternative, the PPCs/PACs activities could be done at the miller's location thereby avoiding intermediaries, double transportation, handling, storage, quality control linked issues. **(Refer to Section 5).**
4. PACS/PPC's are a critical node in the supply chain, and requires adequate infrastructure. There is scope for stakeholders to establish minimum requirements, guidelines for the PPC's to adhere. This should include the management, layout, and space requirements.
5. Government should invest in plastic pallets for stacking of rice and wheat.

Quality and Weighment:

1. Quality checking and weighing equipment need to be better maintained and regularly calibrated.
2. Independent quality assurance team should be created to ensure that the process is followed, and if possible quality control should be done by private agencies.
3. Create an efficient and documented mechanism for negotiation of prices with the farmer, in case of poor quality of paddy and recording of losses in the system.

4. Weighment of paddy should be better enforces as and when paddy is procured.

4.1.3 Mills

Milling Process:

1. The contract of the miller should be as per the quality and quantity of paddy received in actual. This would need enforcement and improvement of QC mechanisms at PPCs.
2. Create a programme to substantially improve milling practices to systematically improve milling outputs from 67-68 percent towards ~73 percent. This would need to be a gradual but mandatory process, and ideally should be applicable to all mills in order to raise production standards up to par.
3. Mills need to move towards adhering to Good Manufacturing Practices (GMP)/ Hazard Analysis and critical control point (HACCP) **(Refer to Annexure 4 & 5).**
4. Food technologist to oversee the mills production process.
5. Verify quality of water used for parboiling process. The quality of water should be tested regularly (microbiological and heavy metal content), given that the quality control process for parboiled rice does not involve any lab analysis.
6. The selection mechanism for mills has to be better defined. There should be a set of parameters that mills would need to satisfy before being selected – which includes capacity availability of storage space, sanitation and GMP standards.



7. As part of the facilitation for transparency and audit, along with the technical conditions for selection, all Government partners should be listed on the portal, where their technical capacities would be published.
8. The mills need to be periodically audited by the food quality control specialists, in order to ascertain their adherence to the conditions pre-described as contract requirements.
9. The prices should be revisited but should be subject to minimum capacities and standards of operations
10. Introduce comprehensive milling capacity mapping and assessment.

Quality Control:

1. Mills need to move towards adhering to Good Manufacturing Practices (GMP)/ Hazard Analysis and critical control point (HACCP) **(Refer to Annexure 4 & 5)**.
2. The mills need to be periodically audited by the food quality control specialists.
3. Food technologist to oversee the mills production process.
4. It would be more practical and economical to do the quality check at the mill rather than reject already delivered cargo at RRC. Besides purely economic reasons, the Government has an obligation to continuously improve food processing standards that would lead the improvements in food quality and safety for the population at large.

Storage:

1. It is recommended to undertake the supply chain optimization activity to

evaluate, among others, parameters such as the transport network and locations of warehouses, if the FPS near to the mills can be directly provided from the mills.

Transportation and Planning:

1. The planning for delivery to RRCs should be done based on the available storage space, forecast of usage etc. Based on the actuals, the central entity (ideally at the state level) should move stocks to FCI and other places to ensure maximum and efficient utilization of available resources.

4.1.4 Farmer Registration and P-PAS System (software system)

IT Systems:

1. SCMS and P-PAS systems need to be integrated.
2. Business Process Review (BPR) should be undertaken to devise the most efficient work flow of the system. The enhancements in the system should be done based on the results of the BPR.
3. The system should be able to auto generate and reconcile data at state, district, block, PAC and farmer level.
4. All activities like planning from end to end, monitoring, reporting and execution should be done using one single system.
5. All entities whether contracted or government should use one single software for all activities.
6. The online use of the system has to be enforced.



7. Monitoring of post-factum data entry has to be done on a daily basis and requisite action to be taken.
8. Removal of all manual recording efforts will require policy level changes in terms of improvements in reporting and transparency.
9. Each entity in the system i.e. farmer, mill, PPCs, advance tokens, vendor receipts, transit challans etc., should be identifiable by a globally unique value. These should be used to ensure traceability and management of resources.
10. Create IT systems that inform registered farmers through SMS on the Paddy procurement dates, quantity etc.
11. Create a dashboard for reporting key data and improve reporting formats. Data Analytics for informed decision making.
12. Farmer identification process needs to be improved in order to avoid loopholes in the system.
13. Adequate arrangements for maintenance and upgrade of IT systems at field locations needs to be implemented.

4.1.5 Summary of Recommendations for the Procurement System

Farmers:

1. Robust IEC campaigns should be organized to enroll as many farmers as possible in the system and to make them aware of the schedules, MSP, rights and obligations.
2. Inform farmers by SMS about the maximum quantity allowed to be sold, avoiding the visit for advance token (two visits to PACS).

3. Implement traceability from SHF to miller's up to the beneficiary. More focused targeting of small holder farmers.
4. PACS need to be equipped with drying and cleaning equipment.
5. P-PAS system to be made robust and a formal mechanism to be put in place to resolve issues related to sharecroppers.

PPC/PACS:

1. The forecasting and planning has to be improved and should be done on the actual capacities of farmers, the PPCs, mills, transporters and warehouses.
2. Losses need to be recorded in the system and there needs to be provision of cleaning drying equipment at the PACS.
3. There is scope for stakeholders to establish minimum requirements, guidelines for the PPC's to adhere. This should include the management, layout and space requirements.
4. Integration between input quantity (PPAS) and output quantity (SCMS) at the millers.
5. Independent quality assurance team should be created to ensure that quality check is followed and if possible quality check should be outsourced to private agencies.

Milling Process:

1. Independent audits on millers (at random, e.g. 15% of millers). This should also entail quality control checks.



2. Mills need to be selected on the basis of their actual capacity, quality and adherence to the GMP. There are numerous mills, and improvement of quality of milling need to cover all of them (whether or not they are engaged with the Government).
3. Mills need to move towards adherence to GMP/HACCP.

P-PAS and Farmer Registration (IT system):

1. SCMS and P-PAS software needs to be integrated.
2. Reduction in duplication of efforts using manual registers require policy level improvements.
3. Create a dashboard for reporting key data and improve reporting formats and data analytics platform for informed decision making by senior officials.

The mission recommends certain alternative mechanisms to make the systems and operations efficient **(Please refer to Section 5)**.

4.2 Supply Chain Management System

4.2.1 RRCs/Depots/RRCs-cum-DSCs/ Base RRCs

Warehouse Management:

1. Plastic pallets as a base for stacking up the rice/wheat should be used. As a policy, government should procure plastic pallets and replace tarpaulin on an on-going basis.
2. Proper fumigation practices should be enforced, such as placing aluminium phosphine tablets on trays, underneath

the pallets instead of directly on bags during fumigation.

3. Quality/integrity of fumigation sheets should be verified and damaged ones should be replaced/repaired.
4. Surroundings of the warehouses should be as clean as the inside of the warehouses. Grass, materials/debris should be removed.
5. Warehouses should be regularly sprayed, nebulised with adequate chemicals and rodent control should be emphasised.
6. The state should involve FCI for quality control and to provide support and training.
7. It would be also advisable that quality control is made independent unit and it reports directly to state head of the department or to outsource the quality control for the entire operations to renowned companies.
8. The use of hooks has been abandoned worldwide decades ago, so regardless of any pressure, use-no-hooks must be rolled out to all Government programs.
9. Conduct an in-depth supply chain and route optimization study of the Government (central and Odisha state-level) structure related to warehousing, programs, and transport network – using transport network optimization software's – to reduce duplications and avoid bottlenecks. **(Refer to Section 5 for details)**.
10. The planning and allocation should be done based on capacities of the involved entities.
11. Introduce Good Warehouse Management procedures **(Enclosed in Annexure 6)**.



12. The bags must be weighed and quality checked by standardising weight at the miller before delivering to the RRC. The commercial standard bag weight is 50kg +/-0.025 kg (tolerance max 0.1 percent of the weight), and the Government should insist that this tolerance is used in all commercial and public transaction.
13. Calibrate electronic weighing scales frequently and verify that they have been sealed.
14. Use the standard weight at the beginning of each transaction to show-reassure the farmers/millers/transporters on the accuracy of the scales and develop a habit of standardization in all transactions.

Planning:

1. Use weighing scales during the receipt and delivery of rice as principle devices to confirm the quantity delivered.
2. Develop and deploy a mechanism of recording losses at each stage of the process – starting from the losses at farms (outside of the IT system), to the P-PACS (where the IT system would start to record them) to the FPS.
3. Integration of SCMS and P-PAS, miller system should be done to create a formal mechanism based on planning of storage, milling capacities etc.
4. Conduct an in-depth study of the Government (central and Odisha state-level) structure related to warehousing, programs, and transport network.

Contracting Transporters:

1. The transport network requires optimisation, to take into consideration:

- Clustering destinations to maximize payload and minimize travel distances.
 - Possible deliveries directly from mills to FPS.
 - Combining grains for different government support programmes such as Mid-Day-Meal (MDM) and ICDS.
 - Combining grains for different government support programmes such as Mid-Day-Meal (MDM) and ICDS.
2. There is a possibility to establish an intra-governmental logistics coordination centre, which would be in charge for dynamic optimization of the supply chain.
 3. The contracting procedures and text of the contracts should be simplified; and unified among various programs. The general terms of carriage should be published on the Government web page, and so only the specific requirements for each tender should be floated. This would greatly minimize work and improve the transport contracting process.

4.2.2 Fair Price Shops

Planning:

1. Integration with SCMS needs to be immediately and it is recommended not to wait for full state deployment of devices.

Storage:

1. Management of the FPS needs to be standardized. Promote owners of FPS who manage their shops well.



2. Improvement in overall storage of food grains at FPS's. Use of Tarpaulin/ Plastic Pallets at FPS needs to be implemented.

Operations:

1. Identify FPS or move/re-locate FPS that have the required infrastructure for access.
2. The weighment has to be enforced before signing of the acceptance note at the FPS. This is a critical habit to be developed (that there is a full check at each handover of commodity), and is of importance for optimization of the network (i.e. in cases when the FPS receives rice directly from the mills).
3. Training needs to be improved for FPS owners and other stakeholders to be well versed with the system as the deployment of PoS devices is improved.
4. Technical support service to FPS's needs to be enhanced for timely and adequate support.
5. Technical support/help desk for trouble shooting at the Blocks are now managed by field staff. One staff manages a cluster of Blocks. This would be more effective if one resource could be deployed for one block.
6. Robust IEC mechanisms need to be implemented to improve the level of Aadhaar seeding, other available authentication mechanisms as well as grievance redressal mechanisms.

4.2.3 Supply Chain Management System (software system)

IT Systems:

1. Integrate all backend databases and ensure that there is a single window to cater to all processes.
2. Fully online systems and total removal of paper and manual systems.
3. Improve traceability of grains from the mills to the beneficiary. One way that this can be done is by barcoding the bags with miller identification, quantity, season etc., on the cloth tag with the above information. The barcodes can then be scanned at the FPS for recording of stock as well keeping trace of the mill, lot number and season of the rice received.
4. All aspects of planning and execution should be implemented in the system. The system should be able to generate an end to end planning for the complete planning and execution cycles.
5. Introduce a dashboard and data analytics to provide decision making support to higher officials.
6. The business process of the system and delegation of authorities needs to be better defined, hence the profiles with the different access rights of the users' needs to be defined. As some planning features could be improved.
7. Business Process Review should be undertaken and enhancements to the system should be done based on the results of the review.
8. Independent testing of the solution should be done and the identified issues should be resolved.
9. Stable and consistent connectivity must be a minimum requirement.



4.2.4 Summary of Recommendations for the Supply Chain Management System

Planning and Execution:

1. Conduct an in-depth supply chain optimisation and route optimisation study of the Government (central and Odisha state-level) structure related to warehousing, programs, and transport network for systematic utilisation of resources. Using optimization software is recommended.
2. Implement and/or improve planning of operations through the supply chain needs to be implemented from starting point to the end point,
3. Transportation contracting and the methodology of determining of maximum transport rate needs to be reviewed.
4. Recording of losses and fixing of liability of the warehouses for management of storage losses.

Warehouse/FPS Management:

1. Quality control and weighment has to be improved drastically and better enforced.
2. Improvements in Warehouse Management Practices (**Refer to WFP Standards for Warehouse Management**), with consistent practices across all storage agencies.
3. Policy level changes for adoption (and management changes for application) of good warehouse management practices.
4. Recording of losses and fixing of liability of the warehouses for management of storage losses.

5. Removal of usage of hooks in handling of bags across all warehouses.
6. Implement and/or improve planning of operations through the supply chain needs to be implemented from starting point to the end point.
7. Quality and quantity management needs to be reorganized in independent unit reporting to higher authority, or outsourced.
8. Warehouse management personal need to be trained on best practices and warehouse infrastructure should be improved.
9. Management of the FPS needs to be standardized.
10. The PoS solution has to be improved.
11. Training needs to be improved for FPS owners and other stakeholders to be well versed with the system as the deployment of PoS devices is improved.

IT Systems:

1. Undertake Business Process Review and enhance/integrate systems based on results.
2. Implementation of Data Analytics for informed decision making.
3. Integration with RCMS for demand planning and PoS for closing balance.

The mission recommends certain alternative mechanisms to make the systems and operations efficient **(Please refer to Section 5)**



5
Cross Cutting
Recommendations
Alternative Approaches



Due to its nature and environmental conditions, both ends of the supply chain are wide, with high granularity and large numbers of farmers and beneficiaries. Similarly, the whole supply chain is complex, meaning with multiple layers/tiers and very wide in all its length. The complete flow includes 6 tiers – farmer, PPC, miller, go-down, FPS and beneficiary – even if they are a few kilometres apart end-to-end. The alternatives presented below describe recommendations which are not substantially included in the sections above, but which we believe that Government of Odisha should look at implementing in order to optimise/improve the current supply chain and procurement operations.

5.1 Move Operations at PACS to Mills

Reducing unnecessary layers can streamline the supply chain operations. This could be achieved by moving the purchasing point from PPC to miller. As an alternative to improving infrastructure at PACS and adding more PACS to the system, thereby increasing the complexity of the system, the government should plan to move PACS to mills. There are many reasons for the same:

- Provide transport costs to farmers instead of mills and thereby empower them.
- Millers often have more storage space as compared to the PACS.
- Millers can be pressurised to invest in cleaning and drying equipment as it is in their benefit to have cleaner paddy.
- Better control over quality check and weighing.
- Integration of miller acceptance with Paddy procurement – faster turnaround time.

- PACS/PPC's representatives can be moved to mills to ensure that there is no harassment of farmers.
- PACS can still be retained to provide cleaning/drying and other (extension) services and be paid a commission to provide extension services to the farmers.

There may be certain challenges in the recommended approach:

- The farmers may have to engage with transport over larger distances, and may find it unviable as they are not compensated for transportation and handling.
- The millers would need to engage with the farmers; that would require bigger workforce and investment in mechanization, and larger storage space to cope with this increased role, which may increase the milling cost.

This approach should be coupled with capacity development for both the farmers and the millers (accompanied by the program of making drying/cleaning mechanization affordable and available at the mills or near farms), this may jump-start the process of necessary quality improvements.

The mission recommends to undertake the above detailed approach on a pilot basis in one district to ascertain the feasibility, cost benefits and implications of such an approach.

5.2 Overall Supply Chain Optimization

The mission recommends that a comprehensive review of the supply chain operation is conducted in order to identify an optimal supply chain setup



to achieve a more efficient and effective TPDS operation. Even if the effective implementation of the full set of changes is not feasible at a first stage, the overall optimal solution should be known, allowing to establish the long term strategy and orient upcoming investments. The optimization process consists of 3 steps – 1st and 2nd refer to supply chain structure; 3rd refers to supply chain operations – in the following order:

- **Step 1:** Define optimal distribution – in terms of numbers and location – of both ends (PPCs and FPSs) using coverage model.
- **Step 2:** Define optimal location and size of warehouses and mills with stochastic/robust approach to build supply chain resilience.
- **Step 3:** Implement optimization strategies on storage and transportation along the supply chain. It may include the introduction/ revision of existing KPIs.

As an example, optimisation could be done for the current transport contracting process, which is currently delegated to the districts. The district officials issue a public tender on behalf of each district once every two years, requesting quotations from small scale transport companies (companies need to own 2 – 5 units of 10-tonne trucks to be eligible to compete). The tender is awarded on the basis of an average rate per one block (INR per quintal per block), and there is only one transporter that is contracted per one block.

Key Observations:

- There are several OSCSC warehouses across the state of Odisha that receive milled rice deliveries from the

millers. Quantity and quality check is conducted upon receipt of the rice. The second level (H&T L2) transport network is then developed to serve FPSs in different blocks. This way of segregation results in less than optimal transport network.

- Currently, a large number of millers with low capacities are contracted in each district. In Rayagada district, for example, there are 94 millers contracted for annual purchases of around 160,000 MT (meaning 1,700 MT/year/miller, or less than 10 MT/day during an 8-month operational period).

Areas of Improvement:

- Transport arrangements are conducted at District and Block level. There was no in-depth study on whether this would be relevant for the entire state. There may be cost and time savings in other methods of transportation and hence an optimisation study may be useful (e.g. millers direct to FPS).
- Considerable economies of scale would be achieved by consolidating milling operation in fewer mills with higher capacity. This would lead to lower milling costs and higher efficiencies, hence savings for the government. This would also allow easier implementation of quality improvement programme, which is necessary to elevate current food processing standards, to eradicate severe quality weaknesses, and to improve environmental controls.

Recommendations:

- Conduct a comprehensive study on various methods that may be adopted, and scope a future 'best-practice'



- plan that may be implemented in the longer-term.
- Engage an external entity, which specialises in humanitarian supply chain analysis, which can to collaborate with reputable academic institutions, to conduct a more comprehensive supply chain review.
- Consequently, the Government could explore creation of logistics coordination cell, whose role would be to integrate all programs for greater cost-efficiency and effectiveness.

- Improvement in contracting norms for mills by including bare minimum technical requirements - capacity, storage, and quality and management parameters.

Figure 6 explains why deliveries from mills directly to FPS, and clustering destinations based on accessibility/distance (regardless of block/department boundaries) can save money. As an example, in an optimal network, it may sometimes be more efficient to deliver directly from mills to the FPS, instead of an intermediary layer of warehouses.

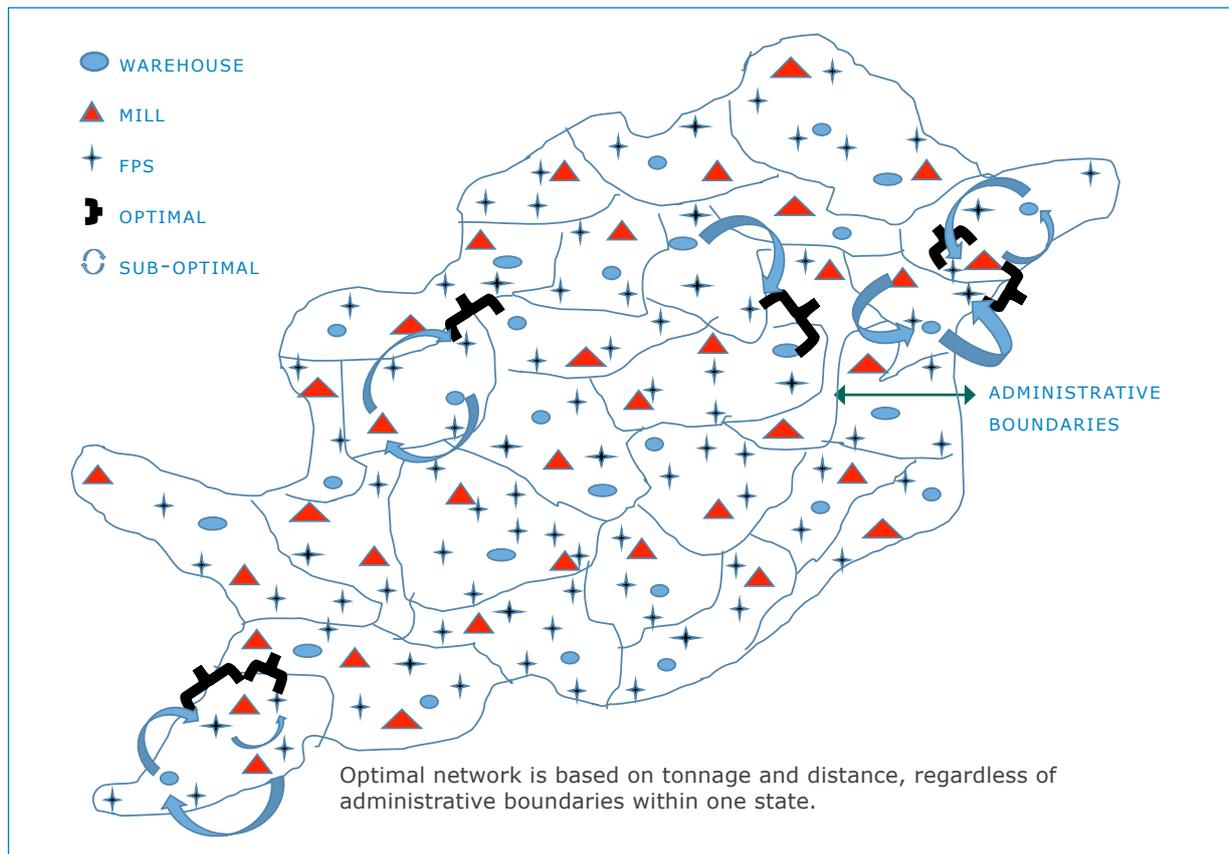


Figure 6: Current and Optimal Supply Chain System.

5.3 Farmer Organisation (FO)

The whole system should evolve and foster the organisation of farmers into farmers' organisation (FOs) and then

these FOs, would be the entry point to the supply chain. A possible way of making this change is by using the existing societies and gradually converting them into FOs. Ultimately, the FOs would move



to the “other side of the table” and would be selling the crops to the government on behalf of the farmers instead of buying on behalf of the government. This change would also bring a positive impact to the administrative process by reducing the number of transactions – from current 710,000 farmers to 2,520 societies/FOs.

There is another important aspect to consider as a gain in such case – overall improvement in quality of the grain traded. Current way of conducting the trade allows large variations in quality of grain, which exposes the farmers to the predatory behaviours of the traders – who use all opportunities to reduce the purchase cost (either quantity or price). An overall objective of the Government is surely that the farmers trade their marketable surplus with commercial entities in the open market – and this trade to be governed by stringent quality standards and enforceable commercial rules. This is a significant change that requires full investment in the farmers and their co-operatives.

The change process must be conducted carefully and gradually, and improvements in the extension services are key. A closer partnership and integration with the current services provided by Ministry of Agriculture /Cooperation must be in place. Preferably, these services should be done by the societies, allocating the necessary resources (technicians, agronomists, etc.) into the societies teams. Affordable mechanization (or loans for their purchase) would be also made available. Scope of extension services must also be enlarged and include capacity building of the societies (future FOs) in terms of management and business administration.

- Convert PACS into effective cooperatives, with farmers participating in the organization.
- Partner with the Ministry of Agriculture/Cooperation to have extension services provided by the cooperatives, incorporate technicians and agronomists as part of their team.
- Extension services focusing on post-harvest handling and storage.
- Scope of extension must include capacity building in management and administration to cooperatives.
- Mechanization and/or loans to be made available.
- In the new framework, instead of PACS buying from SHF on behalf of the government, cooperatives will sell to the government on behalf of the SHFs.
- Incentives are provided to FO’s when they sell paddy, so that farmers see an immediate benefit to organising.

5.4 Procurement from Small Holder Farmers

Rice production in Odisha as well as in India nationwide has grown significantly, mainly due to, growth in irrigation facilities, better quality of seeds, fertiliser subsidies etc. leading to increased yields⁷. The consequence is that the tonnage of rice bought each year has been increasing and is expected to keep growing in the future. As an example in 2012, the actual stocks at FCI godowns vis-à-vis minimum buffer stock norms of rice was at 350 lakh tonnes as against a requirement of 200 lakh tonnes⁸.

⁷Odisha Reference Manual, 2014 , “ State Agricultural Policy-2013”, Accessed at: <http://odisha.gov.in/e-magazine/orissaannualreference/2014/pdf/153-165.pdf>

⁸State of Indian Agriculture 2015-2016, Ministry of Agriculture and Farmer Welfare, Accessed at: http://eands.dacnet.nic.in/PDF/State_of_Indian_Agriculture,2015-16.pdf



The quantum of surplus rice production in the state has been growing with each cropping season and presents a unique opportunity for Odisha to look at alternative local and global markets apart from FCI, thereby empowering its farmers with better returns on their produce. The Government of Odisha should have strong leveraging ability to tap these markets and after it implements the recommendation highlighted in this reports such as: improving the overall quality of food grains, milling and storage standards; improving infrastructure and services provided to farmers; improving traceability of grains from farmers to the end of the supply chain etc.

As an example, WFP has a global procurement plan, which is designed to increase purchases from smallholder farmers while ensuring that food is safe and of good quality. WFP has leveraged its expertise in procurement and buying power to stimulate local economies by working directly with governments and private sector actors, for strengthening local supply chains, markets, food systems and their capacities for creating the right conditions to support inclusive economic growth and prosperity for all.

WFP overall is also committed to using its technical expertise in bringing together partners through a commercial, market-based approach to secure long-term demand for smallholder farmers' harvests. This commitment is also enshrined in the corporate strategy of increasing its procurement from smallholder farmers to 10 percent of its annual food purchases and is implemented through various initiatives that highlight WFP's ability to catalyse private and public sector interest and investment, facilitate farmers' access

to supply-side services and products through multiyear commitments from buyers, agribusinesses, financial service providers and other value chain actors and build on the efforts to sustainably connect smallholder farmers to markets. In fact, India is by far the main origin country of rice for WFP, representing 46 percent of global purchases. During the last two years, WFP purchased over 120 million USD (265,000 MT) of rice from the country. Thus, in the long run, with improvements in food quality and traceability of grains originating from Odisha, access to global markets for farmers in the state can be improved by partnering with various organisation working in this domain.



WFP/ Esha Singh

6

Annexures



6.1 Annexure 1: Mapping of Observations and Recommendations

Observations and Recommendations for Farmers		
KEY AREAS OF WORK	OBSERVATIONS	RECOMMENDATIONS
PADDY PROCUREMENT SYSTEM		
FARMERS		
PADDY PRODUCTION	<ul style="list-style-type: none"> The first drying process is conducted in the open air, whether or not the harvest and threshing is done mechanically, may be the source of large losses. Traditional drying techniques used by the farmers may be the source of 10-15 percent of harvest loss. Traditional drying techniques used by the farmers may be the source of 10-15 percent of harvest loss. 	<ul style="list-style-type: none"> Farm level paddy management techniques require significant improvement, to avoid substantial losses. Specifically, the drying process is critical for reduction of post-harvest losses. Improve facilities at PACS/PPC to support farmers and reduce post-harvest losses in terms of extension services. PACS need to be equipped with drying and cleaning equipment.
FARMER PARTICIPATION IN THE SYSTEM	<ul style="list-style-type: none"> The entry point for the farmers in the supply chain is through the societies, which are managed by the government. It means that they interact with the supply chain in a weak position. Farmers are not organized, which makes it unviable for them to deliver paddy at the PPCs. No special incentives or support is provided to small and marginal farmers. These farmers are in greatest need of support, since they use manual labour for harvesting, and are forced to sell rice immediately to pay for all the costs. The farmer registration is only about 30 percent of the total estimated farmers in the state. Small and marginal farmers may either not be aware, may not be interested or may not find it cost effective to participate. There seems to be a lack of awareness of their rights (SLAs of the various stakeholders). Large and small farmers have access to exactly the same scheme (subsidized inputs and MSP selling price) although the latter needs it much more than the former. 	<ul style="list-style-type: none"> SHGs and/or other co-operatives should be promoted to organize the small farm holders. Convert PACS into effective co-operatives, with farmers participating in the organization. Government needs to invest in awareness or community based systems (farmer associations) to help multiple small farmers organize themselves into groups to deliver their produce to the last mile to ensure that the system captures all transactions of registered farmers in the system. Robust IEC campaigns should be organized to enrol as many farmers as possible in the system and to make them aware of the schedules, rights and obligations. Farmers' registration should not be limited to PACS only. It could be decentralised. CSCs may be involved. Farmers may register anywhere. This will save farmers from harassment and undue delays in registration at PACS. Awareness among the farmers (on all aspects – registration, MSP, transportation modalities, storage, payment, etc.) needs to be increased and the information would be timely disseminated till the lowest level so that the knowledge would increase the bargaining power of the farmers. Target enrolment of 100 percent small and marginalized farmers. Marginalized farmers could receive benefit of not having a ceiling of the sale, so that they can take more land on lease and so benefit additionally from the system.



Observations and Recommendations for Farmers		
KEY AREAS OF WORK	OBSERVATIONS	RECOMMENDATIONS
PADDY PROCUREMENT SYSTEM		
FARMERS		
DISPUTE/GRIEVANCE REDRESSAL AND AWARENESS	<ul style="list-style-type: none"> No dedicated, independent grievance/dispute Redressal mechanism exists. Disputes related to share cropping, oral leases and/or sub lease are handled at PACS without any official guidelines or policy. 	<ul style="list-style-type: none"> An independent GR system and committee needs to be created. The P-PAS system has to be made robust to handle such cases and a formal mechanism has to be set in place such that records are set in both P-PAS and 'land record (<i>bhulekh</i>)' database.
PLANNING/ FORECASTING OF MARKETABLE SURPLUS	<ul style="list-style-type: none"> Planning and forecasting of the marketable surplus is done based on the records of land ownership multiplied by the pre-defined yield/acre. Only registered farmers can bring their paddy to the PPC and at times farmers have more surplus, but cannot sell to the PACs. The yield per acre is high and at times the farmers are left with surplus paddy which the GoO doesn't procure. This surplus is then sold to the millers/traders/middlemen in distress and price less favorable terms to the farmers with a substantially lower price than the MSP. 	<ul style="list-style-type: none"> The forecasting and planning has to be improved and should be done on the actual capacities of farmers, the PPCs, mills, transporters and warehouses. Allow flexibility in the system to allow selling of surplus from registered farmers. Quantity ceiling should be based on maximum yield, instead of average yield. Additional incentives should be introduced for small and marginalised farmers. Integrate farmer's registration systems at PACS level, as currently the farmer needs to register every season to get the inputs and then register again to sell his crops.
PROCUREMENT	<ul style="list-style-type: none"> Paddy which is below FAQ norms is not procured and farmer is supposed to take it back to bring down the moisture content and other foreign matter/impurities upto the standard. As farmers are usually not willing to take back the paddy, informally there is value negotiation with the farmer and sometimes a flat 5-6kg per quintal is taken from the farmer to compensate for the higher moisture and impurities. As the storage at the PPC is limited, the farmer during the period has to guard his stock at the PPCs at his own expense. At times, the paddy is not offloaded in the PPC but after the necessary paperwork and entry in the P-PAS is sent directly to the miller. The small and marginalized farmer may not be able to arrange for their own transport to the mill and have to wait at the PPC before their stock is uplifted by the miller. 	<ul style="list-style-type: none"> Value negotiation for Paddy needs to be checked through independent inspection units, spot checks, through GR systems and should be better enforced. Losses need to be recorded in the system and there needs to be provision of cleaning drying equipment at the PACS to increase the quality of paddy. Payment to the farmer should be done when the stock is accepted at the PACS. More emphasis should be put on quality check at PACS to ensure that paddy accepted is of uniform quality. Implement a reporting system in P-PAS that accounts for how much rice was sold by Small holder farmers.



Observations and Recommendations for Farmers		
KEY AREAS OF WORK	OBSERVATIONS	RECOMMENDATIONS
PADDY PROCUREMENT SYSTEM		
FARMERS		
PROCUREMENT	<ul style="list-style-type: none"> At times millers directly procure from the farmers or the farmer directly delivers to the miller, all on behalf of the PAC. The records are updated at the PACs post factum which has the potential for misreporting. Traceability of farmers', especially small holder farmers throughout the process needs to be improved. 	
PAYMENT TO FARMERS	<ul style="list-style-type: none"> The payment to the farmer is done after the acceptance of paddy by the mills. In case of small/marginalised farmers, sometimes paddy is not lifted immediately and the payment is effective after 1-3 weeks of delivery of paddy at the PPC. 	<ul style="list-style-type: none"> Payment to the farmer should be done when the stock is accepted at the PACS. Validation of Bank A/Cs of farmers are given to CSOs. They do not have adequate manpower. They even do not act prompt on this. It should be given to District Central Cooperative Banks (DCCB), which is in charge of funds disbursement. DCCB should take the responsibility to have the accounts validated from the concerned Banks.

Table 2: Observations and Recommendations for Farmers.



Observations and Recommendations for PACS/PPCs		
KEY AREAS OF WORK	OBSERVATIONS	RECOMMENDATIONS
PADDY PROCUREMENT SYSTEM		
PACS/PPCS		
PLANNING	<ul style="list-style-type: none"> PPCs don't follow the process of advance tokens, issue local queue tickets, which results in long time taken for farmers to sell paddy at PPC. The system caps the maximum daily procurement to 1000 quintal per day per PAC. Traceability of the paddy from the farmer to the mill is missing, thereby making it impossible to inform on Government's performance in supporting small holder farmers and to enable any corrective actions in case of issues in quality. 	<ul style="list-style-type: none"> Planning needs to be adjusted by the storage and receiving capacities of PPC's and average miller offtake. Business process review (BPR) should be undertaken in order to streamline and simplify the process. The system should be enhanced to enable traceability of grains right from the farmer to the beneficiary.
EXECUTION	<ul style="list-style-type: none"> Farmers bring paddy in non-standardized jute gunny bags and the weight in these bags varies between 45 kg to 80 kg. Some PAC's accept paddy from farmers even if they do not bring their ID cards. This has potential to allow middlemen to sell paddy at PPC. Accessibility of PPCs with 10 MT trucks is not always possible due to narrow roads. 	<ul style="list-style-type: none"> There is scope for stakeholders to establish minimum requirements, guidelines for the PPCs to adhere. This should include improvement in the management, layout, and space requirements. These guidelines and operations should be better enforced. Alternatively, it is recommended to move PACS to Mills (Refer to Section 5).
INFRASTRUCTURE	<ul style="list-style-type: none"> The PACs at times do not stack paddy by farmer. This makes the traceability of the grains very difficult. The storage at PPC's is below acceptable standards. The PPC's organized by the PACSs do not have adequate infrastructure for storage or for cleaning and draying of paddy. PPC warehouse infrastructure is inadequately small, considering that some stocks sit there for a week or longer. Losses due to spillage seem to be common as the workers are using hooks. Pallets are not available, conveyor belts and other basic mechanization is missing. Staging area for paddy was not adequate; no pallets, in direct sunlight; susceptible to animals and insects, no adequate perimeter fencing. 	<ul style="list-style-type: none"> Investment in storage facilities as well as improvement of staging area for procurement needs to be completed. As an alternative, the PPCs/PACs activities could be done at the miller's location thereby avoiding intermediaries, double transportation, handling, storage, quality control linked issues etc. PACS/PPC's are a critical node in the supply chain, and requires adequate infrastructure – There is scope for stakeholders to establish minimum requirements, guidelines for the PPC's to adhere. This should include the management, layout, and space requirements. Government should invest in plastic pallets for stacking of rice and wheat.
QUALITY AND WEIGHMENT	<ul style="list-style-type: none"> In practice at some places neither the weighment nor the quality control is done at the PACs. The paddy is moved directly to the miller where the quality control and weighment happens. 	<ul style="list-style-type: none"> Quality control needs to be drastically improved.



Observations and Recommendations for PACS/PPCs		
KEY AREAS OF WORK	OBSERVATIONS	RECOMMENDATIONS
PADDY PROCUREMENT SYSTEM		
PACS/PPCS		
<p>QUALITY AND WEIGHMENT</p>	<ul style="list-style-type: none"> Some weighbridges don't seem to be precise. Tolerance rate of the weighbridges is usually above internationally accepted rate of: 0.02 – 0.04 percent. Effectiveness of quality control seems to be a persistent and cross cutting issue. None of the PPCs visited by us fully implemented and practiced quality control and/or weighment procedures. No demarcated space was allocated for administrative activities as well (i.e. QC area, weighing area etc.). 	<ul style="list-style-type: none"> Quality checking equipment need to be better maintained and regularly calibrated. Independent quality assurance team should be created to ensure that the process is followed, and if possible quality control should be done by private agencies (Refer to Section 5). Create an efficient and documented mechanism for negotiation of prices with the farmer, in case of poor quality of paddy and recording of losses in the system.

Table 3: Observations and Recommendations for PACS/PPCs.



Observations and Recommendations for the Mills		
KEY AREAS OF WORK	OBSERVATIONS	RECOMMENDATIONS
PADDY PROCUREMENT SYSTEM		
MILLS		
MILLING PROCESS	<ul style="list-style-type: none"> The miller is contractually bound to provide 68 percent of milled rice as per FAQ norms per quintal of paddy procured. This is calculated at 17percent moisture content. However, it has been observed that the average moisture content in paddy is around 13 percent-15 percent especially during the Kharif (summer season). 	<ul style="list-style-type: none"> The contract of the miller should be as per the quality and quantity of paddy received in actual. This would need enforcement and improvement of QC mechanisms at PPCs. Create a programme to substantially improve milling practices to systematically improve milling outputs from 67-68 percent to ~73 percent.
	<ul style="list-style-type: none"> All the millers that we met during the mission have shared that they are never able to obtain 68 percent rice due to inferior quality of paddy. The mills have their own sources of water. Arsenic contamination originating from the water used for the steam is very relevant risk to the parboiled rice, but there may be other compounds and heat resistant microorganisms that can contaminate the rice through the application of the steam. 	<ul style="list-style-type: none"> Mills need to move towards adhering to Good Manufacturing Practices (GMP)/ Hazard Analysis and critical control point (HACCP) (Refer to Annexure 4 &5). The mills need to be periodically audited by the food quality control specialists. Food technologist to oversee the mills production process. Verify quality of water used for parboiling process. The quality of water should be tested regularly (microbiological and heavy metal content), given that the quality control process for parboiled rice does not involve any lab analysis.
	<ul style="list-style-type: none"> The milling price has not changed over the last 2 decades whereas their operational costs have increased. Some of the visited mills were of low capacity and operate under inefficient conditions (one shift only, low usage of installed capacity etc.). 	<ul style="list-style-type: none"> The prices should be revisited but should be subject to minimum capacities and standards of operations. The selection mechanism for mills has to be better defined. As part of the facilitation for transparency and audit, along with the technical conditions for selection, all Government partners should be listed on the portal, where their technical capacities would be published. Mills need to be selected on the basis of their actual capacity, quality and adherence to the GMP. There are numerous mills, and improvement of quality of milling need to cover all of them.
QUALITY CONTROL	<ul style="list-style-type: none"> The quality control mechanism at the mills was not up to standards, there were a lot of spillage and the mills at most times were not very well maintained. Whilst the equipment is in place, most of the mills are poorly managed and maintained. The guidelines 	<ul style="list-style-type: none"> Mills need to move towards adhering to Good Manufacturing Practices (GMP)/ Hazard Analysis and critical control point (HACCP) (Refer to Annexure 4 &5). The mills need to be periodically audited by the food quality control specialists.



Observations and Recommendations for the Mills		
KEY AREAS OF WORK	OBSERVATIONS	RECOMMENDATIONS
PADDY PROCUREMENT SYSTEM		
MILLS		
QUALITY CONTROL	for acceptable standards of manufacturing practices were not being followed stringently.	<ul style="list-style-type: none"> • Food technologist to oversee the mills production process. • It would be more practical and economical to do the quality check at the mill rather than reject already delivered cargo at RRC.
STORAGE	<ul style="list-style-type: none"> • Most mills have sufficient storage capacity for the paddy as per their allotment and usually around 5000 MTs for milled rice. • It was also observed that some of the millers storage space is not always up to standard, and not well maintained. 	<ul style="list-style-type: none"> • It is recommended to undertake the supply chain optimization activity to evaluate if the FPS near to the mills can be directly provided from the mills.
TRANSPORTATION AND PLANNING	<ul style="list-style-type: none"> • At times the millers have to store milled rice over a period of 1-2 months due to the unavailability of storage space at the RRCs. This affects their efficiency and at times mills remain closed for 2-4 months. 	<ul style="list-style-type: none"> • The planning for delivery to RRCs should be done based on the available storage space, forecast of usage etc. Based on the actuals, the central entity (ideally at the state level) should move stocks to FCI and other places to ensure maximum and efficient utilization of available resources.

Table 4: Observations and Recommendations for the Mills.



Observations and Recommendations for Farmer Registration and P-PAS		
KEY AREAS OF WORK	OBSERVATIONS	RECOMMENDATIONS
PADDY PROCUREMENT SYSTEM		
FARMER REGISTRATION AND P-PAS		
IT SYSTEMS	<ul style="list-style-type: none"> Needs to be integrated fully with the SCMS and other components of the PDS computerised system. Duplication of data entry and not enough consistency checks e.g. same DC certificate can be entered multiple times. Does not provide mechanism for planning and forecasting. The state level end to end view of the planning and subsequently execution is missing. Some of the entries can be automated e.g. date, grain accepted or not (based on the quality values) etc. Lack of IT hardware support and maintenance. At some locations low powered PCs were being used which often hang. Data entry if lost in between had to be redone all over again. Manual registers for all activities are maintained alongside the system, leading to duplication of efforts and provides room for manipulation. The role of an independent verifier in the system has not been defined. Advance token number generated is a serial number which cannot be linked to the farmer. Farmer code from the farmer registration module may be used. Different formats of ID type in use to identify farmers. This can be made consistent with a fixed format for farmer once Aadhaar is linked. The farmer data which is required for documentation and to eliminate fake purchases takes months to compile even after close of a KMS. Farmers are never sure as to when they can sell their paddy to their society. The implemented system does not seem to support any decision making based on the reports generated by the system. Farmer identification through a plot of land is an issue as several persons can be attributed to the plot of land when crop-sharing, especially if the agreement between the land owner and a tenant is verbal. 	<ul style="list-style-type: none"> SCMS and P-PAS systems need to be integrated. Business Process Review should be undertaken to devise the most efficient work flow of the system. The enhancements in the system should be done based on the results of the BPR. The system should be able to auto generate and reconcile data at state, district, block, PAC and farmer level. All activities like planning from end to end, monitoring, reporting and execution should be done using one single system. All entities whether contracted or government should use one single software for all activities. The online use of the system has to be enforced. Monitoring of post-factum data entry has to be done on a daily basis and requisite action to be taken. Removal of all manual recording efforts will require policy level changes in terms of improvements in reporting and transparency. Each entity in the system i.e. farmer, mill, PPCs, advance tokens, vendor receipts, transit challans etc., should be identifiable by a globally unique value. These should be used to ensure traceability and management of resources. Create IT systems that inform registered farmers through SMS on the Paddy procurement dates, quantity etc. Farmer identification process needs to be improved in order to avoid loopholes in the system. Adequate arrangements for maintenance and upgrade of IT systems at field locations needs to be implemented. Create a dashboard for reporting key data and improve reporting formats. Data Analytics for informed decision making.

Table 5: Observations and Recommendations for Farmer Registration and P-PAS.



Observations and Recommendations for RRC-cum-DSCs

KEY AREAS OF WORK	OBSERVATIONS	RECOMMENDATIONS
SUPPLY CHAIN MANAGEMENT SYSTEM		
RRC-cum-DSC		
WAREHOUSE MANAGEMENT	<ul style="list-style-type: none"> Traces of the powder-like substances have been found on various points on stacks (on the bags themselves). The quality control personnel confirmed these traces are residues from the aluminum-phosphine tablets used for fumigation. 	<ul style="list-style-type: none"> Do not place aluminum phosphine tablets directly on bags during fumigation. Put them on trays, underneath the pallets. Verify quality/integrity of fumigation sheets, and replace/repair the damaged ones.
	<ul style="list-style-type: none"> Free-flying insects were noticed in number of warehouses – these may not be the primary infestation. Warehouse infestation with rodents must be very high, based on the: a) spillages originating from handling bags, and use of hooks; b) set-up of the warehouses (lash vegetation, open sewages etc). 	<ul style="list-style-type: none"> Clean surroundings of the warehouses as good as inside of the warehouses. Cut grass, remove materials/debris. Spray and nebulize the warehouses regularly with adequate chemicals. Introduce rodent control.
	<ul style="list-style-type: none"> Quality control of the rice received in the depots needs to be improved. Whilst all the depots are equipped with the appropriate equipment, but it seems that some equipment has never been used. The handling and stacking process involves use of hooks, which leads to immense losses during stacking and also leaves the grain susceptible to infestation and deterioration of quality. The mission also observed that bags are frequently damaged in handling (often by using hooks), and therefore the empty bags cannot be effectively re-used – leading either to spillages/ losses or high replacement costs. 	<ul style="list-style-type: none"> The state should involve FCI for quality control and to provide support and training. It would be also advisable that quality control is made independent unit and it reports directly to state head of the department or to outsource the quality control for the entire operations to renowned companies. The use of hooks has been abandoned worldwide decades ago, so regardless of any pressure, use-no-hooks must be rolled out to all Government programs with immediate effect. Use good quality bags. Ensure standard weight in bags.
	<ul style="list-style-type: none"> We observed, low utilization of rented storage by the OSCSC in a CWC warehouse leading to losses for the state government at some places. 	<ul style="list-style-type: none"> Conduct an in-depth supply chain and route optimization study of the Government (central and Odisha state-level) structure related to warehousing, programs, and transport network. The planning and allocation should be done based on capacities of the involved entities.
	<ul style="list-style-type: none"> The stacks are assembled over a tarpaulin which is placed on the warehouse floor. While this may help reducing the moisture transfer from the concrete to the bags, it definitely prevents ventilation of the bags, and makes pest control (fumigation) more difficult. Depots are poorly equipped, have no pallets, not even simple mechanization such as conveyor 	<ul style="list-style-type: none"> Introduce Good Warehouse Management procedures (Enclosed in Annexure 6). Start using plastic pallets as a base for stacking up the rice/wheat. As a policy government should procure plastic pallets and replace tarpaulin on an on-going basis.



Observations and Recommendations for RRC-cum-DSCs		
KEY AREAS OF WORK	OBSERVATIONS	RECOMMENDATIONS
SUPPLY CHAIN MANAGEMENT SYSTEM		
RRC-cum-DSC		
WAREHOUSE MANAGEMENT	belts and small forklifts. Lack of such facilities makes the process time consuming and inefficient.	
	<ul style="list-style-type: none"> Longer storage of commodities and maximally high stacking leads to deterioration of rice quality and losing the moisture. This results in a loss to the depot. Mills issue bags with + / - 0.250 kg variation. This in itself is 10 times more than the acceptable fluctuation (bags should not vary more than +/- 0.025 kg). Given inaccuracies of the weighing scales at the PPCs, there is a risk that the Government receives systematically less grains per bag. 	<ul style="list-style-type: none"> Ensure standard weight in bags at the miller. The bags must be weighed and quality checked before delivering to the RRC. Calibrate electronic weighing scales frequently.
PLANNING	<ul style="list-style-type: none"> There is no liability fixed in the process to account for storage losses, which eventually get passed on to the end consumer. Planning of miller delivery to RRC's is not part of the Supply Chain System. Informal methods of planning and communication (SMS) are used. Complex structure of storage with many agencies with different levels of practices and enforcement. 	<ul style="list-style-type: none"> Use weighing scales during the receipt and delivery of rice as principle devices to confirm the quantity delivered. Develop and deploy a mechanism of recording losses. Integration of SCMS and P-PAS, miller system should be done to create a formal mechanism based on planning of storage, milling capacities etc. Conduct an in-depth study of the Government (central and Odisha state-level) structure related to warehousing, programs, and transport network.
CONTRACTING TRANSPORTERS	<ul style="list-style-type: none"> The transporters responsible for delivering rice from Depots to FPSs are contracted at the block level. The prices vary from block to block, however in discussion with transporters, the mission observed that the commercial rate is usually much lower than the rate paid by the government. 	<ul style="list-style-type: none"> The transport network requires optimisation, to take into consideration: <ol style="list-style-type: none"> clustering destinations to maximize payload and minimize travel distances; possible deliveries directly from mills to FPS; Combining grains for different government support programmes such as Mid-Day-Meal (MDM) and ICDS. There is a possibility to establish an intra-governmental logistics coordination centre, which would be in charge for dynamic optimization of the supply chain. The contracting procedures and text of the contracts should be simplified; and unified among various programs. The general terms of carriage should be published on the Government web page, and so only the specific requirements for each tender should be floated. This would greatly minimize work and improve the transport contracting process.

Table 6: Observations and Recommendations for RRC-cum-DSCs.



Observations and Recommendations for FPS

KEY AREAS OF WORK	OBSERVATIONS	RECOMMENDATIONS
SUPPLY CHAIN MANAGEMENT SYSTEM		
FPS		
PLANNING	<ul style="list-style-type: none"> We have seen relatively good planning of supply of rice in the FPS. However the planning will change should the beneficiary portability be introduced. The FPS owners will need to plan better and subsequently the supply chain will have to deliver. The closing balance is not being pushed back to the SCMS. 	<ul style="list-style-type: none"> Integration with SCMS needs to be completed and it is recommended not to wait for full state deployment of PoS devices.
STORAGE	<ul style="list-style-type: none"> FPS capacities vary from location to location. Some are poorly managed, with bad storage, and ill-equipped. Some FPS did not even have electronic weighing machines. FPS having electronic weighing machines seem to be calibrated and well-tuned. The storage of grains at the FPS is not proper and at times seems inadequate. 	<ul style="list-style-type: none"> Management of the FPS needs to be standardized. Promote owners of FPS who manage their shops well. Improvement in overall storage of food grains at FPS's. Use of Tarpaulin/ Plastic Pallets at FPS needs to be implemented.
OPERATIONS	<ul style="list-style-type: none"> Some FPS are located in areas that are difficult to access using 10 MT trucks and even if accessible by road are restricted by regulation. Grains are not weighed at the FPS and the acceptance note is merely signed by the FPS owner, which is then delivered back to the RRC. PoS devices are still not working as intended and there is a lack of understanding of the FPS owners of its use. The PoS devices (newly installed) still operate in English and most of the FPS owners operate by just knowing which section of the screen to click on. There is a major lapse in the support provided to the FPS owners in using PoS. All district officials complained about the incompetency of the technical resources provided at the district level and on the lack of training, handholding support. FPS Owners also mentioned that the PoS devices at most times stop working or do not work as intended. The technical helpline nos. provided by the vendor do not seem to work and most of complainants don't get notifications. Most of the transactions were not being done using Aadhaar. The beneficiary wise Aadhaar seeding remains a major challenge in making the whole system efficient. 	<ul style="list-style-type: none"> Identify FPS or move/re-locate FPS that have the required infrastructure for access. The weighment has to be enforced before signing of the acceptance note. Training needs to be improved for FPS owners and other stakeholders to be well versed with the system as the deployment of PoS devices is improved. Technical support service to FPS's needs to be enhanced for timely and adequate support. Technically competent staff to be deployed on regular basis in the districts for trouble shooting and handholding support to FPS owners and concerned district level officials. Technical support/help desk for trouble shooting at the Blocks are now managed by field staff. One staff manages a cluster of Blocks. This would be more effective if one resource could be deployed for one block. Integration with SCMS needs to be completed. Robust IEC mechanisms need to be implemented to improve the level of Aadhaar seeding, other available authentication mechanisms as well as grievance redressal mechanisms.



Observations and Recommendations for FPS		
KEY AREAS OF WORK	OBSERVATIONS	RECOMMENDATIONS
SUPPLY CHAIN MANAGEMENT SYSTEM		
FPS		
OPERATIONS	<ul style="list-style-type: none">Some beneficiaries complain about the quality of rice being sold at the FPS and at some FPS the rice was found to be of poor quality.	

Table 7: Observations and Recommendations for FPS.



Observations and Recommendations for Supply Chain Management System		
KEY AREAS OF WORK	OBSERVATIONS	RECOMMENDATIONS
SUPPLY CHAIN MANAGEMENT SYSTEM		
SCMS		
IT SYSTEMS	<ul style="list-style-type: none"> The complete supply chain system does not work as one system but is a collection of different modules, portals and some manual processes. Traceability of the commodities from the source to beneficiary and back cannot be done. The system does not allow to view the complete planning and execution plan, thereby making it difficult for decision makers to monitor and make adjustments. All the responsibilities are segregated at district or block level and in some cases even solely at the warehouse level. Such segregation may lead to problems in reconciliation and thus hampers monitoring, planning and course correction. Critical documents such as DC, transit challans, lifting plans etc. have provisions to be entered or even modified. In a work flow based system, these documents or instructions should be available in the system and used. If in case of offline activity, while the transactions are uploaded at the end of a day, these documents should also be downloaded. It seems that several transit slips and acceptance notes could be posted against one delivery note. The system needs to check the delivery and reject double posting attempts. The data is not automatically uploaded to the server and if the computer crashes or switches off RRC loses all the data entered after last upload. The system should upload the data to the server automatically. 	<ul style="list-style-type: none"> Integrate all backend databases and ensure that there is a single window to cater to all processes. Fully online systems and total removal of paper and manual systems. Improve traceability of grains from the mills to the beneficiary. One way that this can be done is by barcoding the bags with miller identification, quantity, season etc., on the cloth tag with the above information. The barcodes can then be scanned at the FPS for recording of stock as well keeping trace of the mill, lot number and season of the rice received. All aspects of planning and execution should be implemented in the system. The system should be able to generate an end to end planning for the complete planning and execution cycles. Introduce a Dashboard and data analytics to provide decision making support to higher officials. The business process of the system and delegation of authorities needs to be better defined, hence the profiles with the different access rights of the users' needs to be defined. As some planning features could be improved. Business Process Review should be undertaken and enhancements to the system should be done based on the results of the review. Independent testing of the solution should be done and the identified issues should be resolved. Good and stable connectivity needs to be provided.

Table 8: Observations and Recommendations for Supply Chain Management System.



6.2 Annexure 2: Summary of Visits and Consultations of the Mission

S.NO	NAME OF OFFICIAL	DESIGNATION	LOCATION	DATE OF VISIT
1	Mr. Rajesh Kumar Singh, IAS	Joint Secretary (Impex), Ministry of Agriculture	New Delhi	17 April, 2017
2	Mr. S. P. Kar	ED (T), FCI Hqrs	New Delhi	18 April, 2017
3	Mr. Deepak Sharma	General Manager (Sales), FCI Hqrs	New Delhi	18 April, 2017
4	Mr. K.K. Paliwal	General Manager (Procurement), FCI Hqrs	New Delhi	18 April, 2017
5	Mr. V.K. Aggarwal	Deputy General Manager (Hqrs), FCI Hqrs	New Delhi	18 April, 2017
6	Mr. Neeraj Kumar	Asstt. General Manager (I&E)	New Delhi	18 April, 2017
7	Mr. P.K. DAS	Director(Marketing), State Trading Corporation	New Delhi	18 April, 2017
8	Mr. Akhil Mathur	Director General Manager (Marketing), State Trading Corporation	New Delhi	18 April, 2017
9	Mr. Pradipta Kumar Mohapatra, IAS	Principal Secretary, Department of Food Supplies & Consumer Welfare	Bhubaneswar	19 April, 2017
10	Mr. Niranjan Nayak	Managing Director Odisha State Civil Supplies Corporation Ltd.	Bhubaneswar	19-20 April, 2017
11	Mr. Subhakanta Mishra	Additional Secretary, Department of Food Supplies & Consumer Welfare	Bhubaneswar	19-20 April, 2017
12	Mr. M.Q. Haque	Joint Secretary, Department of Food Supplies & Consumer Welfare	Bhubaneswar	19-20 April, 2017
13	Mr. K. C. Das	General Manager (Procurement), Odisha State Civil Supplies Corporation Ltd.	Bhubaneswar	19-20 April, 2017
14	Mr. Santosh Kumar Dash	General Manager (PDS) , Odisha State Civil Supplies Corporation Ltd.	Bhubaneswar	19-20 April, 2017
15	Mr. Sanjib Kumar Mishra	TPDS Coordinator, Project Management Unit (TPDS)	Bhubaneswar	19-20 April, 2017
16	Project Management Unit (TPDS) members	Members	Bhubaneswar	19-20 April, 2017
17	Representatives of Technical agencies associated with P-PAS and SCMS in Odisha	CSM, TQM, IPE Global, Mastek, Linkwell etc.	Bhubaneswar	19-20 April, 2017
18	Mr. Hemanta Kumar Jain	General Manager, FCI Regional Office	Bhubaneswar	21 April, 2017



S.NO	NAME OF OFFICIAL	DESIGNATION	LOCATION	DATE OF VISIT
PEGP Godown at Bhusandapur, Tangi Block, Khurda District				
19	Mr. Ramakanta Ransingh	Civil Supplies Officer, Khurda	Khurda	21 April, 2017
20	Mr. Nihar Ranjan Parija	Assistant Civil Supplies Officer (Procurement), Khurda	Khurda	21 April, 2017
21	Mr. Nirmal Mohapatra	Supply Inspector, Tangi Block, Khurda	Khurda	21 April, 2017
22	Ms. Bhanumati Baral	Owner, PEGP Godown, Bhusandapur, Tangi Block, Khurda	Khurda	21 April, 2017
District visited – Group A –Balasore district				
23	Mr. Pramod Kumar Das, IAS	Collector, Balasore	Balasore	21-22, April, 2017
24	Mr. Manmath Kumar Pani	Additional District Magistrate ,Balasore	Balasore	21-22, April, 2017
25	Ms. A. Kerketa	District Social Welfare Officer,Balasore	Balasore	21-22, April, 2017
26	Dr. Hrusikesh Kandi	District Education Officer, Balasore	Balasore	21-22, April, 2017
27	Mr. Jaysankar Prasad Manipatra	Civil Supplies Officer, Balasore	Balasore	21-22, April, 2018
28	Mr. Manmath Kumar Dash	Deputy Registrar of Cooperative Societies, Balasore	Balasore	21-22, April, 2017
29	Mr. Biswa Ranjan Das	Assistant Registrar of Cooperative Societies,Balasore	Balasore	21-22, April, 2017
30	Mr. Ajay Kumar Mallick	Assistant Civil Supplies Officer,Balasore	Balasore	21-22, April, 2017
31	Mr. Prafulla Kumar Nayak	Assistant Civil Supplies Officer, Balasore Municipality ,Balasore	Balasore	21-22, April, 2017
32	Mr. Ramakanta Sethy	Assistant Civil Supplies Officer, Balasore Sadar	Balasore	21-22, April, 2017
33	Mr. C.S.Patra	Assistant Civil Supplies Officer ,Balasore	Balasore	21-22, April, 2017
34	Mr. Anadi Sethy	I/C Marketing Intelligence Officer, Balasore	Balasore	21-22, April, 2017
35	Mr. Jalandhar Panda	Deputy General Manager, Bhadrak Balasore Central Cooperative Bank, Balasore	Balasore	21-22, April, 2017
36	Mr. Arun Kumar Maity	Procurement Incharge, District Central Cooperative Bank, Balasore	Balasore	21-22, April, 2017



S.NO	NAME OF OFFICIAL	DESIGNATION	LOCATION	DATE OF VISIT
37	Mr. Sambhunath Nayak	ICS of O/o ARCS, Balasore	Balasore	21-22, April, 2017
38	Mr. Paresh Nath Kar	Block Education Officer, Sadar, Balasore	Balasore	21-22, April, 2017
39	Mr. Sanjay Somani	Owner: SMM Rice Mill, Seragada, Balasore	Balasore	21-22, April, 2017
40	Ms. Sudhanjali Rout	Procurement Inspector, Remuna, Balasore	Balasore	21-22, April, 2017
41	Mr. Ramakanta Jena	Area Manager, CWC, Bampada, Balasore	Balasore	21-22, April, 2017
42	Mr. Ambika Prasad Patnaik	Depot Superintendent, CWC, Bampada, Balasore	Balasore	21-22, April, 2017
43	Mr. Govinda Chandra Dash	Depot Superintendent, OSWC, Balasore, Balasore	Balasore	21-22, April, 2017
44	Mr. K.C. Maharatha	Assistant Manager (Accounts), OSCSC Ltd., Balasore	Balasore	21-22, April, 2017
45	Mr. Rajendra Prasad Murmu	Procurement Inspector, Balasore	Balasore	21-22, April, 2017
46	Mr. Gopal Prasad Behera	Secretary, Primary Agriculture Cooperative Society (PACS), Panapana, Balasore	Balasore	21-22, April, 2017
47	Mr. Pradipta Kumar Dash	Assistant Secretary, Primary Agriculture Cooperative Society (PACS), Panapana, Balasore	Balasore	21-22, April, 2017
48	Mr. Prafulla Kumar Palei	Data Entry Operator, Primary Agriculture Cooperative Society (PACS), Panapana, Balasore	Balasore	21-22, April, 2017
49	Mr. Abhimanyu Mahakud	FPS Owner, Ward No. 26 under Balasore Municipality, Balasore	Balasore	21-22, April, 2017
Institutions Visited-Balasore				
A. Primary Agriculture Cooperative Society (PACS), Panapana				
B. SNM Rice Mill, Seragada				
C. Rice Receiving Centre, Remuna				
D. Local market at Nuabazar, Remuna				
E. Barakua Nodal School & AWC				
F. One FPS of ward No. 26 under Balasore Municipality				
G. CWC Depot, Bamapada				
H. OSWC Depot, Balasore				
District visited – Group B –Ganjam district				
50	Mr. Saroj Mishra	Additional District Magistrate, Ganjam	Ganjam	21-22, April, 2017
51	Mr. A. Patro	Civil Supplies Officer, Ganjam	Ganjam	21-22, April, 2017
52	Mr. Krushna Chandra Sethi	Assistant Civil Supplies Officer, Ganjam	Ganjam	21-22, April, 2017



S.NO	NAME OF OFFICIAL	DESIGNATION	LOCATION	DATE OF VISIT
53	Mr. Rajani Kanta Das	Assistant Civil Supplies Officer, Chatrapur (Sadar)	Ganjam	21-22, April, 2017
54	Mr. Kailash Pradhan	Assistant Civil Supplies Officer, Ganjam	Ganjam	21-22, April, 2017
55	Mr. Pravakar Patra	Assistant Civil Supplies Officer, Ganjam	Ganjam	21-22, April, 2017
56	Mr. P. Baikuntha Rao	Owner : Private Entrepreneur Guarantee Programme (PEGP)	Ganjam	21-22, April, 2017
57	Mr. Rama Rao	Manager, Central Warehouse, Berhampur	Ganjam	21-22, April, 2017
58	Ms. Ruchita Patra	Procurement Inspector, Ganjam	Ganjam	21-22, April, 2017
59	Ms. Priyanshu Pradhan	Procurement Inspector, Ganjam	Ganjam	21-22, April, 2017
60	Mr. Nikhil Mohan Bastia	Marketing Inspector, Chatrapur	Ganjam	21-22, April, 2017
61	Ms. P. Bhargabi	Marketing Inspector, Digapahandi	Ganjam	21-22, April, 2017
Institutions/sites visited				
A. PACS, Rangeilunda block				
B. PEGP, Digapahandi				
C. Rice Mill. Digapahandi				
D. Central Warehouse, Berhampur				
E. FCI Godown, Jagannath Prasad				
F. FPS Centre at ward no. 24 under Berhampur Municipality				
District visited – Group A – Sambalpur district				
62	Mr. Yudhistir Nayak	Additional District Magistrate, Sambalpur	Sambalpur	23-25 April,2017
63	Mr. Pitamber Acharya	Civil Supplies Officer, Sambalpur	Sambalpur	23-25 April,2017
64	Mr. Prasan Kumar Bag	DRCS, Sambalpur	Sambalpur	23-25 April,2017
65	Mr. Brundaban Chhatriya	ARCS, Sambalpur	Sambalpur	23-25 April,2017
66	Mr. B. P. Supkar	Assistant Civil Supplies Officer, Sambalpur	Sambalpur	23-25 April,2017
67	Mr. Dillip Kumar Nayak	Assistant Civil Supplies Officer, Sambalpur	Sambalpur	23-25 April,2017
68	Ms. Puspanjali Mishra	CDPO, Katapalli	Sambalpur	23-25 April,2017
69	Mr. Suryakanta Pradhan	Procurement Inspector, Sambalpur	Sambalpur	23-25 April,2017
70	Ms. Sarojini Ekka	Procurement Inspector, Katapalli	Sambalpur	23-25 April,2017
71	Ms. Kuresha Pradhan	Head Mistress, Budharaja High School, Sambalpur	Sambalpur	23-25 April,2017



S.NO	NAME OF OFFICIAL	DESIGNATION	LOCATION	DATE OF VISIT
72	Mr. Nitesh Sahoo	Remed Society, Sambalpur	Sambalpur	23-25 April,2017
73	Mr. Jena	Manager, PEGP Godown, Sambalpur	Sambalpur	23-25 April,2017
74	Mr. K. Venkata Rao	Proprietor, Venkateswar Rice Mill, Babubandha, Sambalpur	Sambalpur	23-25 April,2017
75	Mr. Deepak Das	Fair Price Shop owner, Budharaja, Sambalpur	Sambalpur	23-25 April,2017
Institutions/sites visited				
A. Remed Society, Sambalpur				
B. Venkateswar Rice Mill, Babubandha, Sambalpur				
C. Rice Receiving Centre, Kalamati				
D. Fair Price Shop at Budharaja, Sambalpur				
E. Budharaja High School				
F. ICDS Centre and AWC at A. Katapalli, Sambalpur				
District visited – Group A – Baragarh district				
76	Mr. Anjana Kumar Manik, IAS	Collector, Bargarh	Baragarh	23-25 April,2017
77	Mr. Bijay Kumar Rath	Additional District Magistrate, Bargarh	Baragarh	23-25 April,2017
78	Mr. Batakrushna Dehuri	PD, DRDA, Bargarh	Baragarh	23-25 April,2017
79	Mr. Bhimsent Ekka	Sub-Collector, Bargarh	Baragarh	23-25 April,2017
80	Mr. Bibekananda Korkora	Civil Supplies Officer, Bargarh	Baragarh	23-25 April,2017
81	Mr. Narayan Panda	Assistant Civil Supplies Officer, Bargarh	Baragarh	23-25 April,2017
82	Mr. Raj Kishor Mishra	Superintendent, Central Warehousing Corporation, Kendupalli	Baragarh	23-25 April,2017
83	Ms. Mahananda	Procurement Inspector, Bargarh	Baragarh	23-25 April,2017
84	Ms. P. Soren	Procurement Inspector, Bargarh	Baragarh	23-25 April,2017
Institutions/sites visited				
A. ICDS Centre, Kumelsinga				
B. Tamporosora Seva Samabaya Samiti				
C. Marketing Yard at Tamporosora				
D. Lath Industry-Rice Mill at Kendupali				
E. Central Warehouse, Kendupali				
District visited – Group B – Rayagada district				
85	Mr. Laxmidhar Behera	Additional District Magistrate, Rayagada	Rayagada	23-25 April,2017



S.NO	NAME OF OFFICIAL	DESIGNATION	LOCATION	DATE OF VISIT
86	Ms Sabita Bagh	District Social Welfare Officer, Rayagada	Rayagada	23-25 April,2017
87	Mr. N. Mohanty	Civil Supplies Officer, Rayagada	Rayagada	23-25 April,2017
88	Mr. Sanjib Kumar Sahoo	Assistant Civil Supplies Officer, Rayagada	Rayagada	23-25 April,2017
89	Mr. Subodha Hota	Assistant Civil Supplies Officer, Rayagada	Rayagada	23-25 April,2017
90	Ms Resma Silki Das	Marketing Inspector, Rayagada	Rayagada	23-25 April,2017
91	Mr. Kishore Chandra Moharana	Marketing Inspector, Rayagada Block	Rayagada	23-25 April,2017
92	Mr. Subharaj Samantaray	Marketing Inspector, Padampur Block	Rayagada	23-25 April,2017
93	Mr. Manoj Rath	Marketing Inspector, K. Singhpur Block	Rayagada	23-25 April,2017
94	Mr. Satya Narayan Bhoi	Marketing Inspector, Kolanara Block	Rayagada	23-25 April,2017
95	Mr. Manas Bhoi	Marketing Inspector, Chandrapur Block	Rayagada	23-25 April,2017
96	Ms Reena Burh	Marketing Inspector, Rayagada Municipality	Rayagada	23-25 April,2017
97	Mr. Pravakar Mallick	Marketing Inspector, Muniguda Block	Rayagada	23-25 April,2017
98	Mr. Sibu Pradhan	Procurement Inspector, Gunupur Block	Rayagada	23-25 April,2017
99	Mr. K. C. Ojha	Superintendent, OSWC, Rayagada	Rayagada	23-25 April,2017
100	Ms. Sabita Bagh	Secretary, RMC Rayagada, Rayagada	Rayagada	23-25 April,2017
101	Mr. P. Basudev	Owner, Gouri Shankar Rice Mill, Siriguda, Rayagada	Rayagada	23-25 April,2017
102	Mr. Harihar Dash	MD, LAMPS, Rayagada, Rayagada	Rayagada	23-25 April,2017
103	Mr. S. Dhir	MD, LAMPS, K.Singhpur, Rayagada	Rayagada	23-25 April,2017
104	Mr. M. Tirupati	Fair Price Shop Owner, Ward No. 22, Rayagada Municipality, Rayagada	Rayagada	23-25 April,2017
Institutions/sites visited				
A. OSWC, Rayagada				
B. Regulated Marketing Committee, Rayagada				
C. Fair Price Shop at Ward No. 22, Rayagada				
D. Gouri Shankar Rice Mill, Siriguda, Rayagada				



S.NO	NAME OF OFFICIAL	DESIGNATION	LOCATION	DATE OF VISIT
E. Budaguda RMC yard (mandi) in K. Singhpur Block				
F. LAMPS, K. Singhpur				
District visited – Group B – Kalahandi district				
105	Mr. S. P. Dora	Civil Supplies Officer, Kalahandi	Kalahandi	23-25 April,2017
106	Mr. Dillip Kumar Patra	Assistant Civil Supplies Officer, Kalahandi	Kalahandi	23-25 April,2017
107	Mr. Ratnakar Sethi	Assistant Civil Supplies Officer, Kalahandi	Kalahandi	23-25 April,2017
108	Mr. Prafulla Dash	Assistant Civil Supplies Officer, Dharamgarh	Kalahandi	23-25 April,2017
109	Mr. K. C. Dash	Manager, Central Warehousing Corporation Kalahandi	Kalahandi	23-25 April,2017
110	Miss Dipanjali Behera	Procurement Inspector, Junagarh	Kalahandi	23-25 April,2017
111	Mr. Purna Chandra Tudu	Marketing Inspector, Junagarh	Kalahandi	23-25 April,2017
112	Mr. Bulu Patjoshi	Proprietor, M. R. Rice Mill, Moter, Junagarh	Kalahandi	23-25 April,2017
Institutions/sites visited				
A. CWC, Junagarh				
B. Primary Agriculture Cooperative Society, Charbahal, Junagarh Block				
C. M. R. Rice Mill, Moter, Junagarh Block				
D. Weekly Market at Belguda				
E. Fair Price Shop at Baladialmal Gram Panchayat				
F. RCMS Centre at Bhawanipatna				
G. Interaction with a group of farmers at Junagarh Block				



6.3 Annexure 3: Terms of Reference of the Mission

Terms of Reference for WFP Procurement and Logistics Experts for assistance in Odisha, India

Background:

The Targeted Public Distribution System (TPDS) is one of the government's most important instruments of policy aimed at food security, inclusive growth and public satisfaction. It delivers a minimum requirement of food grains and other essential items at highly subsidised prices to the poor. As one of the oldest welfare-oriented schemes, it is also perhaps the most extensive, providing food security to 67 percent of the citizens. The program is now under the National Food Security Act⁹ 2013 (NFSA), and aims to cover around 800 million people with assured subsidized monthly household ration consisting of rice/wheat/millets at a prescribed price of 5/3/1.5 US cents (or Rs. 3/2/1.) per Kg.

The TPDS is operated under the joint responsibility of the central and state governments, with the former responsible for procurement, storage, transportation (up to the district headquarters) and bulk allocation of food grains. The State Governments are further responsible for distributing these food grains from the Food Corporation of India (FCI) warehouses (owned and operated by central government) in the state to beneficiaries via last mile retail outlets called Fair Price Shops (FPS) through a network of state owned warehouses. In addition, there are 15 states/UT's which have decentralized procurement⁹, whereby the

State Government itself undertakes direct purchase of paddy and wheat on behalf of Government of India, and also stores and distributes these food grains under TPDS and other welfare schemes. The central government covers the expense incurred for procurement and transport by the state until they reach the FCI godowns and reviews the quality of food grains procured.

India's small-holder farmers (SHF) –those owning less than 2.0 ha of farmland – comprise 78 percent of the country's farmers, but own only 33 percent of the total cultivated land; they nonetheless produce 41 percent of the country's food-grains¹⁰. Their productivity is somewhat higher than that of medium- and large-size farms. Moreover, their marketable surpluses are increasing.

Rice is the most important crop for Indian SHF and they stand for 49 percent of all rice produced in the country. They also play a relevant role in production of wheat, sorghum and pulses.

During the last decades, India has implemented several agricultural-trade liberalization initiatives. Thus, restrictions on imports and exports have been removed, and tariff rates have been progressively lessened. In consequence, agricultural exports and imports each increased sharply, also increasing the share of agricultural trade in agricultural GDP.

In fact, India plays an important role as a sourcing country of cereals for WFP. During the last two years, WFP purchased

⁹www.dfpd.nic.in/decentralisedprocurement

¹⁰Smallholder Farmers in India: Food Security and Agricultural Policy, FAO.



over 150 Million USD of food of Indian origin, Rice standing for 80 percent of it. For this commodity, which was cultivated in India and sourced to WFP through various international companies, represents a largest share (46 percent) of global rice purchases.

WFP aims to source from SHF 10percent of all food purchases worldwide. Considering high share of SHF production in India and its relevance as a country of food origin to WFP, Food Procurement is aiming to explore new procurement procedures in India that will contribute to reaching the target.

WFP's Purchase for Progress (P4P) project has also shown that WFP's experience in pro-smallholder procurement can also be instrumental in supporting the development of public procurement programs managed by local governments.

WFP in Asia-Pacific explores possibilities for South-South and Triangular cooperation in the area of improvement of food systems applying holistic approach and specifically considering opportunities for development of small holders (farmers, traders and food processors).

Scope of Work:

WFP has been asked to review two critical components of TPDS in Odisha, the Paddy Procurement System (P-PAS) and the Supply Chain System (SCMS). Both these systems have been automated through software applications, developed, with financial support from DFID, by the OMEGA (Odisha Modernising Economy, Governance and Administration), which is an independent state agency. The basic premise of automating both these systems is to introduce more transparency and

accountability in the system as well reduce leakages and pilferages which have plagued TPDS since its inception. From WFP Headquarters' perspective, and considering corporate target of SHF reaching 10 percent of global food purchases, Food Procurement is interested in understanding the current regulatory framework for SHFs in the country. If they are structured and reliable enough, SHF purchases in the country can be pursued and registered as so within WFP. Assessment of TPDS operations will provide useful information and insights about the operational procedures and IT systems in place for keeping track and controlling SHF participation in relevant cereal supply chains. This will be address by consulting with Government agencies and Ministries involved in the operations, Food Corporation of India and selected traders.

Finally, WFP's Asia-Pacific region is looking into policies, sourcing strategies and food system integrations which may be used to support combination of private/public partnerships for institutional and commercial market engagement of small holders, resulting in further Governments' investments in this area. For that purpose, time and other resources permitting, discussions with small holders (producers, aggregators and processors) will be held to obtain more detailed insights and provide specific recommendations while drawing lessons learned.

The mission is expected to be conducted for 2-3 weeks, with a possibility for follow up missions if needed. Following the report, which will have some high level recommendations, WFP would also need to support GoO actively in the implementation of the recommendations by defining the exact outputs e.g. re-



designing part of the logistics transaction documents, suggesting reports that would be more useful than the conventional ones being used, suggesting/ reviewing their contract agreements with transporters, supporting them in undertaking route optimisation (through scientific tools), upgrading elements of the software, etc.

About SCMS and P-PAS:

Paddy Procurement Automation System (P-PAS)

As a “Decentralised Procurement State”, Odisha procures Paddy during two seasons- Kharif and Rabi Marketing Season. Govt. of Odisha (GoO) prepares the Food & Procurement Policy before the start of the marketing session. This policy is further implemented by the State Food, Supplies and Consumer Welfare Department (FS&CW). Different agencies are appointed by the department with targets for each district given to them based on analyzing the previous years’ paddy procurement volume and current year’s paddy production. The entire operations for Paddy procurement are now implemented electronically using an application called the Paddy Procurement Automation System (P-PAS) which has been recently developed and is in operation since 2014.

District level Paddy Procurement

Committee is formed under the chairmanship of Collector, which decides to open the Paddy Purchase Centres (PPC) in the district at different locations which are convenient for the farmers to come and sell their paddy. Paddy is procured from the farmers at the Paddy Purchase Centres by the agencies in the presence of Millers’ representatives. These listed

agencies appoint custom millers to mill rice from procured paddy after entering into agreement as per the decision of the collector. The details of the farmers are entered in the Purchase Register. Paddy sampling is done at the PPC before acceptance. Once, the paddy is accepted, it is weighed and Paddy Purchase Register & Vendor Receipt is maintained with the quantity and amount. Two cheques are prepared for the farmer, one for the Minimum Support Price (MSP) and another for the bonus (@ Rs. 50 per quintal), and these two cheques are handed over to the concerned farmers. The system also prepares Paddy Acceptance Notes and Transit Passes. Paddy Acceptance Note is maintained and transit pass is given to the Millers to take the paddy from the Paddy Purchase Centre to their Mills. At the PPC, Stock Register and Cash Books are also maintained. On a particular day, if excess paddy is procured beyond the intake capacity of the millers, the balance paddy is sent to storage godowns for temporary storage. The Regulated Market Committee¹¹ gets 2 percent commission on MSPs for paddy procurement. Post Milling, the millers deliver the Custom Milled Rice to various District Storage Centres, to which they are attached.

Supply Chain Management System

Under the mandate of the NFSA and a Supreme Court of India Order, the State Governments need to implement “Door Step Delivery” for TPDS operations. This implies that, it would be the state’s responsibility to lift food grains from FCI /State/Private godowns in the State and deliver them the final distribution point i.e. the Fair Price Shops (FPS). The existing system meets the basic requirements to help automate the

¹¹http://www.osamboard.org/about_us.aspx



end-to-end supply chain functions in the state. The system supports key functions of stock accounting at the depot, quality analysis of grain, accounting of collections from depot, notifications to FPS owners, beneficiaries and key stakeholders, data auditing, handling of transport contractors and also reporting and analysis. The vision for this system is to be able to optimise the use of existing resources- warehouses, truckloads etc., leading to reduction in wastage, enhanced transparency, accountability and integration both outward with other schemes and inwards with other automated systems for TPDS.

About SHF in India and Available Opportunities:

WFP Purchases

International trade can considerably contribute to poverty reduction and food security in developing countries when marketable surplus is available and SHFs compete under competitive conditions for the export opportunities.

By setting a corporate target of buying 10percent from SHF out of total food purchases, WFP envisages to use its purchasing power to contribute to SHF access to markets and livelihood improvement. One of the planned procurement modalities involves indirect purchases from SHF through contracts with traders and this seems to be the most feasible approach for India.

In order to properly plan this purchases, it is necessary to fully understand current regulatory framework for SHF in India, in terms of definitions, databases available, dedicated public policies, control modalities and IT systems

currently used. Considering there may be a certain degree of decentralization, this assessment must be done for the different existing and relevant government levels for the regions of interest.

Traceability and IT Systems

In India, the National Information Centre (NIC) of the Ministry of Information Technology - through initiatives such as the DISNIC-Agris Project, and AGRISNET (a NIC-net based Agricultural Informatics and Communications Network) - seeks to reach all agricultural districts and blocks through its massive "Gateway Networks". Through these networks, farmers have opportunity to learn of and benefit from new and improved agricultural practices, to have weather-forecast-based guidance for timely agricultural operations, to be alerted by satellite surveys of pests and diseases, and to access crop-output forecasting and marketing strategies for domestic and for export trade.

Understanding the IT system used to control the supply chain operations (deliveries, stocks payment) under TPDS is important because it can become a powerful tool to WFP purchases in the country. In order to support eventual decision for targeting, it is also recommended to address the current SHF share in TPDS, as well as understand what kind of traceability is available to keep track of seller's profile.

TPDS Targeting

Currently, TPDS is part of India's agricultural prices policies that include several pro-poor and farmer-friendly features: minimum support prices,



selective market intervention, and encouragement to producers and/or consumers cooperatives, cereals buffer stocks, and distribution of subsidized food-grains through the Public Distribution System. These features have resulted in improved market integration and they also potentially help to lessen food insecurity and poverty.

Notwithstanding the positive impacts of India's various inter-related policy instruments in achieving food self-sufficiency by the late 1980s, inefficient implementation has lessened their effectiveness, and there have been several distortions³. And due to lack of targeting, TPDS costs have been constantly increasing, while the main beneficiaries of this situation have been the larger surplus-producing farmers.

Given its expertise in pro-smallholder procurement, WFP could provide technical assistance to make TPDS procurement processes more smallholder-friendly and thereby promoting smallholder market access. In particular, WFP could support with technical assistance around targeting of smallholder farmers, development of pro-smallholder procurement modalities and pricing mechanisms, supply chain management and quality management.

Scope of Activities during the Mission

Understand the current systems and policies in place for procurement for both Wheat and Rice for the supply chain for the TPDS

1. Review GoO's procurement Systems and Policies and integration with the automated systems
2. Review GoO's logistics Systems and Policies for the TPDS

3. Understand the current regulatory framework for SHFs, both at national and regional level.
4. Identify and understand tracking systems used to register and control purchases (farmer's information and database).
5. Review farmer-friendly features of TPDS.
6. Discuss with GoO, FCI and selected traders about proposed contract modality and SHF-procurement opportunities in the region and adoption of proposed contract modalities. Identify the areas of convergence with other food based schemes.
7. Identify gaps (technical, capacity, policy, systems, procedures, etc.) and areas for improvement / optimisation for all the elements of the procurement and supply chain systems in view of global best practices.
8. Propose recommendations for effective and efficient procurement and supply systems for rice and wheat and for the TPDS.
9. Understand policies and levels of practical support to the Small Holders (farmers, aggregators and processors), and identify opportunities for further collaboration.

Visits and Consultations

In order to understand the current operations, the requirements, the problems and to propose possible solutions, field visits to the following entities would be undertaken:



Paddy Procurement System

1. Overview of entire procurement process – information, grain and financial flows with relevant stakeholders (State Dept., Civil Supplies Corporation, Transporters, Millers, Field level officers, Food Corporation of India, warehouse operators etc.)
2. Visit to a Paddy Procurement centre and consultation with the Paddy Procurement Committee (PPC)
3. P-PAS (Paddy Procurement Automation System (online Application) - overview of the existing functionality
4. Visit to State Storage Depots (Rice, Sugar Depot and Base Rice Receiving Centres (RRC's)) and FCI Godown, with overview of practices and storage guidelines and dispatch procedures.
5. Review of the FCI Online Depot System (the system is also available for adaptation by any state) and review its suitability for Odisha's Procurement Operations.
6. Overview of the Milling Process, Quality Assurance Guidelines and other operational procedures.
7. Visit Ministry of Food and/or Ministry of Agriculture – overview of national regulations about SHF.
8. Meeting with GoO overview of regional regulations about SHF.
9. Meeting with local traders to assess current practices and engage in pro-smallholder procurement efforts.

10. Meet with the small holder farmers, aggregators and processors.

11. Other Data Collection visits (as required)

In addition, it is imperative to review the procurement for wheat and Sugar and review the integration with Supply Chain Operations.

Supply Chain Operations

Overview of entire operations- information, grain and financial flows

1. Consultation with relevant stakeholders (State Dept., Civil Supplies Corporation, Transporters, Millers, Field level officers, Food Corporation of India, warehouse operators etc.) on the shortcomings and opportunities for changes to the existing system.
2. Overview of the General operational Guidelines, Org Structure and Roles and Responsibilities.
3. Visit to Rice Mills, Sugar Depot and Base RRC-cum-DSC, Zonal RRC, FPS and understanding of the operational procedures.
4. Overview of online and offline application used for Supply Chain Automation.
5. Review of overall planning process for coordinating grain flows across the state with an overview of organization structure, reporting and coordinating mechanism.
6. Overview of the tendering/contracting process for transporters and tracking procedures.
7. Review of current status of integration/ plan for integration across different



components of EtE automation and with other food based welfare schemes.

8. Visit the small holders and review the farm-to-market market supply chain, as well as mechanisms that work in support of small holders to access commercial and institutional buyers.
9. Overview of the ICDS and MDM operations with visits.

Submission of Report to GoO

The main objective of the mission would be to provide a comprehensive set of recommendations to the GoO that would serve as a guide to implement changes in the system and policies for procurement and distribution. The reports should describe the current status for Procurement and Supply Chain Systems and Policies, identify gaps and areas for optimization; present recommendations based on the findings and global best practices. The final report that would be submitted to the GoO within one and a half months of the completion of the mission. An internal report will be provided to Supply Chain and Programme Divisions in the HQ, and the Regional Bureau in Bangkok, addressing the findings related to the engagement with Small Holders (farmers, aggregators and processors), and SHF procurement opportunities in India.



6.4 Annexure 4: Good Manufacturing Practices

6.4.1 Good Manufacturing Practices for Rice Mills

This document summarizes a series of good hygienic practices for rice milling operations including paddy receiving, drying, cleaning, dehusking, polishing, general grading, packaging, storage,

and transportation. It is based on Codex Alimentarius General Principles of Food Hygiene (CAC/RCP 1-1969) and could be used as a tool for checklists development and auditing purposes.

	ITEMS	REQUIREMENTS	INSPECTION METHODS
1. ESTABLISHMENT	1.1 Location qualities	<p>1.1.1 The establishment shall be located in an area with no adverse impact to the communities. (ensure easy access to transport, open spaces separated from offices, parking, employees areas, waste water treatment, etc.).</p> <p>1.1.2 The establishment shall not be located in an area that may cause contamination to rice products (i.e. areas prone to flooding should be avoided or establish measures to ensure that area is stable without signs of shrinkage due to humidity, also waste dumpsites and stray animals in the vicinity should be avoided).</p>	<p>1.1.1 Visual inspection of surrounding environment and/ or check preventive measures against pollution or adverse effects to communities.</p> <p>1.1.2 Visual inspection of surrounding environment and check preventive measures against product contamination.</p>
	1.2. Building and operating Areas 1.2.1 Drying area	<p>1.2.1.1 Floor shall be made of smooth concrete, clean, no water logging, and free of waste or trash. In case the floor is not concrete, it shall be covered with materials that are able to prevent contamination.</p> <p>1.2.1.2 The drying area shall be protected from the entry of pets and disease carrier animals, and/or installed with fences.</p>	<p>1.2.1.1 Visual inspection of the operating area and and/ or interview the operators.</p> <p>1.2.1.2 Visual inspection of drying area and preventive measures.</p>
	1.2.2 Soaking and steaming areas	<p>1.2.2 Building structure shall be made of strong and durable materials, easy to clean and maintain with good drainage.</p> <p>Wall, partition and floor shall be water-proof, non-absorbent, and made of non-toxic materials suitable for its intended use. They should have smooth surfaces, and floors should be designed for good drainage and no water-logging.</p>	<p>1.2.2 Check building structure and operating area, particularly drainage and water treatment areas.</p>
	1.2.3 Storage areas for paddy, rice products and by-products	<p>1.2.3.1 For normal storage:</p> <ol style="list-style-type: none"> Designated areas for each product shall be provided separately in order to prevent the mix-ups and contamination. Building structure shall be strong, easy to clean and maintain. Storage areas shall be able to prevent the entry of pests and disease carrier animals. Storage areas shall be able to protect against moisture. Adequate ventilation or ambient temperature and relative humidity control systems shall be provided. <p>1.2.3.2 For silo storage:</p> <ol style="list-style-type: none"> Silo shall be designed in order to allow effective circulation of paddy or rice products by the basis of first-in and first-out system without any leftover. 	<p>1.2.3.1 Check storage areas, structure, and control measures against pests, disease carrier animals and moisture.</p>



	ITEMS	REQUIREMENTS	INSPECTION METHODS
1. ESTABLISHMENT	1.2.3 Storage areas for paddy, rice products and by-products	<ol style="list-style-type: none"> 2. Silo structure shall be strong, easy to clean and maintain. 3. Silo shall be able to prevent the entry of pests and disease carrier animals. 4. Silo shall be able to protect against moisture. 5. Adequate ventilation or ambient temperature and relative humidity control systems shall be provided. 	1.2.3.2 Check silo, structure, ventilation and records of ambient temperature and relative humidity.
	1.2.4 Areas assigned for paddy cleaning, dehusking, polishing grading and rice product packing	<ol style="list-style-type: none"> 1.2.4.1 Areas shall be designed to have adequate working spaces and clearly separated from one another which are able to prevent contamination from pests and disease carrier animals. 1.2.4.2 Building structure shall be strong, made of durable materials, easy to clean and maintain. 	<ol style="list-style-type: none"> 1.2.4.1 Check the layout of the building and operating areas. 1.2.4.2 Check building structure and operating areas.
	1.3. Equipment, machinery and utensils	<ol style="list-style-type: none"> 1.3.1 Specifications, types and sizes of equipment, machinery and utensils used in the production shall be appropriate for production capacity. 1.3.2 Equipment, machinery and utensils shall be strong, durable and made of appropriate materials that do not cause contamination harmful to the consumer and shed any particulate matter to rice products. 1.3.3 Equipment, machinery and utensils shall be regularly cleaned and maintained. 1.3.4 The equipment, machinery and utensils shall be checked for accuracy before use. 	<ol style="list-style-type: none"> 1.3.1 Check equipment, machinery and utensils and/or interview the operators. 1.3.2 Check equipment, machinery and utensils and check preventive measures against contamination. 1.3.3 Check the work plan and operations. 1.3.4 Check the test records of equipment, machinery and utensils.
	1.4 Facilities	<ol style="list-style-type: none"> 1.4.1 Adequate ventilation shall be provided in the production area. 1.4.2 Adequate lighting shall be provided in the quality control areas where the quality is visually inspected. 1.4.3 Water used in the rice polishing process shall be sufficient and meet the standards of potable water. 1.4.4 Adequate number of cleaning facilities shall be provided and ready for use. 1.4.5 Adequate systems and facilities for drainage and waste disposal shall be provided. 1.4.6 Adequate facilities for personal hygiene and toilets shall be provided. 1.4.7 Hazardous substances shall be stored in a secure and separated area. 	<ol style="list-style-type: none"> 1.4.1 Check ventilation and temperature in the production area. 1.4.2 Check the light intensity. 1.4.3 Check records of analytical results of water quality used in rice polishing process if available (analysis once annually). 1.4.4 Check availability and sufficiency of cleaning facilities. 1.4.5 Check systems or facilities for drainage and waste disposal and records of waste disposal. 1.4.6 Check necessary personal hygiene facilities and toilets. 1.4.7 Check chemical storage area and practices.
2. CONTROL OF OPERATION	2.1 Paddy receiving	<ol style="list-style-type: none"> 2.1.1 Paddy to be received shall be from: <ol style="list-style-type: none"> 1. Those fields that have been certified or have followed Good Agricultural Practices for Rice, or 2. Known sources of production which can be traced. 2.1.2 Clear quality criteria for purchasing paddy shall be established and implemented. 2.1.3 The accuracy of equipment used for paddy quality inspection (paddy husker, polisher, round sieve used for sorting broken kernels) and amylose assay kit, if available, shall be checked according to their manuals. 2.1.4 Weighing equipment, and paddy moisture meters shall be calibrated at least once a year. 	<ol style="list-style-type: none"> 2.1.1 Check records of paddy receiving and operation and/or interview. 2.1.2 Check the purchasing operation and records of paddy quality inspection and/or interview. 2.1.3 Check records of the accuracy of equipment used for paddy quality inspection and amylose assay kit. 2.1.4 Check report of calibration.



	ITEMS	REQUIREMENTS	INSPECTION METHODS
2. CONTROL OF OPERATION	2.2 Soaking and steaming	2.2.1 Water used in soaking and steaming processes shall be clean and free of residues harmful for consumption. 2.2.2. Containers used in soaking and steaming processes shall be thoroughly cleaned after use 2.2.3 Weighing equipment, volumetric flasks and thermometers shall be calibrated at least once a year.	2.2.1 Check record of water quality analytical results (water to be analyzed at least once a year). 2.2.2 Check the record of operation and interview 2.2.3 Check the report of equipment calibration.
	2.3 Drying	2.3 Paddy that has moisture content above 15 percent shall undergo a drying process within 24 hours prior to storage.	2.3 Check the record of drying or sampling for quality control inspection and/or interview.
	2.4 Paddy storage	2.4.1 Paddy shall be stored according to the duration for safe storage and moisture content 2.4.2 Adequate ventilation shall be provided. 2.4.3 Circulation of paddy shall be properly controlled to ensure that there is no quality deterioration of paddy leftover.	2.4.1 Check the stored paddy and randomly check the moisture content. 2.4.2 Check the paddy storage area and record of operation. 2.4.3 Check the operation and the record.
	2.5 Dehusking, polishing and grading	2.5.1 Specific systems or preventive measures shall be provided for the control and elimination of dust generated during the production processes. 2.5.2 Dehusker, polisher, grader, color sorter, stone and metal debris separators shall be calibrated at least once a year. 2.5.3 Supervisors shall pass specific training.	2.5.1 Check the environment both inside and outside the production area as well as the performance of dust control and elimination system. 2.5.2 Check the record of equipment calibration. 2.5.3 Check records of specific training and/or interview supervisors.
	2.6 Transportation	2.6 Vehicles used for transporting rice products shall be clean, tightly closed and able to prevent the products from rain.	2.6 Check vehicles and the record of vehicle cleaning.
	2.7 Record keeping	2.7.1 The following information shall be recorded General information of rice mill owner 1. Paddy receiving. 2. Quality grading of rice products. 3. Quality parameters to be monitored. Performance test of machinery. 4. Validation and calibration of equipment, machinery and utensils. 5. Control and prevention of disease carrier animals. 6. Storage of paddy, rice products, and by-products. 7. Transportation of rice products. 8. Historical records of personnel, training and annual medical examination. 2.7.2 All records shall be maintained for at least 3 years.	2.7.1 Review records. 2.7.2 Check the records and their maintenance.
	3. MAINTENANCE AND SANITATION	3.1 Cleaning and maintenance	3.1 Cleaning and maintenance of buildings and areas including equipment, machinery and utensils shall be regularly practiced.
3.2 Controls of insects and disease carrier animals		3.2 Effective methods for prevention of insects and disease carrier animals shall be provided to prevent the contamination to rice products.	3.2 Check the control programs and records, particularly for paddy drying ground and storage of paddy, rice products and by-products as well as rice packing area.



ITEMS	REQUIREMENTS	INSPECTION METHODS
3.3 Disposal of waste, unused or unrelated materials	<p>3.3.1 Unqualified rice products shall be stored separately in order to prevent the mix-ups to the qualified rice products.</p> <p>3.3.2 Rubbish and waste shall be immediately removed from production area and disposed hygienically.</p> <p>3.3.3 Unused equipment, machinery and utensils shall be removed from production area.</p>	<p>3.3.1 Check the storage areas, record of operations and/or interview.</p> <p>3.3.2 Check the storage areas, record of operations and/or interview.</p> <p>3.3.3 Check operating area and/or interview.</p>
4. Personal Hygiene	4. Personnel and visitors who are allowed to enter production area shall adhere strictly to the personal hygienic practices.	4. Check the personal hygiene instruction of the manufacturer and the personal hygiene of on-duty personnel and visitors and/or interview.
5. Training	<p>5.1 Relevant personnel shall be trained on good hygienic practices and food safety.</p> <p>5.2 Machinery and quality control supervisors and personnel working in a product quality control laboratory shall be trained according to the duties and responsibility.</p>	<p>5.1 Check the training programme and the record of training and/or interview.</p> <p>5.2 Check the training programme and the historical records of personnel and/or interview.</p>

Effect of post-harvest management on paddy quality

Timely harvesting, threshing, drying, and stored properly can result in the production of good quality milled rice. Mixtures of chalky and immature kernels, mechanically stressed grain during harvesting threshing, delays in drying, and moisture migration in storage can result in broken and discolored milled rice. Blending/mixing different varieties with different physio-chemical properties during the post-harvest operations contribute to a large extent in the lowering of the milled rice quality produced. Purity is related to the presence of dockage in the grain. Dockage refers to material other than paddy and includes chaff, stones, weed seeds, soil, rice straw, stalks, etc. These impurities generally come from the field or from the drying floor. Unclean paddy increases the time taken to clean and process the grain. Foreign matter in the grain reduces milling recoveries and the quality of rice and increases the wear and tear on milling machinery

Paddy Storage General Recommendations

Paddy to be stored shall be clean and free of foreign matters, such as straw, stubble, weed, gravel, stone, soil and sand. Duration for safe storage depends on the moisture content of paddy as follows

STORAGE DURATION (MONTHS)	MOISTURE CONTENT (PERCENT)
2	14
8 to 12	12 to 13

Temperature and relative humidity inside the paddy storage should be controlled to be lower than the conditions that promote the growth of microorganism and pest (optimum conditions for microbial growth are at 30°C to 40°C and more than 65percent relative humidity. For storage pest, favorable conditions for their growth are at 25°C to 35°C and 65percent to 80percent relative humidity). If temperature and relative humidity are



too high, they will adversely affect the paddy quality.

Best Practices

Circulation of paddy shall be controlled so FIFO principles are applied. Paddy of deteriorated quality shall be managed to be completely removed from the storage area.

Thermometer and air moisture meters shall be calibrated at least once a year. Cleanliness of paddy storage area and the surroundings shall be maintained. Floors shall be dry, without water-logging and damp surfaces. Adequate drainage systems shall be installed with drain covers in order not to permit the accumulation of rubbish and waste as well as harboring areas for disease

carrier animals, such as birds, rodents, cockroaches and ants.

The stored paddy shall be inspected regularly for at least once a week, depending on the quality and quantity of paddy as well as the level of risk in order to prevent the damage caused by pests, birds, rodents or microorganisms. Random sampling for the inspection of pest infestation shall be carried out for at least once a month. In case of rot or quality deterioration of rice products is found, they shall be removed from the storage area immediately.

When the temperature and moisture content within a pile of paddy increase, those piles should be relocated or turned over periodically in order to release the excess of heat and the humidity accumulated within the pile.

General GMP Checklist	
ITEMS	REQUIREMENTS
A. Food Safety Management Systems	
1	SPECIFICATIONS INCLUDING PRODUCT RELEASE The business shall ensure that product specifications are adequate, accurate and ensure compliance with relevant safety, legislative and customer requirements. The business shall prepare and implement appropriate product release procedures.
1.1	Are specifications available for all product inputs (raw materials, ingredients, additives, packaging materials, rework) and finished products?
1.2	Are the available specifications compliant with relevant safety, legislative and customer requirements?
1.3	Are specifications up to date, unambiguous and available to relevant staff?
1.4	Are changes to specifications clearly communicated both internally and externally?
1.5	Is there a documented product release procedure in place? Does it effectively ensure that the final product meets the specification?
1.6	Is there a designated person with responsibility for controlling specifications?
2	TRACEABILITY The business shall establish a traceability system which enables the identification of product lots and their relation to batches of raw materials, primary and final packaging materials, processing and distribution records. Records shall include: <ul style="list-style-type: none"> • Identification of any out sourced product, ingredient or service. • Records of batches of in process or final product and packaging throughout the production process. • Records of purchaser and delivery destination for all products supplied.
2.1	Is a documented traceability system in place for every product that meets regulatory and customer requirements?
2.2	Is the traceability system, including work in progress, post-treatment and rework, fully operational and effective?



General GMP Checklist	
ITEMS	REQUIREMENTS
A. Food Safety Management Systems	
2.3	Are records enabling product identification available through all production stages: stock / inventory, work in progress, post processing and rework. Are records available from purchase through production and to immediate destination for all raw materials and packaging materials (primary and final product)?
2.4	Are there clear labelling procedures that ensure continuous identification of the product through all stages of production and delivery?
3	FOOD SAFETY INCIDENT MANAGEMENT The business shall demonstrate the ability to withdraw and recall affected product, contact relevant customers and maintain records of these incidents.
3.1	Can the business withdraw and recall affected product?
3.2	Are records of incidents maintained?
3.3	Are all incidents recorded and assessed to establish their severity and consumer risk?
4	CONTROL OF NON-CONFORMING PRODUCT The business shall ensure that any product which does not conform to requirements is clearly identified and controlled to prevent unintended use or delivery.
4.1	Is a documented procedure in place to identify and manage all non-conforming raw materials, product inputs, semi-finished and finished products, processing equipment and packaging materials?
4.2	Is the control of non-conforming product managed by competent people?
5	CORRECTIVE ACTION The business shall ensure that corrective action be undertaken as soon as possible to prevent recurrence of non-conformity.
5.1	Is a documented corrective action procedure in place to analyse any complaints and investigate non-conformities to prevent recurrence?
5.2	Are corrective actions (i.e. release, rework, quarantine, and rejection/disposal) identified and effectively implemented?
6	MANAGEMENT RESPONSIBILITY The business shall ensure there is management commitment to provide the resources to develop, implement and comply with their food safety programme.
6.1	Is there evidence that management is committed to provide the resources to implement and comply with their food safety programme?
7	RECORD KEEPING REQUIREMENTS The business shall ensure that records are available to prove the business is complying with the food safety system which includes all relevant regulatory and customer food safety requirements.
7.1	Are records available to support the compliance of the business with the food safety system which includes all regulatory and customer food safety requirements that apply?
7.2	Has the business set timescales for record retention which comply with regulatory or customer requirements?
8	CONTROL OF MEASURING & MONITORING DEVICES Measuring and monitoring devices critical to food safety and regulatory requirements shall be reliable.
8.1	Are measuring and monitoring devices critical to food safety and regulatory requirements reliable?
8.2	Are actions taken and recorded when measuring and monitoring devices are found to be outside of specified limits?
9	TRAINING The business shall ensure that all people are adequately trained in food safety and practices according to their job responsibilities.
9.1	Have all new people been effectively trained?
9.2	Have all relevant people received refresher training?



General GMP Checklist	
ITEMS	REQUIREMENTS
B. Good Manufacturing Practices (GMPs)	
1	<p>PERSONAL HYGIENE The business shall ensure the implementation of appropriate hygiene practices for all its people and visitors. Such practices shall result in sanitary handling and delivery of safe and quality products to customers. The Codex Alimentarius Commission's recommendation on personal hygiene shall be followed.</p>
1.1	Are personal hygiene requirements in place and applicable to all relevant people, contractors and visitors?
1.2	Are personal hygiene requirements compliant with legal requirements, if applicable?
1.3	Are communication procedures in place for people, contractors and visitors addressing actions to be taken in the case of an infectious disease?
1.4	Is a qualified person responsible to decide if individuals with a suspect illness may enter food areas and how these individuals are controlled?
1.5	Are people, contractors and visitors aware of and complying with the personal hygiene requirements?
1.6	Are people, contractors and visitors aware of and complying with the requirements for the wearing and changing of protective clothing in specified work areas?
2	<p>FACILITY ENVIRONMENT The business facilities shall be located and maintained so as to reduce the risk of contamination and enable the production of safe and legal products.</p>
2.1	Is the facility located, designed, constructed and maintained to ensure product safety?
2.2	Is the facility effectively maintained, cleaned and disinfected to prevent physical, chemical and microbiological product contamination?
2.3	Is the lighting of the appropriate intensity and design to ensure that food safety practice is effective?
2.4	Are structures, surfaces and materials that come in contact with food easy to maintain, clean and where appropriate disinfect?
2.5	Is the equipment positioned to ensure that there is no compromise to food safety from waste water or drainage?
2.6	Are the grounds and surrounding areas of the facility maintained and kept free of waste and accumulated debris?
3	<p>CLEANING & DISINFECTION The business shall ensure appropriate standards of cleaning and disinfection shall be maintained at all times and throughout all production stages.</p>
3.1	Are documented cleaning and disinfection procedures in place and effective, including verification activities, to ensure the cleanliness of the facility, utilities and equipment?
3.2	Are cleaning equipment, utensils and chemicals clearly marked, stored in a segregated area away from product, equipment, packaging and suitable for intended use?
3.3	Are qualified, trained people used for cleaning and disinfection?
4	<p>PRODUCT CONTAMINATION CONTROL The business shall ensure appropriate facilities and procedures are in place to minimise the risk of physical, chemical, or microbiological contamination of product.</p>
4.1	Are physical barriers or effective procedures in place to reduce and avoid the risk of any potential physical, chemical or microbiological contamination?
5	<p>PEST CONTROL The business shall ensure controls are in place to reduce or eliminate the risk of pest infestation (including rodents, insects and birds).</p>
5.1	Is there evidence of pest infestation?
5.2	Is an effective pest control programme in place?
5.3	Are the controls appropriate in relation to the product, raw material and facility?



General GMP Checklist

ITEMS	REQUIREMENTS
5.4	Is the inspection programme undertaken by a competent person at an appropriate frequency and are findings addressed?
6	WATER QUALITY The business shall ensure that the quality of water, ice or steam in contact with food product is suitable for its intended use. All food contact water, ingredient water and water used in cleaning and sanitising operations shall be from a potable source.
6.1	Are there processes in place to ensure that the quality of water, steam and ice does not compromise the food safety of the finished product?
6.2	Are documented procedures in place to prevent the cross-contamination of potable water by non-potable water?
7	STAFF FACILITIES The business shall ensure that staff facilities be designed and operated so as to minimise food safety risks.
7.1	Are suitable changing rooms provided for staff?
7.2	Are toilets provided, operational, accessible and adequately segregated from processing and food handling areas?
7.3	Are suitable and sufficient hand-washing facilities provided and accessible?
7.4	Are separate lunch room facilities provided away from production, packaging and storage areas?
8	WASTE MANAGEMENT The business shall have a programme in place for the collection and disposal of waste material.
8.1	Are suitable provisions in place for the storage and removal of waste?
8.2	Are containers designated for inedible products, waste or by-products clearly marked and properly utilised?
9	STORAGE AND TRANSPORT The business shall ensure that all raw materials (including packaging), semi processed product and finished product be stored and transported under conditions that protect the product.
9.1	Are there adequate facilities for the storage of food and ingredients?
9.2	Are the food storage facilities constructed to effectively protect materials and finished product from contamination during storage?
9.3	Is the food transport appropriate to minimize deterioration of food (e.g., by temperature and humidity control).
C. Control of Food Hazards	
1	PRELIMINARY TASKS The business shall identify and comply with regulatory and customer requirements related to the product and to the product category. <ul style="list-style-type: none"> • Task 1: Establish a multi-disciplinary food safety team. • Task 2: Describe the product and product category of all ingredients (including raw materials, packaging, finished product) and the required conditions for storage and distribution. • Task 3: Describe the intended use of the product and identify the target consumer. • Task 4: Describe all of the steps taken to produce the product in a process flow diagram. • Task 5: Compare the process flow diagram with the production process to ensure it is accurate.
1.1	Has the business identified and complied with regulatory and customer requirements related to the product and product categories?
1.2	Has a team with different responsibilities for food safety undertaken the tasks described in this section of the checklist (Tasks 2-5)?
1.3	Is there a complete product description available of the product/product category including all ingredients including raw materials, packaging, finished product and conditions for stage and distribution?
1.4	Has the intended use of the product been described and the target consumer been identified?
1.5	Have all of the process steps taken to produce the product been described in a process flow diagram?
1.6	Has the process flow diagram(s) been compared to assure it accurately reflects the process?

6.5 Annexure 5: WFP Standards for QC



6.5.1. Checklist for accompanied Food Inspection

Intended users

Any WFP staff that is required to witness and report on the on-the-spot inspection services provided by a contracted third party (Inspection Company).

root-causes for deviations between inspection reports and actual food quality received, and indicate any critical incompliances with the contractor's Scope of Work.

Purpose

To gather basic information on the on-the-spot practices of the WFP appointed third party inspectors.

The collected data can also provide complementary factual information for the overall evaluation/assessment of the service providers' performance, and determination of gaps/capacity building required for the service provider.

This information can assist in identifying

Checklist for accompanied food inspection

INSPECTOR DETAILS

Name of company: _____

Name of inspector: _____

TOOLS OF INSPECTOR (mark with X):

- Sampling spear
- Sampling scoop
- Quartering equipment
- Grading sieve of size _____ mm
- Moisture meter
- Hand TALLY counter
- Portable weighing scale
- Aflatoxin Testing Kit
- Protective Equipment like gloves, masks
- Sampling bags. Are they in sufficient quantity _____
- Markers / Writing equipment
- Equipment sterilizing – Alcohol or any other material
- Copy of WFP's guide to sampling and copy of WFP specifications



Other:

Activities Performed (Mark With X)

- Sampling of consignments
- On-the-spot food grading
- Check of bags: _____ markings? _____ stitching? **Picture required**
- Check of bag stitching
- Check of warehouse facility Pictures required
- Check of trucks used for food dispatch
- Weigh verification for _____ (number) bags
- TALLY
- Check if any fumigation activities

Sampling Methodology (To Be Filled Per Location)

Location of sampling: _____

- Timing of sampling. Samples were withdrawn (mark with X): Picture Required
- From stacked products at the supplier warehouse
- During stack dismantling and loading of trucks (dispatch of goods from supplier)
- During loading of containers (goods in movement)

SUPPLIER					
PRODUCT					
PO #					
SI#	TOTAL MT OF SI	BAGS SIZE (KG)	TOTAL # OF BAGS SAMPLED	# SPEARINGS PER BAG	SIZE (KG) OF AGGREGATE SAMPLE

The bags sampled were withdrawn (mark with X where relevant):

- In a representative manner, covering the entire volume of the stack (top-bottom-all 4 sides-centre)



- Only from specific parts of the stack that were immediately and easily accessible (e.g.
- In a sterile hygienic manner (i.e. sampling tools were sterilized with ethanol prior to sampling or entire packs were withdrawn without opening)
- The inspector washed his hands and/or sterilize with alcohol before sampling
- The sample mixed and divided properly

Comments on ease of access to stack and overall condition of the warehouse:

The Sample Markings/Label Include:

- Date
- Stack markings – SI / PO
- Location
- Name of warehouse
- Quantity
- Location in warehouse
- Inspector Name
- Inspector initials

Duration of inspection: _____ hours/location

Generic remarks or observations on inspector’s practices and deeds

Name of witnessing WFP staff:

Date:



6.6 Annexure 6: WFP Warehouse Management Manual

6.6.1. The Storekeeper's Responsibilities

Food may be spoiled and lost during delivery, storage and distribution. Many of these losses can be reduced through improved handling and storage management practices.

This handbook provides guidelines on the basic principles of good storage management practice for foodstuffs, in particular:

- food aid commodities;
- food grains.

It is aimed at storekeepers responsible for warehouses, and attempts to cover some of the basic principles of:

- receipt and despatch of goods;
- handling and stacking;
- warehouse maintenance and cleaning;
- inspection of stocks;
- pest control;
- waste disposal;
- documentation and record-keeping.

The duties of the storekeeper are not simply to account for what has been received and issued, but to act as supervisor, inspector and manager. The storekeeper's objective is to maintain the quality of the food and to minimise losses.

6.6.2. The Store Premises

A well-maintained and orderly warehouse not only looks good, but helps to protect the stored food from damage and loss. The storekeeper must ensure that the whole site, as well as the building, is kept in a satisfactory condition.

Boundary fences and gates: must be secure against unauthorised entry of people and animals:

- repair or replace damaged sections;
- arrange security guard;
- ensure adequate lighting;
- fit standard padlocks.

Roads and hard standing: areas should be safe for vehicles and reduce risks of them becoming stuck:

- make sure drainage is working;
- fill potholes;
- check signs.



Open ground: should be kept clear and tidy to reduce problems with rodents:

- remove rubbish;
- cut grass, bushes and trees.

Weighbridge: if provided, must be looked after carefully, and any instructions on checking, calibration and maintenance strictly followed.

Where possible, maintenance and small repair jobs should be undertaken by warehouse staff as soon as possible. For larger jobs, authorisation should be requested promptly.

Store buildings: must be kept in good condition inside and outside. A programme of planned maintenance is advisable. (Figure 7)

Roof: look for leaks, repair them or ask for repairs to be promptly carried out. Until these are done, protect any food underneath with waterproof sheets. Tighten any loose bolts, screws or nails holding roof sheets.

Doors: oil hinges or runners. Check proper opening and closing. Check locks and bolts.



Figure 7: Maintenance of the building (exterior).

Windows and ventilators: must open and close properly. Replace broken panes. Fit mesh to keep out birds.

Gutters and drains: clean before wet season. Keep channels clear, repair where necessary.

Walls: should be as smooth as possible. Repair defective cement rendering, fill cracks. Keep the walls clean, and whitewash them. (Figure 8)

Floor: repair cracks in concrete floors. Fill gaps in other kinds of floor to prevent food and dirt collecting.



Figure 8: Maintenance of the building (interior).

Fire precautions:

fire extinguishers should be provided on holders fixed just inside the doors, where they can be reached easily in an emergency. They should be serviced regularly.



Smoking should be forbidden inside, or close to, the store.

Hygiene: clean the store before putting food into it (see Section 6.6.6). It is important that the storekeeper has the necessary cleaning equipment, e.g. brooms and shovels (see Section 6.6.13).

6.6.3. Unloading and Checking

Check the consignment before unloading it from the vehicle. If wet or damaged packages are seen:

- consider whether a problem should be reported before accepting the commodities;
- if cargo superintendents are present ensure they are informed about the damage;
- sign for the commodities as damaged;
- take special care of the damaged commodities during storage.

Count: the packages as they are unloaded - write the details of the tally on the delivery note or waybill and ask the truck driver to countersign. (*Figure 9*)

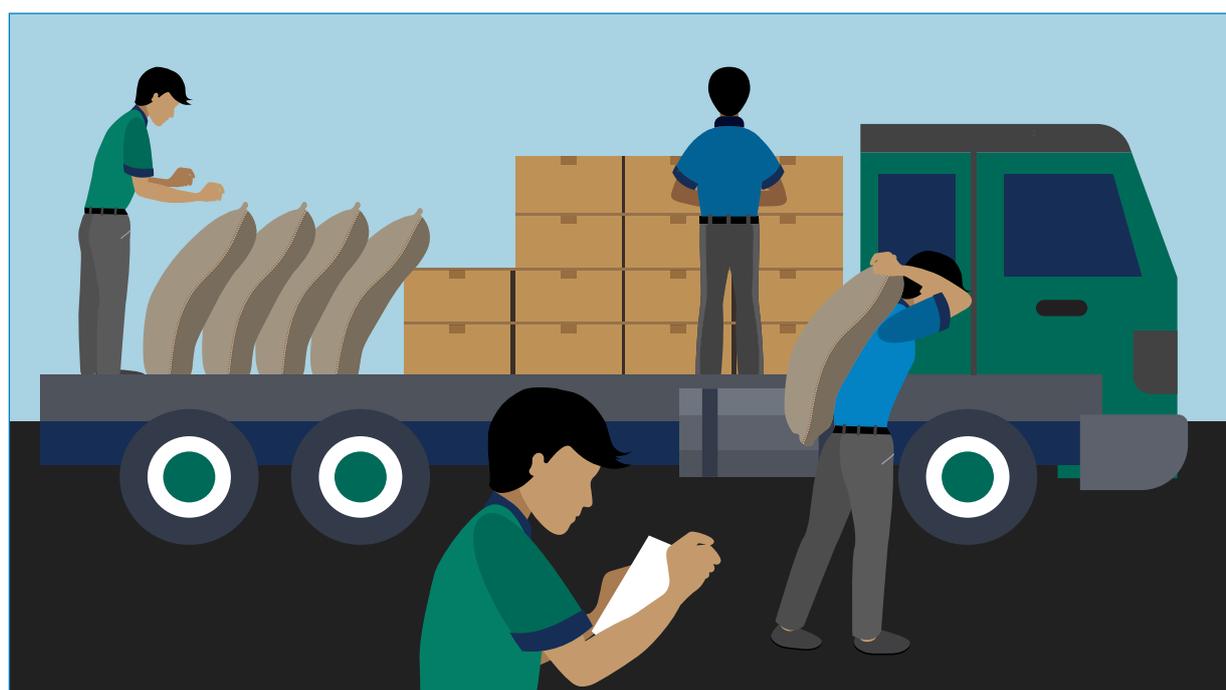


Figure 9: Unloading and checking of packages.

Inspect each container. Look for:

- damaged packages; (*Figure 10*)
- wet or water-stained packages; (*Figure 11*)
- open packages; (*Figure 12*)

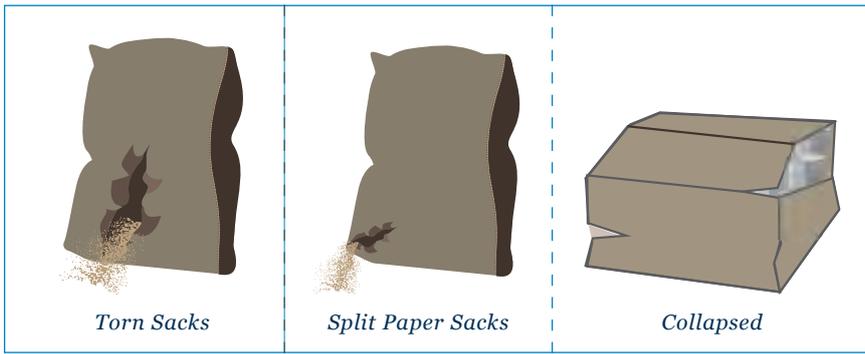


Figure 10: Damaged packages.



Figure 11: Wet packages.

- leakage and spillage; (Figure 13)
- damaged packages inside cartons; (Figure 14)
- insects on the surface of packages; (Figure 15)
- insects in foodstuffs, or insect damage. This will only be seen if a sample of the food is taken and examined; (see Section 6.6.7) (Figure 15)
- Underweight bags. (Figure 16)

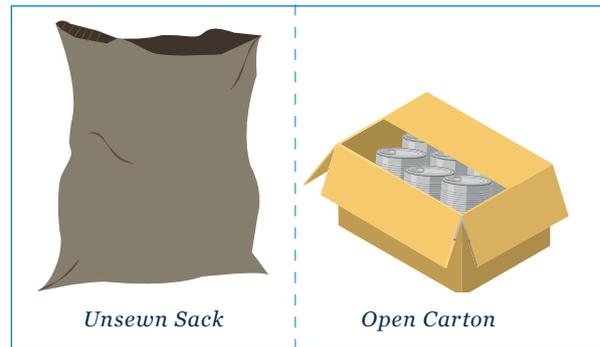


Figure 12: Open packages.

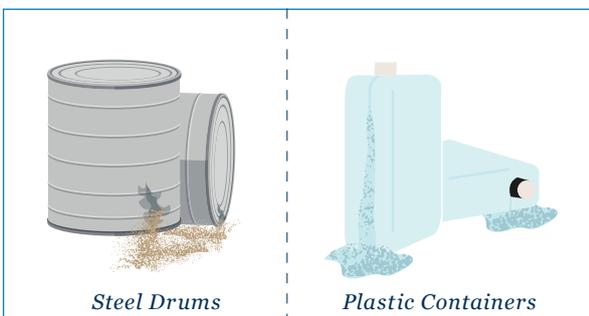


Figure 13: Leakage and Spillage.

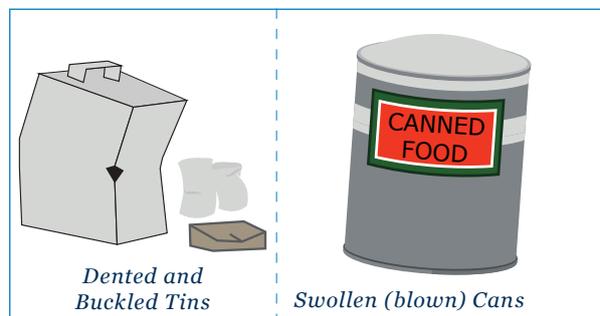


Figure 14: Damaged packages inside cartons.

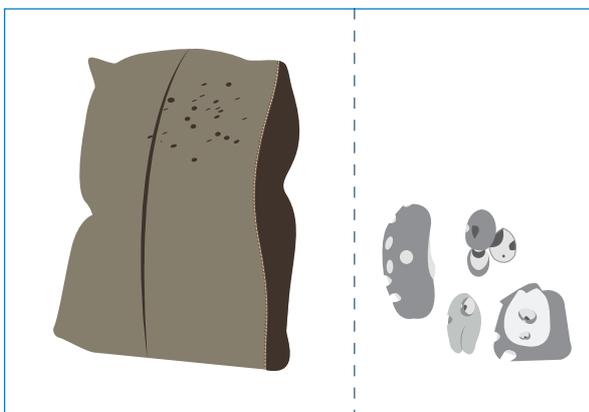


Figure 15: Insects on the surface of packages and insect damage.

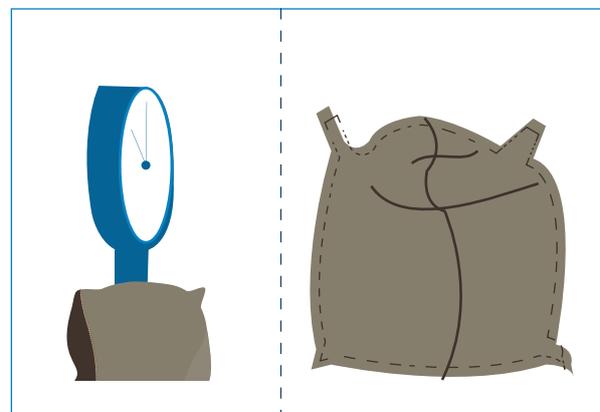


Figure 16: Underweight bags.



If you find any of these defects:

- separate the damaged goods from the rest of the delivery;
- record the number of damaged packages;
- stack the defective packages separately;
- do not mix different types of damaged goods;
- deal with wet packages as you have been instructed.

If you have no special instructions for dealing with any of these defects, ask for them.

Then, as soon as possible:

- repair damaged packages; (Figure 17)
- repack split bags; (Figure 18)
- Restack alongside main stacks or above sound packages. (Figure 19)

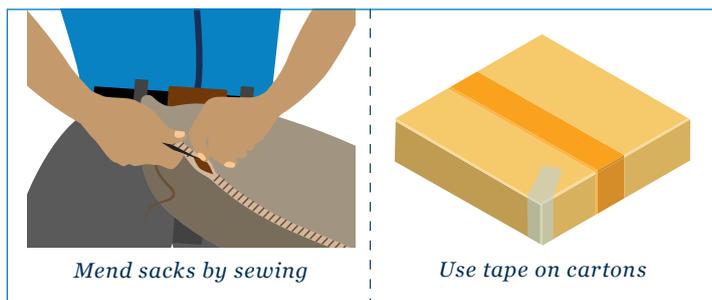


Figure 17: Repair damaged packages.

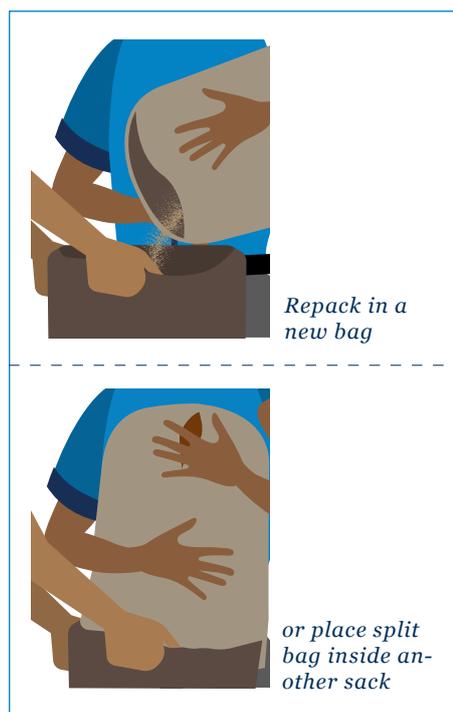


Figure 18: Re-pack split bags.

Spilt grain: should be re-bagged, if possible making up to the original bag weight.

Leaking vegetable: oil should be repacked in clean spare containers.

When food is in badly damaged packages it may be unfit to eat (see Section 6.6.9).

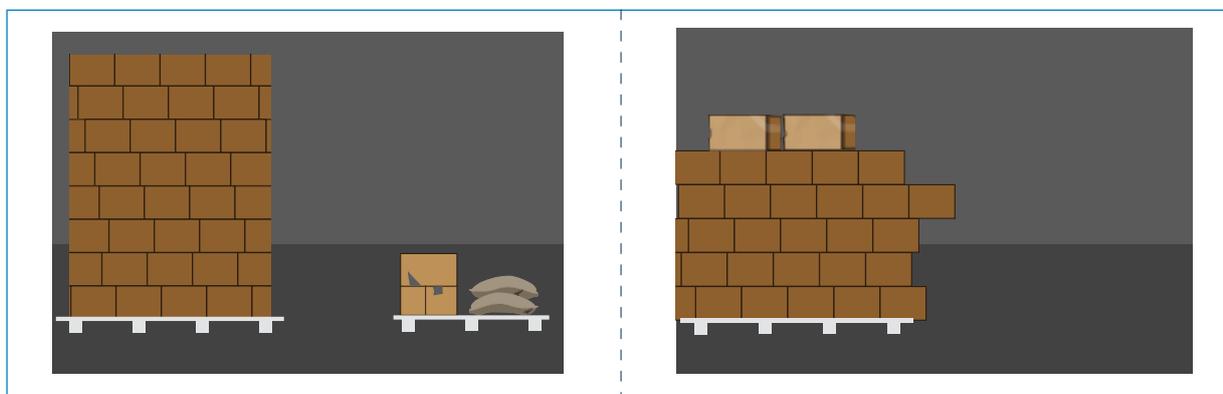


Figure 19: Re-stack repaired packages separately.



6.6.4. Handling

Careful handling will help to prevent damage to packages and keep losses of food low. (Figure 20- 23)

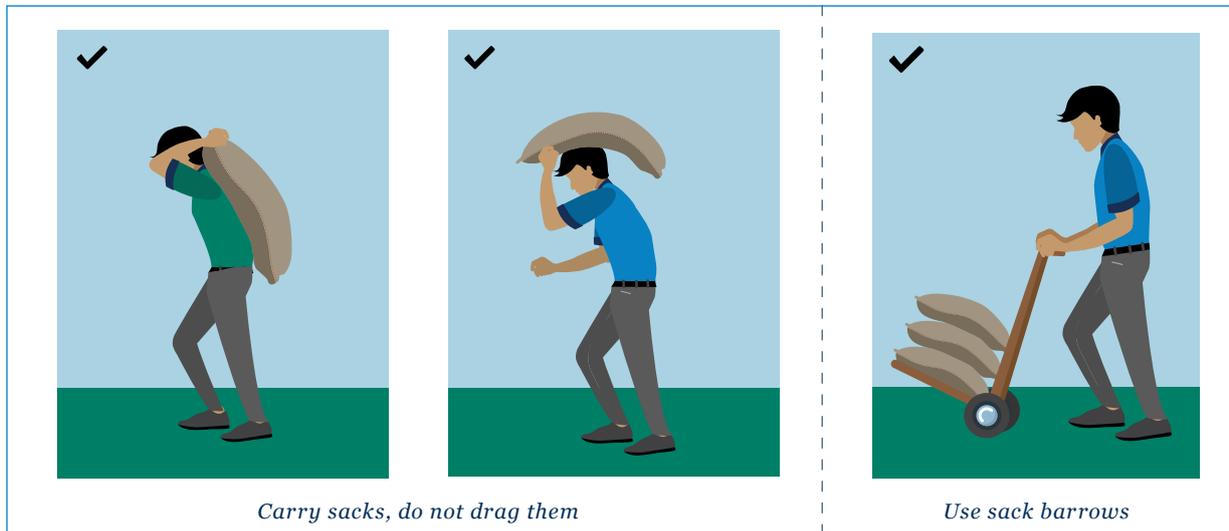


Figure 20: Handling of sacks.

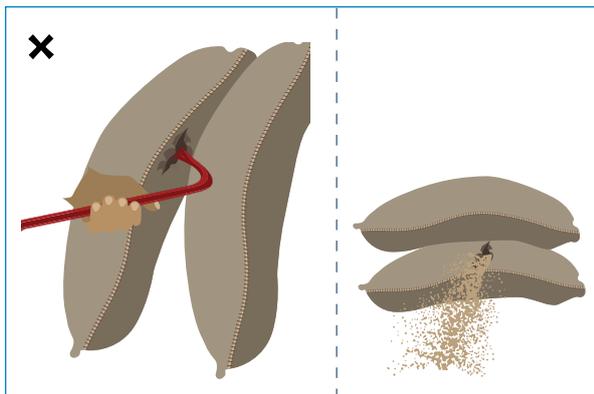


Figure 21: Do not use hooks, grain spills from the holes.



Figure 22: Do not throw or drop this will split any package, especially paper sacks.



Figure 23: If flour or grain is wet it will go mouldy-grain may even germinate.



6.6.5. Stacking

Stack Layout

Plan the layout of stacks before the goods arrive. Clean the floor before building a stack.

Calculate the floor space needed for each foodstuff, taking into account:

- quantity to be stored;
- type of commodity and package;
- dimensions of package;
- height of stack - this may be limited by
 1. package type;
 2. height of store;
 3. width of stack - the stack must not be higher than it is wide;
 4. size of available fumigation sheets.

Make stack layout plan. (Figure 24)

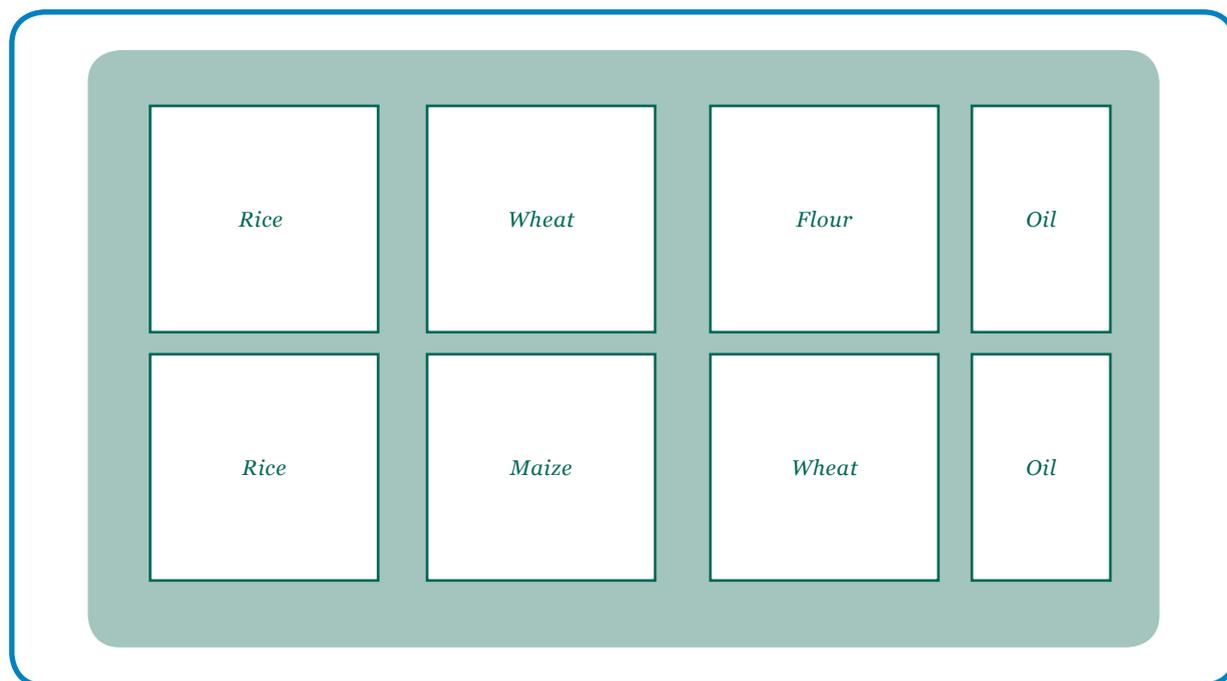


Figure 24: Sample stack layout plan.

Large Store

Trucks should not be allowed inside, unless the store has been certified as suitable by a recognised authority, e.g. an engineer. (Figure 25)

If trucks are allowed to enter, the store layout should provide wide aisles between opposite pairs of doors.

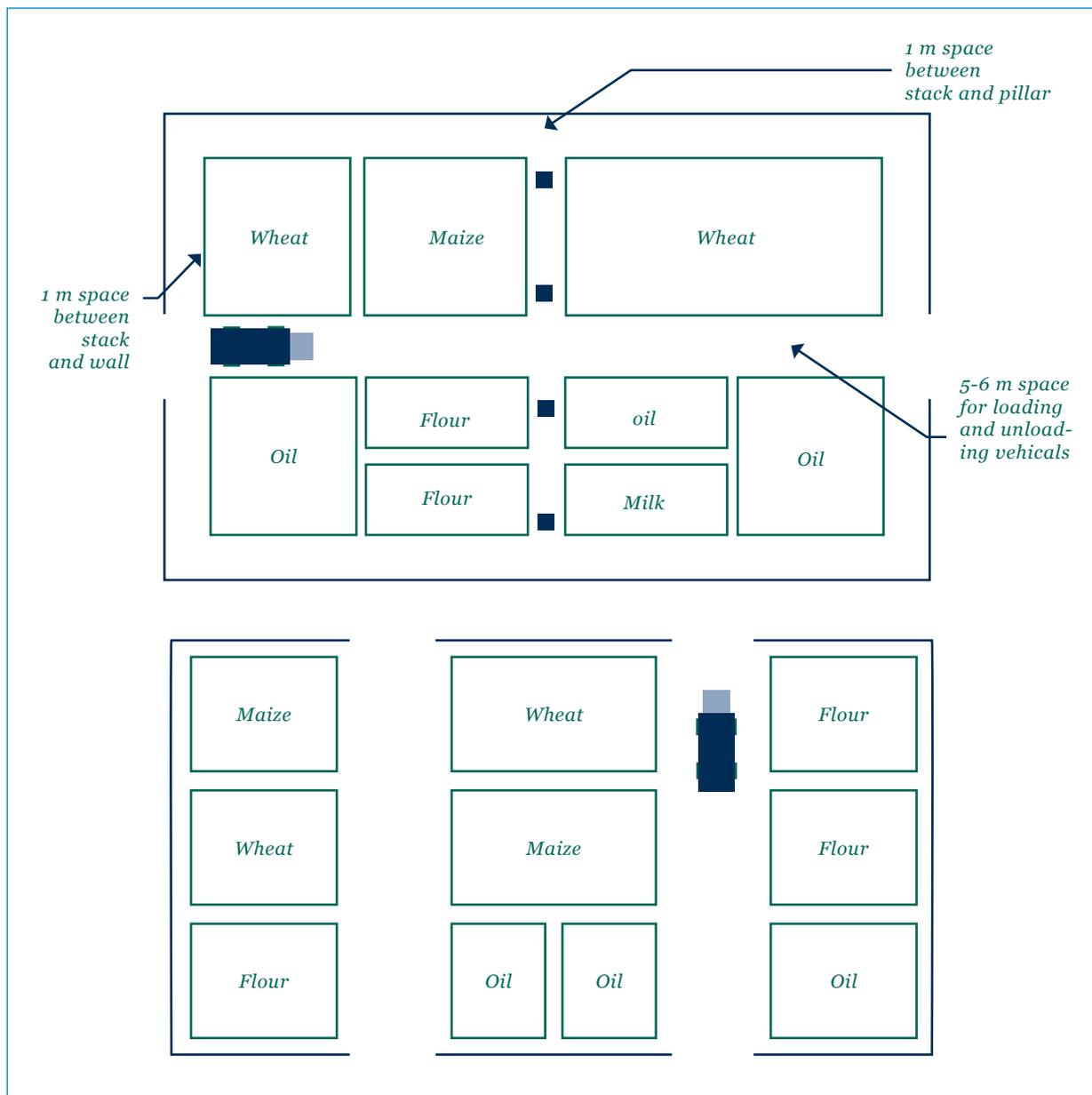


Figure 25: Layout of a large warehouse.

Small Store

There is no need for aisles wide enough for trucks, but there must still be sufficient room for staff to move and work between stacks. The spaces should never be less than you need to walk all the way round every stack. (Figure 26)

- Access space must allow easy loading and unloading;
- If loading machines are used, extra space is needed;
- Lines painted on the floor can serve as a guide for leaving enough space when positioning stacks. (Figure 27)

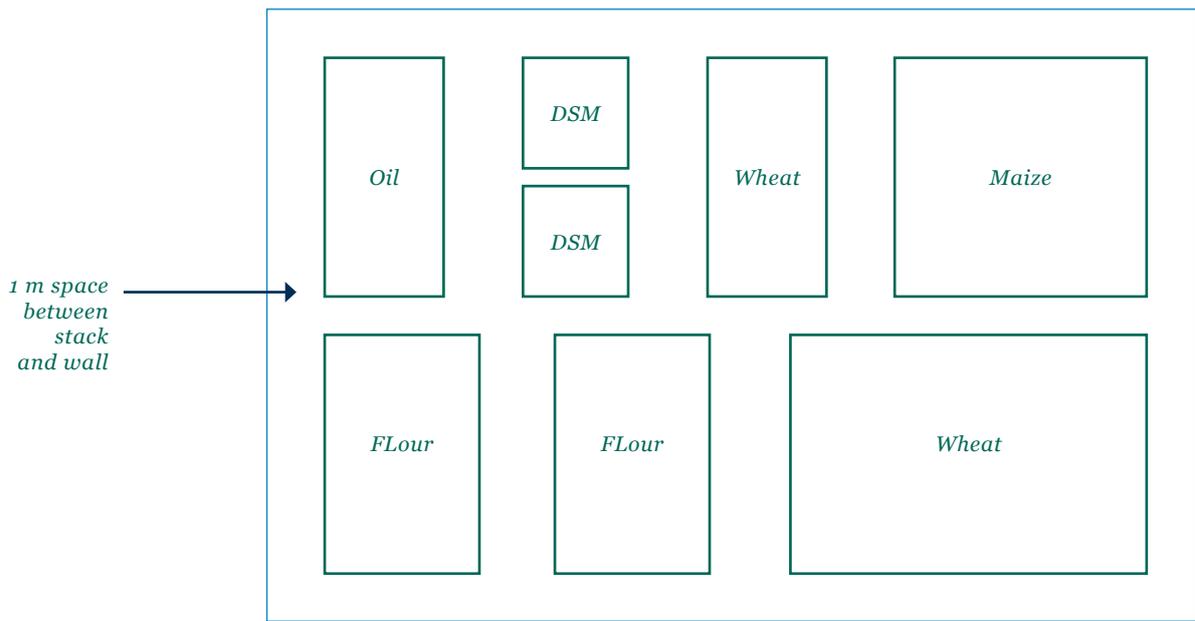


Figure 26: Layout of a small warehouse.

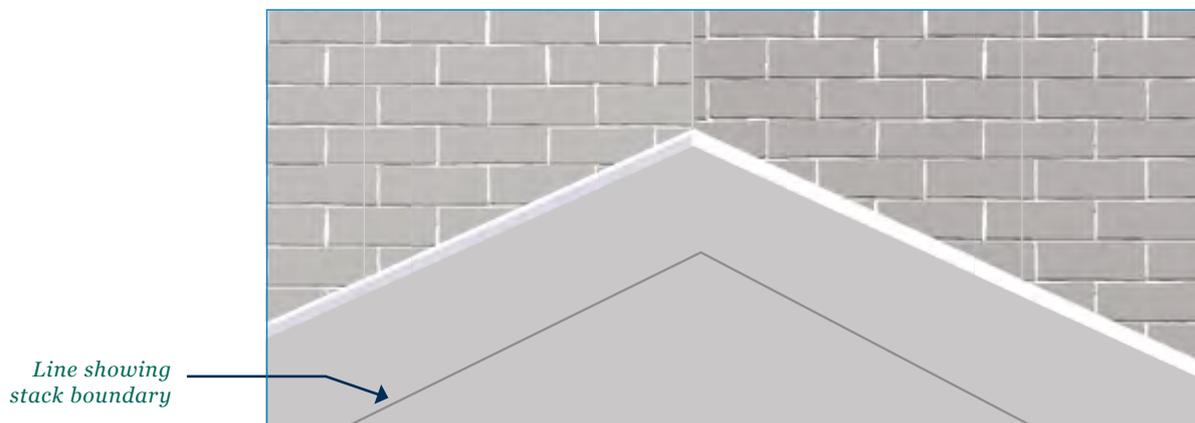


Figure 27: Stack boundary.

Different commodities, different packages and different consignments (new and old stocks) must be placed in different stacks. (Figure 28)



Figure 28: Keep food commodities separate from general stores.



Never store agricultural chemicals such as pesticides and fertilisers or cement in the same store as food.

Shipping Instruction (SI) numbers or Commitment Request (CR) numbers accompany the consignments from first receipt to final distribution to beneficiaries. Consignments with different SI or CR numbers must be stacked separately. (Figure 29)

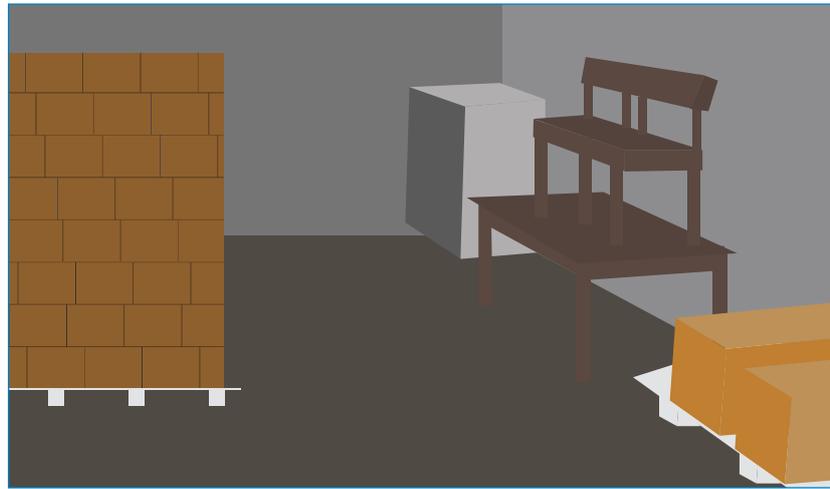


Figure 29: Separate packaging for agricultural and non-agricultural products.

Stacking

Stacks should be built on dunnage. It protects the food from dampness, allows ventilation and assists with fumigation. Strong pallets make ideal dunnage. If there are too few pallets then priority should be given to using them for flour and blended food.

Types of dunnage includes pallets, as shown in (Figure 30-34).

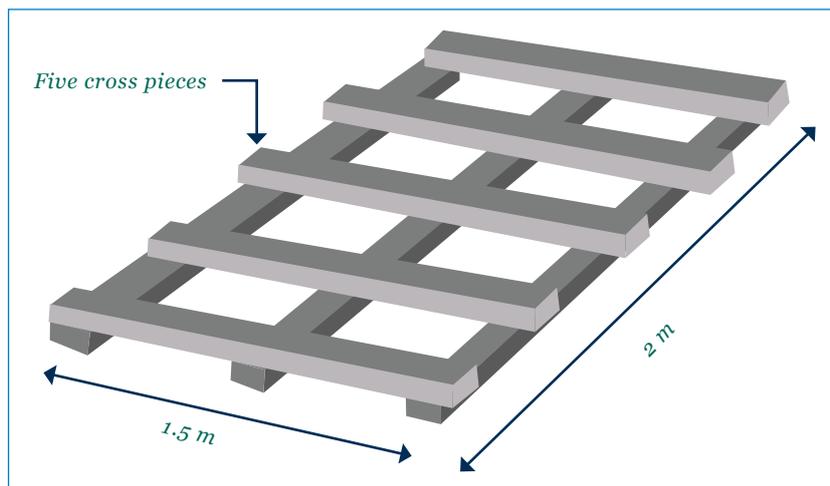


Figure 30: Round poles single layer.

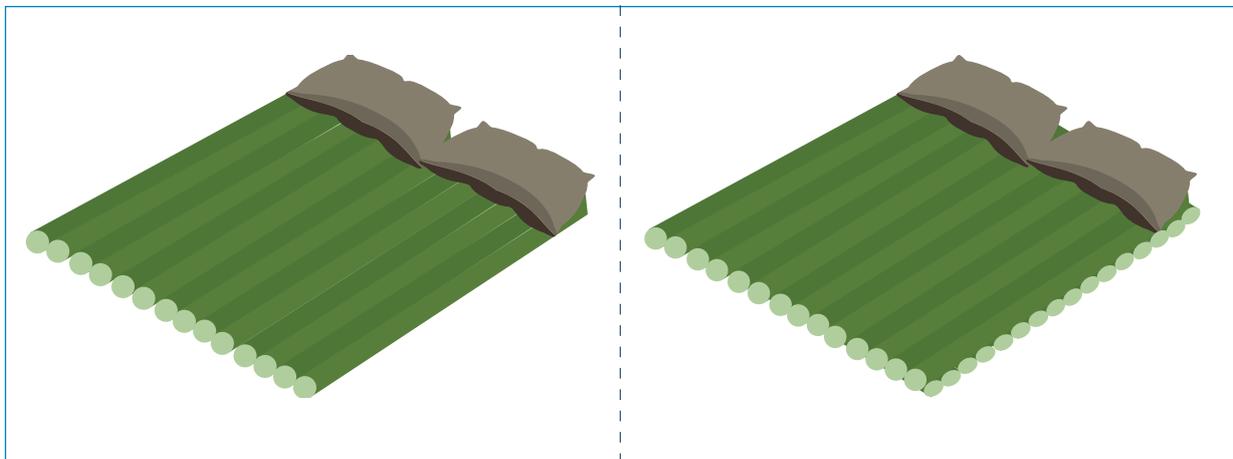


Figure 31: Round poles, Double layer at right angles.



Figure 32: Dunnage should be level, otherwise the stack may be unsafe.

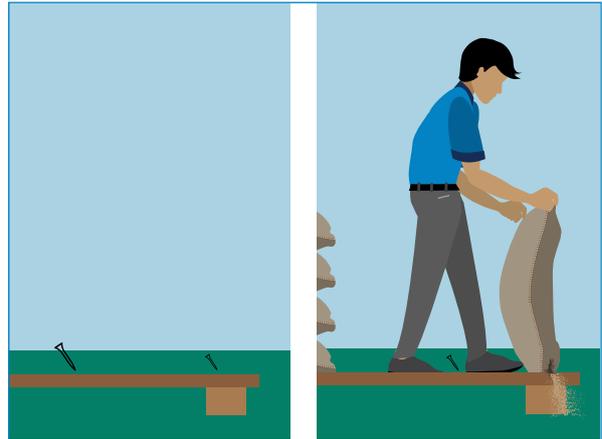


Figure 33: Remove projecting nails and splinters or the bottom bags may be torn and food spilt.

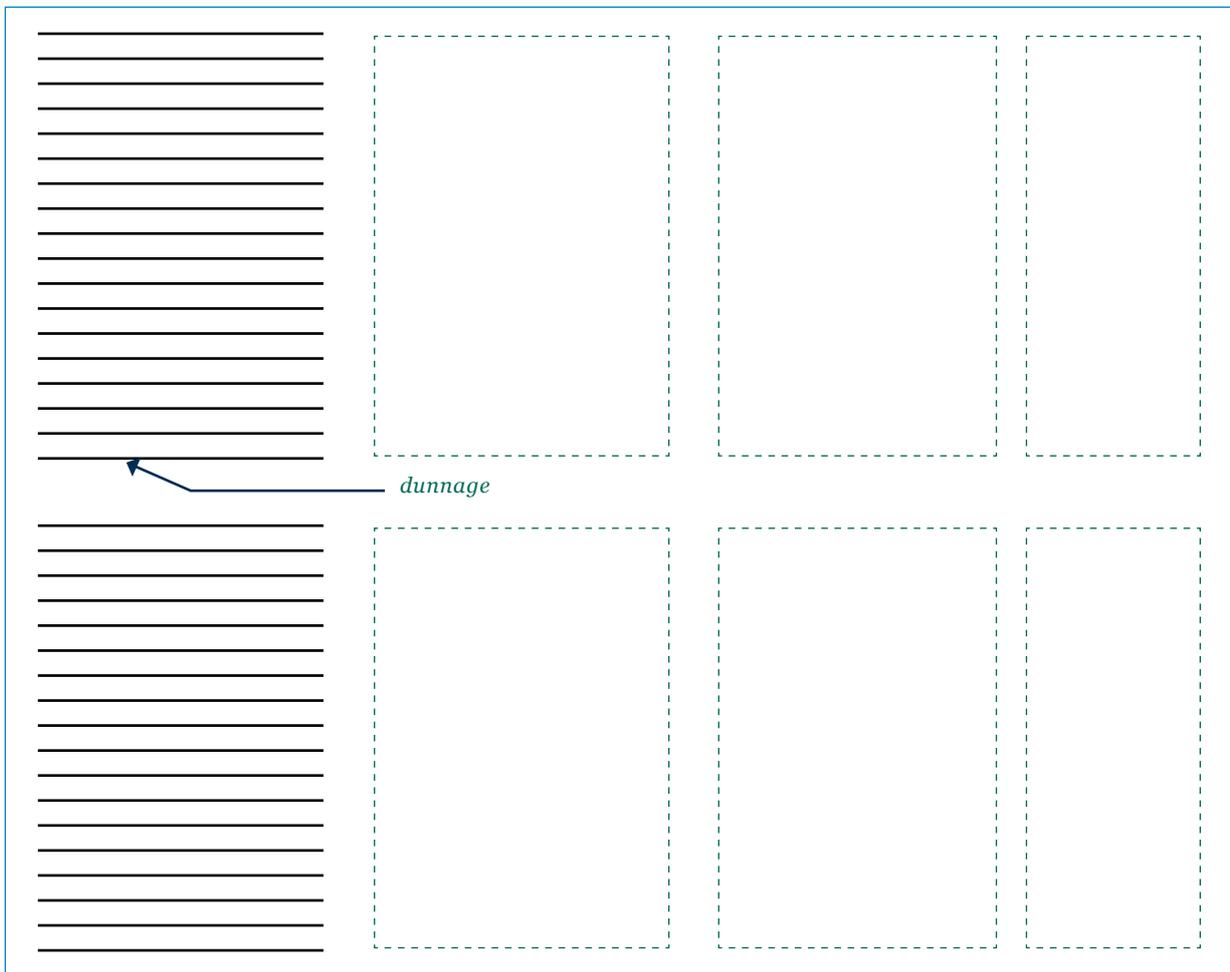


Figure 34: Place dunnage in position.

Place first layer of packages. Stacks should be built in an orderly way so that the quantity in a stack can be counted easily. Two examples of layouts for sacks with length twice the width are shown in (Figure 35).

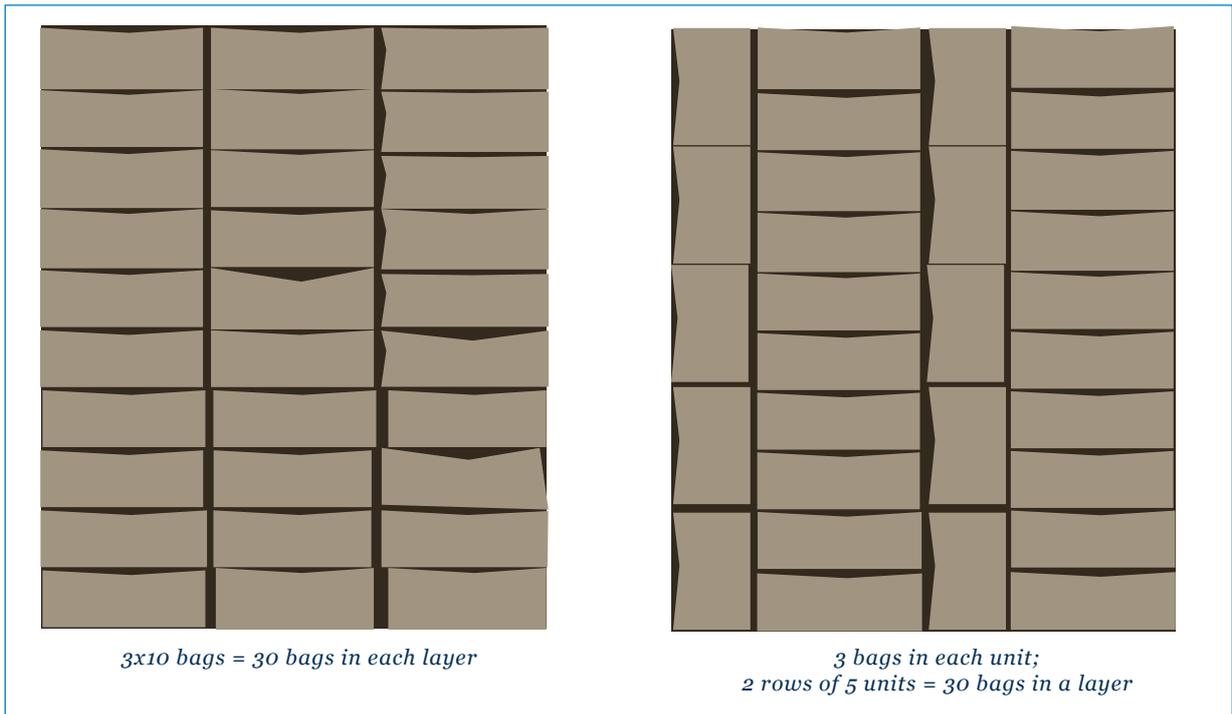


Figure 35: Sample stack layouts.

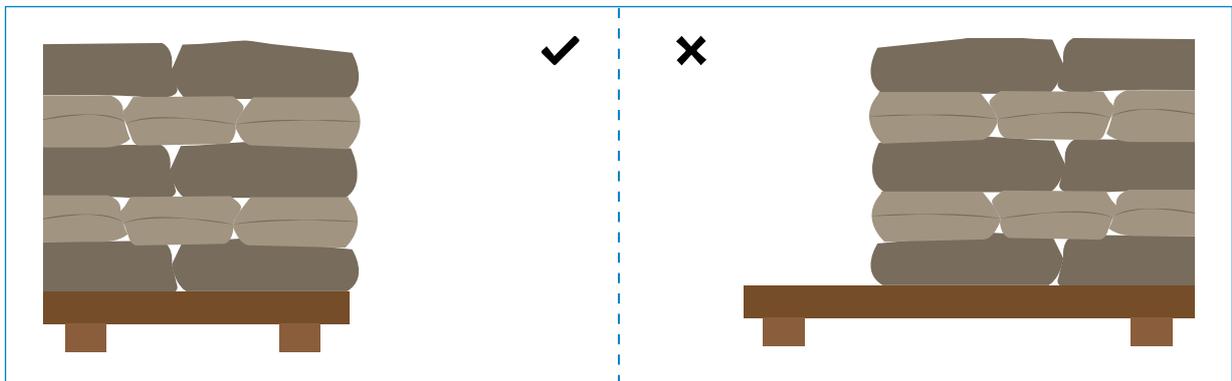


Figure 36: The stack should be built to give a firm bonded or interlocked stack, which will be safe.



Figure 37: Bonded vs unbonded stacking.



Bonded stacking can be obtained by placing each layer of bags in the opposite direction from the layer below. For example (*Figure 38-39*):

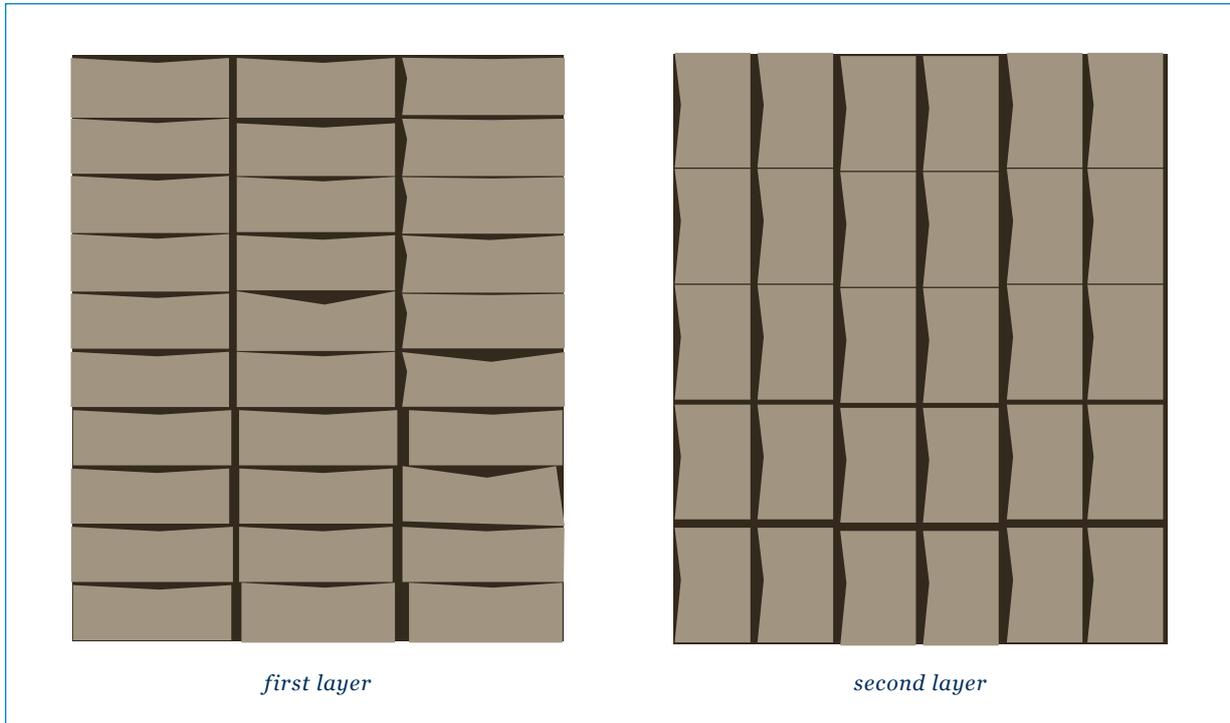


Figure 38: 1st and 2nd layers in bonded stacking layout.

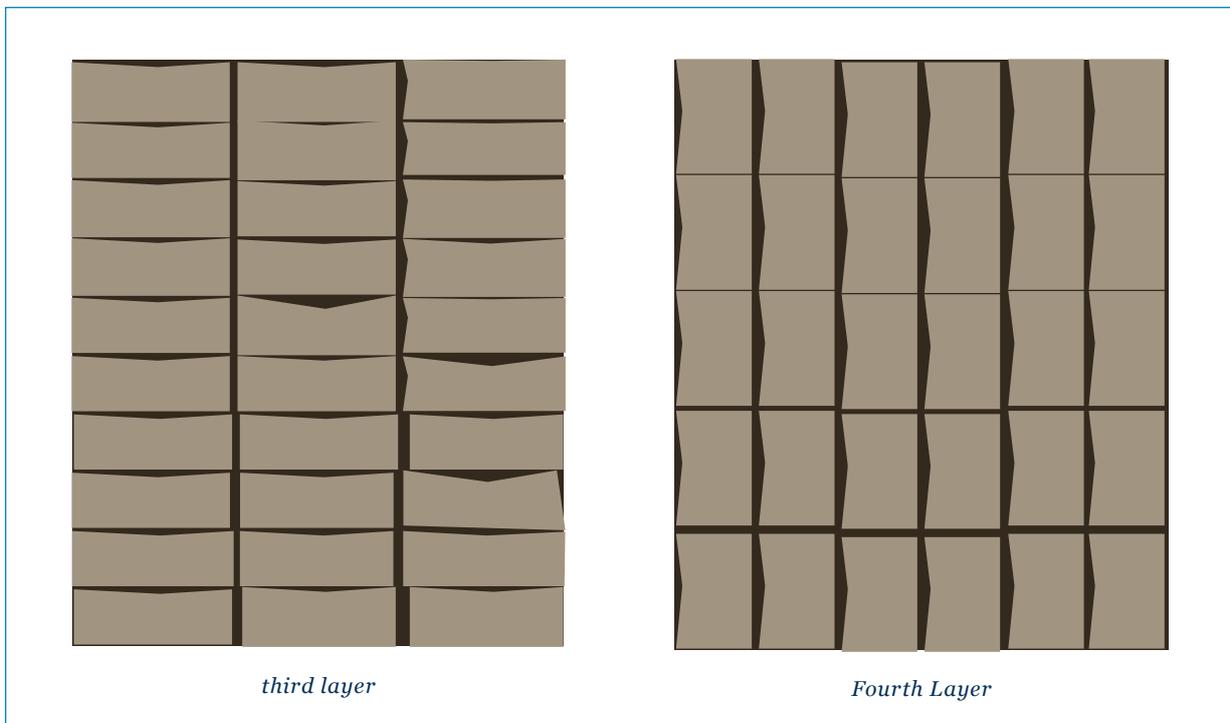


Figure 39: 3rd and 4th Layer of bonded stacking layout.



and so on, in the same pattern, to the top of the stack. Normally, after the first few layers, the stack will be built up in steps from one end, not in complete layers. However it is important to keep the pattern correct. Alternatively, more stable bonding can be achieved with 3-bag units. (Figure 40)

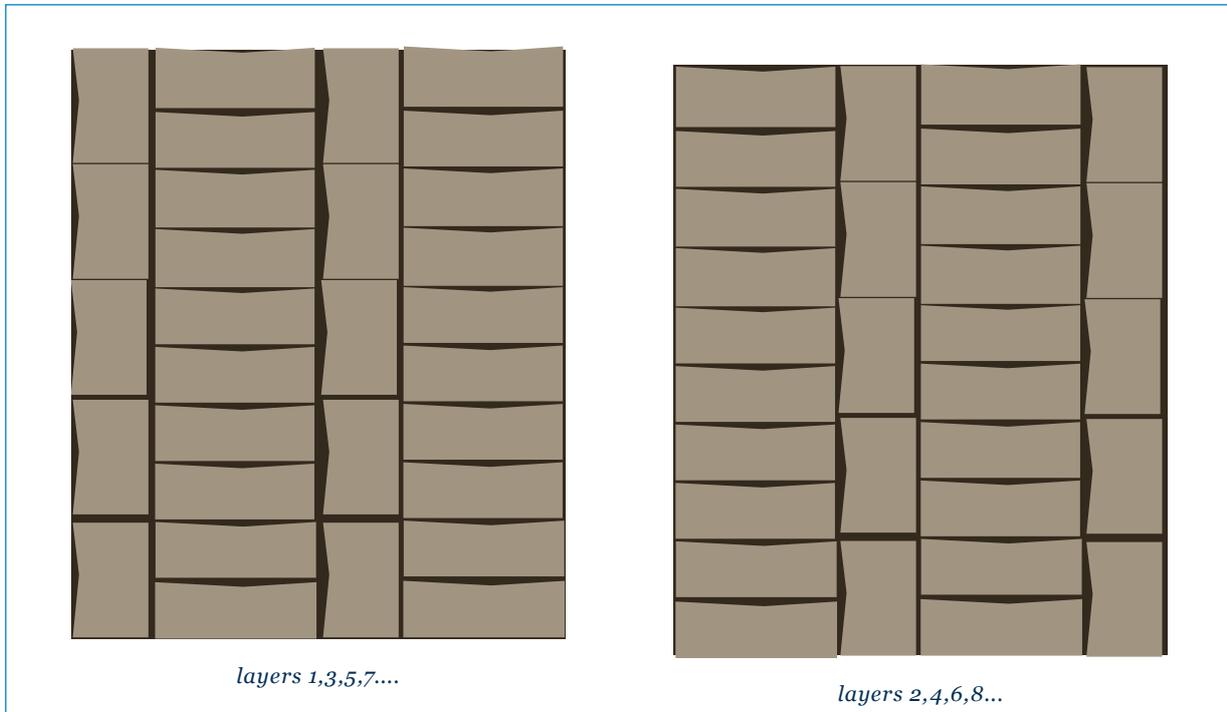


Figure 40: Stacking pattern for 3 bag units.

When the sack length is about 1.5 times the width, stacking based on 5-bag units can be used. (Figure 41)

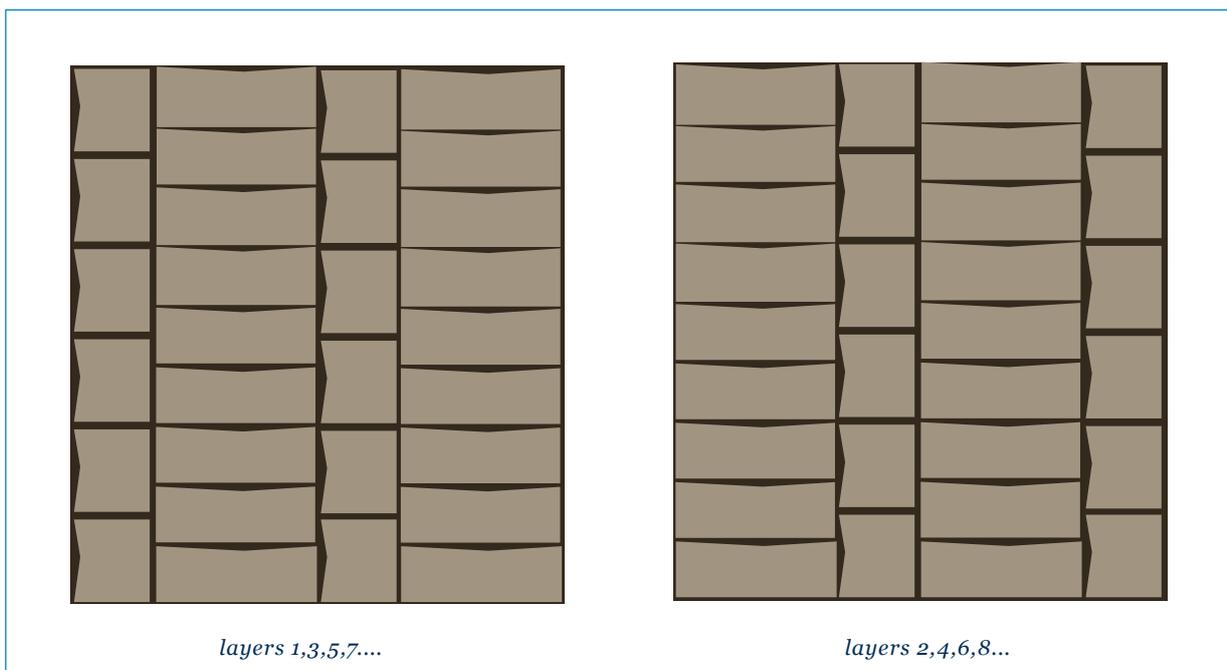


Figure 41: Stacking pattern for 5 unit.



Stacking in 3 or 5 bag units is usually preferable if the commodity is to be removed from the stack gradually, over a long period, as individual units can be removed to keep the stack end straight. Other arrangements for bonding stacks are possible.

Remember

Stack damaged and repaired packages separately.

Observe stacking instructions on packages. Stack oil in tins or bottles the right way up, or they may leak.

Build the stack up to a reasonable height but there should be space between the stack and the roof to permit inspection and pest control. This space will also facilitate ventilation. (Figure 42-46)

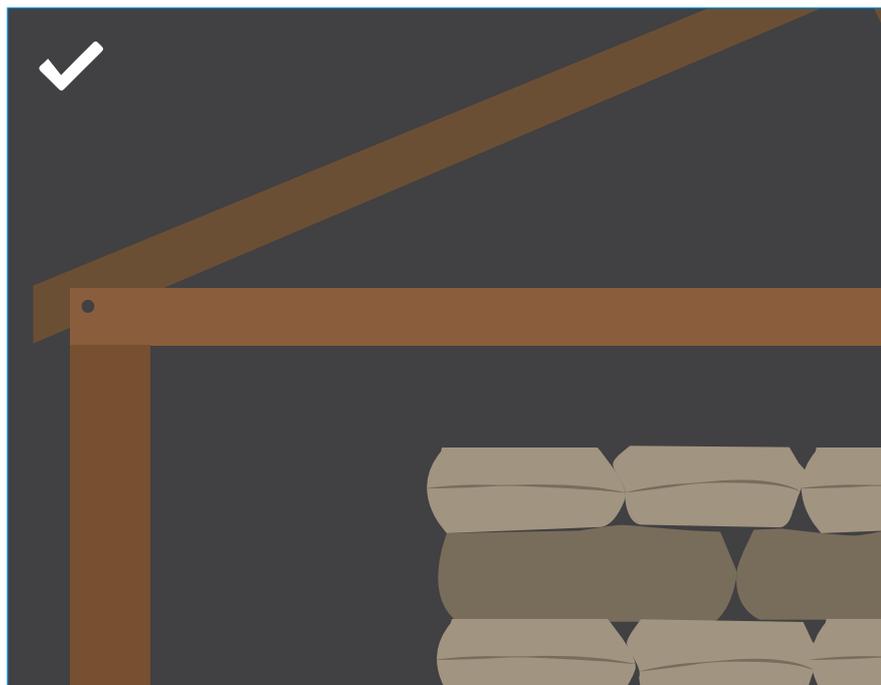


Figure 42: Space between stack and roof.

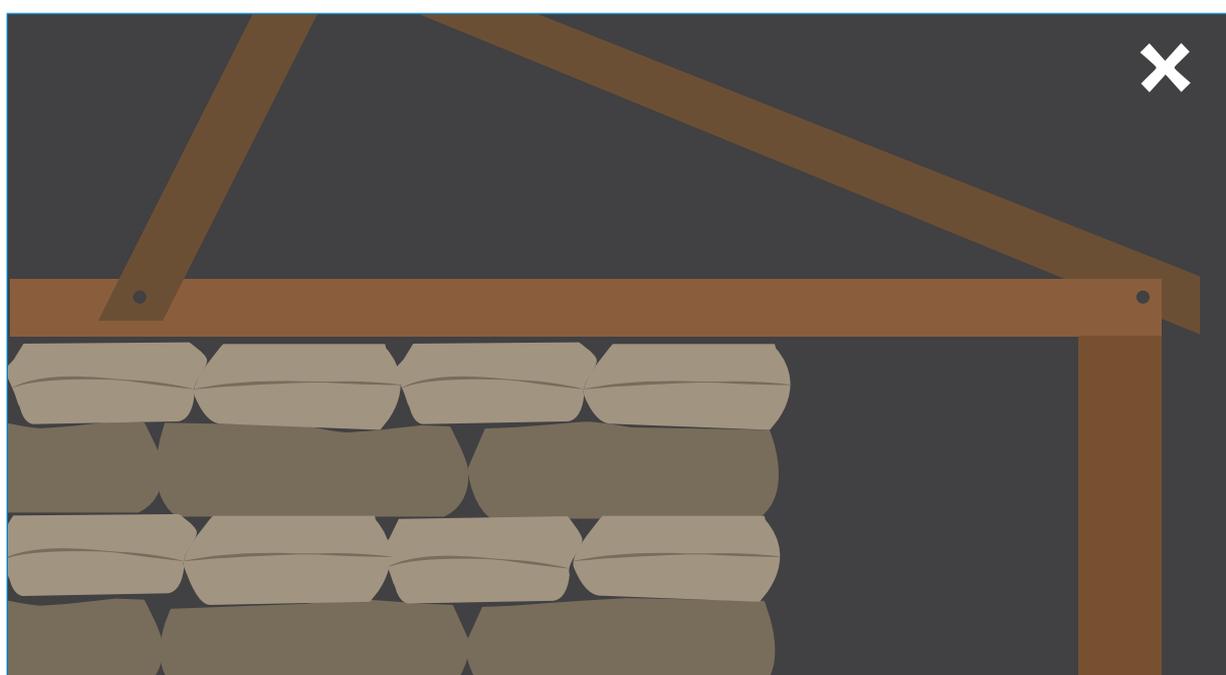


Figure 43: Do not stack too close to the roof so as to reduce ventilation and prevent access.

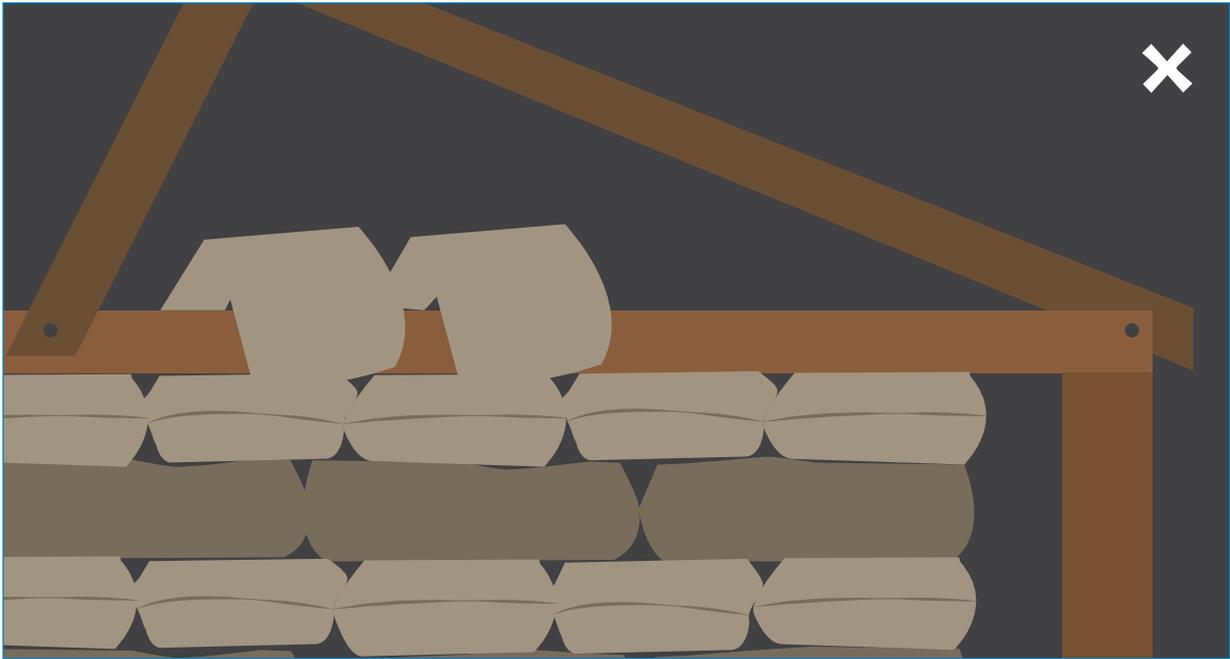


Figure 44: Do not stack close up to, or on top of, the roof beams so as to risk damaging the structure.

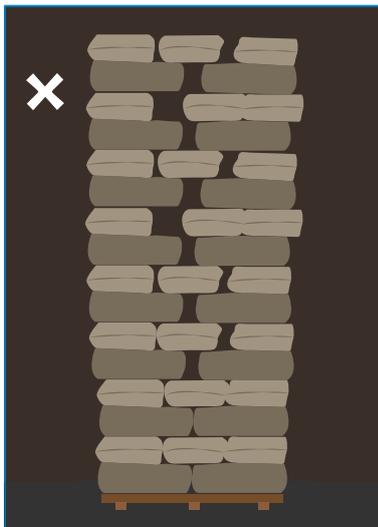


Figure 45: The stack should not be so high that it is unstable.

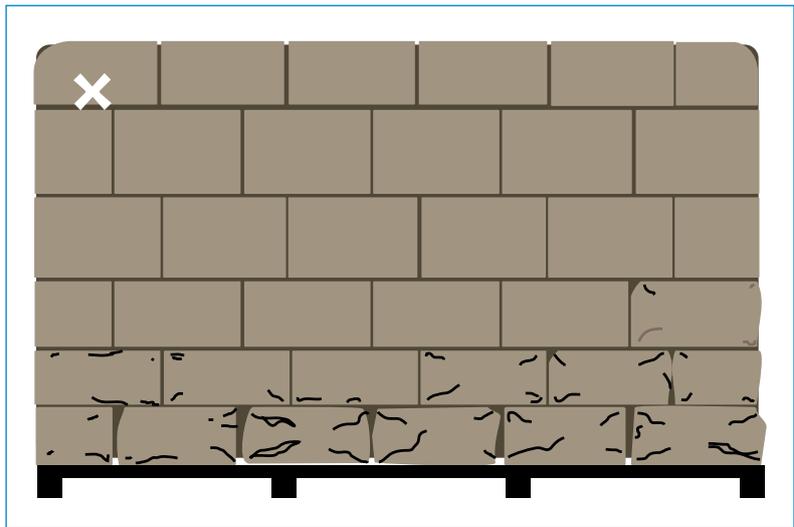


Figure 46: Don't make stacks so high that packages at the bottom are crushed or split.

Stack Card

When construction of the stack commences, a stack card should be opened and attached to the side of the stack in a visible and accessible position. (See Section 6.6.13 and *Appendix 1*).

Unloading

When breaking down a stack, the bags or cartons should be lifted down carefully, without throwing or dropping them. The stack will usually be dismantled in steps from one end.

When dispatching, packages must be handled as carefully as when they were received.



6.6.6. Cleaning the Store

The store should be kept clean and tidy both inside and outside because clean tidy stores help in the control of pests, and make working conditions better. (Figure 47-48)



Figure 47: Clean inside.



Figure 48: Clean outside: weeds and rubbish provide cover for rats.

These Things Are Important

Cleaning schedule (Figure 49):

- each day, sweep the floor;
- each week, clean the walls and stack sides;
- each month, clean the whole store thoroughly; when the store becomes empty, clean the whole store.



Figure 49: Clean roof beams and tops of walls. When cleaning the whole store, clean roof beams and tops of walls. Use plastic sheeting to protect the stack from falling while sweeping.

Always dispose of the sweepings away from the store (see Section 6.6.9).

The cleaning sequence for the whole store should be: first - from the top to the bottom of the store; and second - from the furthest corner inside the store, to the doorway.

The cleaning sequence for the whole store should be: first - from the top to the bottom of the store; and second - from the furthest corner inside the store, to the doorway.

(Figure 50-53)



Figure 50: Keep the walls and the sides of the stacks clean.



Figure 51: Thoroughly clean wall/floor joints and corners.



Figure 52: Keep the floor clean.

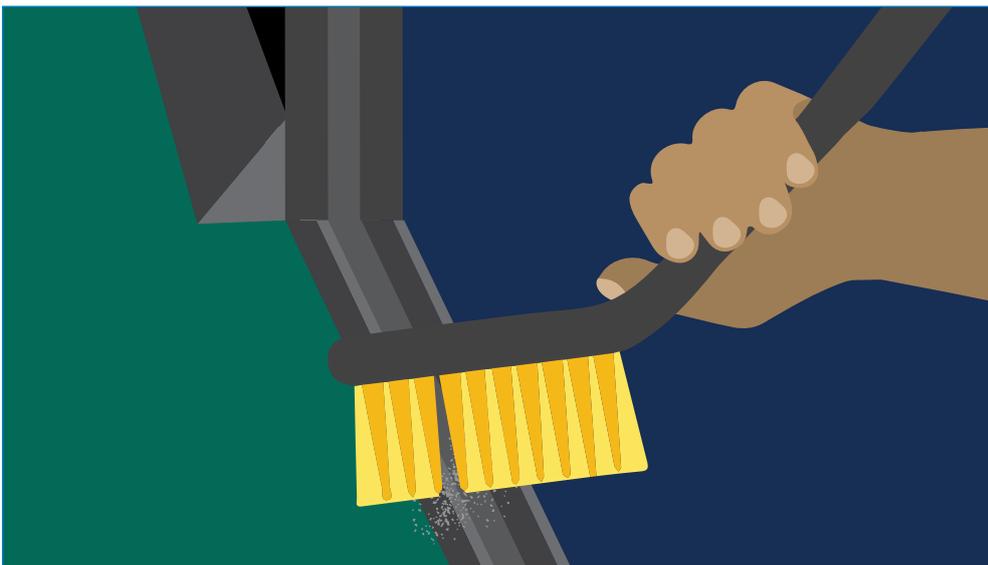


Figure 53: Clean doors and door channels.



6.6.7. Inspection of Stocks and the Store

Inspect the store and food stocks at least once a week so that prompt action can be taken if there are any problems. With all commodities, look for physical damage, staining caused by water, and evidence of theft. With:

- **cereal grains;**
- **pulses;**
- **flour and blended foods** packed in jute or woven polypropylene bags, and **dried fruit** in cartons or boxes;

Use *sight, hearing and smell* to search for insects and rodents themselves, and for evidence of their activities such as damaged grain and droppings. (Figure 54-57)

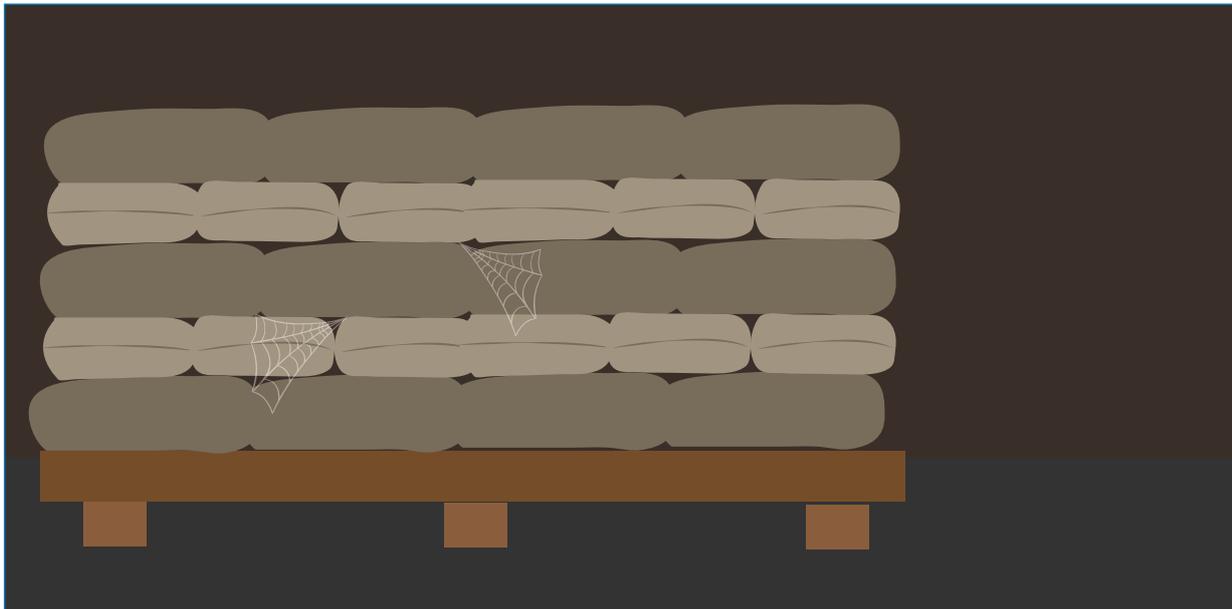


Figure 54: Beetles and moths, webbing cocoons.

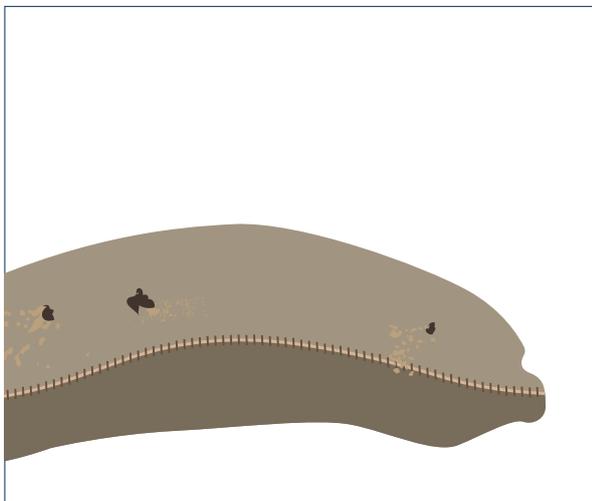


Figure 55: Damage by rats.

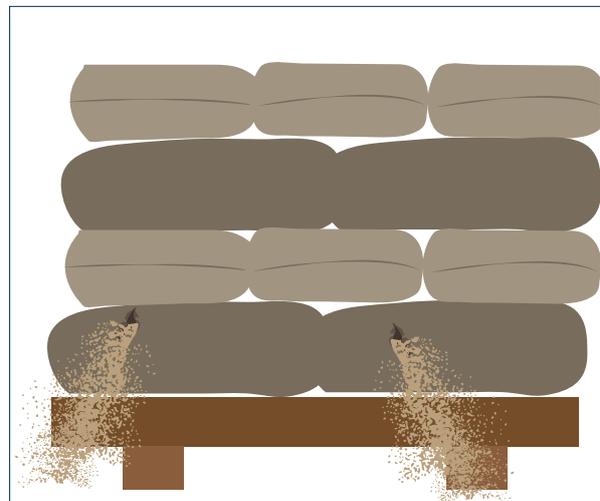


Figure 56: Split and broken sacks.



Figure 57: Check for heating, by lifting a top bag and feeling the bag below.

If you are authorised to do so, you can take samples of these commodities using a sampling spear. Check the sample for smell, and look for insect damage and mould discoloration (Figure 58).

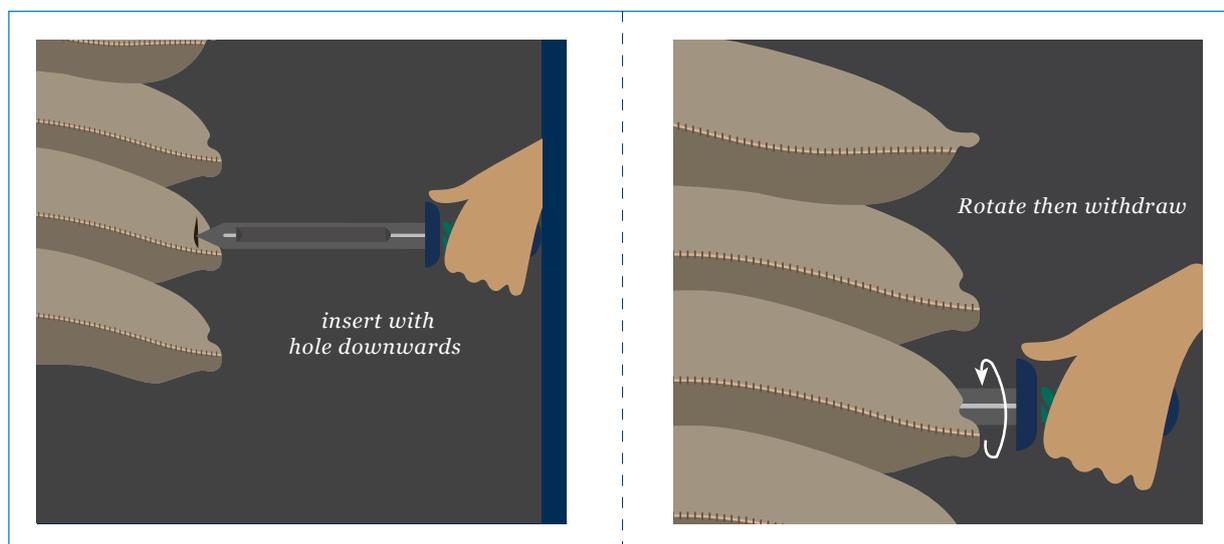


Figure 58: Use of sampling spear.

With **flour and blended food in paper bags**, you should inspect stacks in the same way, but do not take samples with a spear because it will damage the packaging (Figure 59).

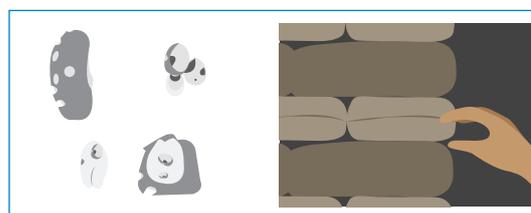


Figure 59: Check bags for insect damage.

With **dried skimmed milk** in paper bags, the powder can in time form a solid hard lump: feel the bag to check whether this is happening.

With **canned cheese, canned meat and canned fish**, open a carton and check cans externally for rust and for the beginning of swelling. Reseal the carton afterwards. (Figure 60-61)



Figure 60: Check cans for rust and swelling.



Figure 61: With vegetable oil, look for leaking containers.

Where to Inspect (Figure 62-67)

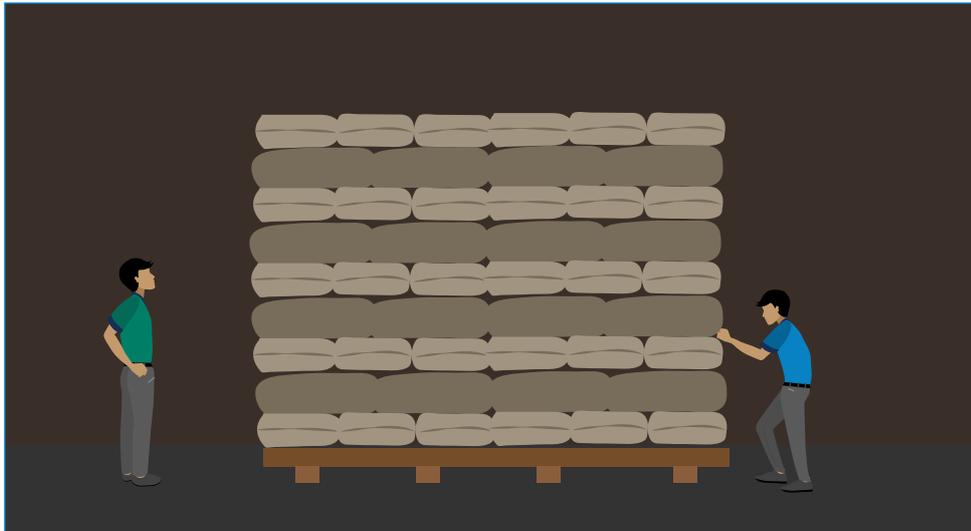


Figure 62: Inspect all around the sides of a stack (also listen for insect activity).



Figure 63: Insects usually hide from the light, look for them between bags and in the seams and 'ears'.



Figure 64: At corners, you can push a bag up slightly to look further between bags.

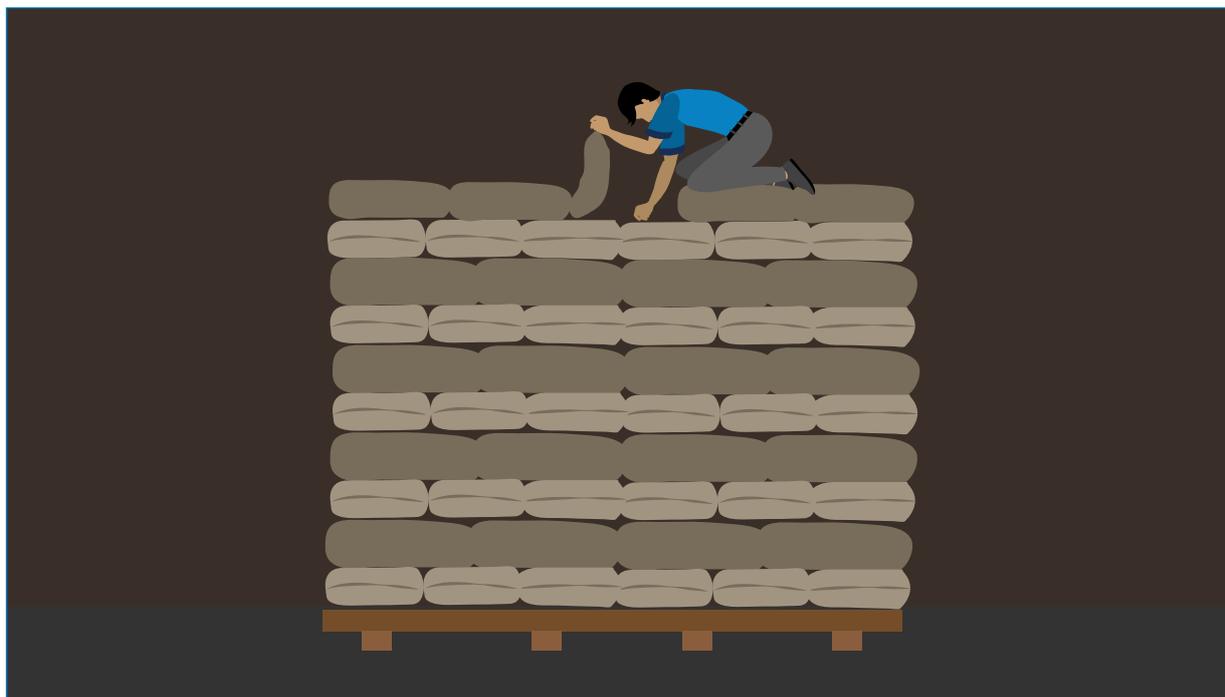


Figure 65: At the top of stack lift some bags and look underneath. Look around the base of the stacks and underneath the dunnage for insects and signs of rodent attack.

Inspect the store itself for:

- leaking roof;
- broken windows or ventilators;
- badly fitting doors;
- cracked walls and floors;
- signs of entry of rats and mice.
- Inspect the outside of the store and the area around it. Write down what you find in your inspections do not forget to record the date. It is a good idea to use an Inspection Report Form (see Appendix 2). Keep these records, either in a notebook in the store or on a stack card hung on the stack or on the wall. You can then see how the condition of the commodity, or the building, has changed from one inspection to the next.

If you find anything wrong, deal with it according to the instructions you have been given; if you have no instructions for a specific problem, ask for guidance.

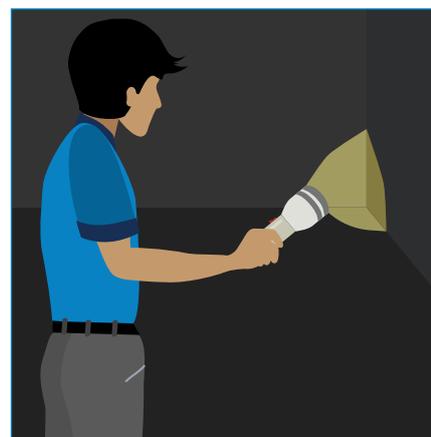


Figure 66: Check in dark spaces using a good torch.



Figure 67: Make the inspection report form to record information.



6.6.8. Stock Rotation

A general rule is that the oldest stock should be issued first - First in, first out (FIFO). Well-planned stacking, with easy access to all food in the store, makes this rule easier to apply. (Figure 68-69)

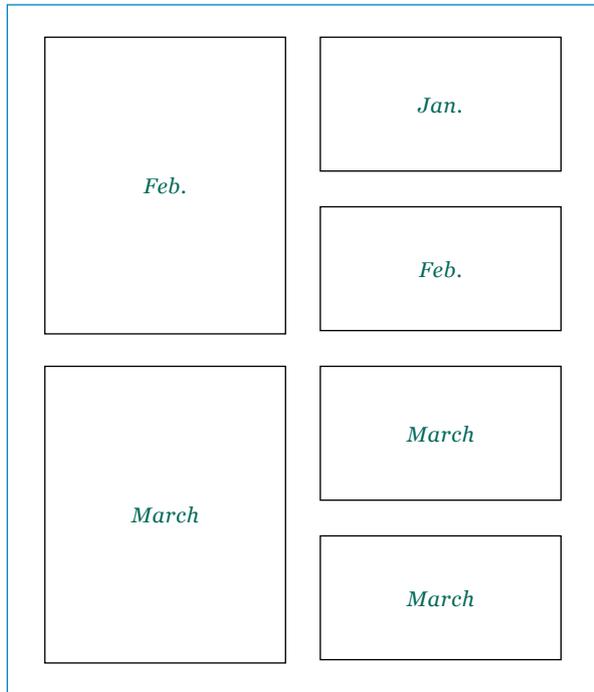


Figure 68: Issue first the stock which arrived in January.

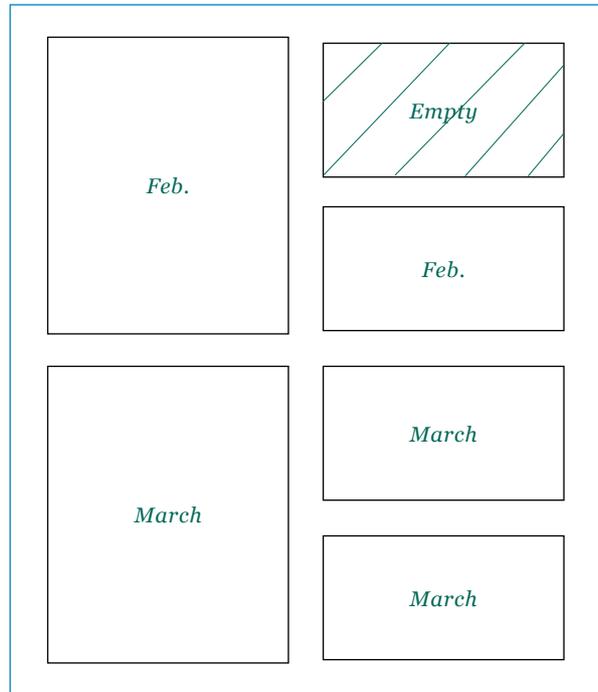


Figure 69: New stock arriving in April can be stacked in the freed space after it has been cleaned.

The first in, first out rule is not followed if there is food which is fit to be eaten, but which will not store well, for example, because it is near the expiry date or in damaged packages. Such food should be issued without delay, even before older undamaged stock.

6.6.9. Waste Disposal

Spillage and Sweepings

Grain and pulses spilled onto a clean floor are usually not waste - they may be re-bagged, after cleaning by sieving if necessary - but small quantities of dirty spilt grain should be destroyed.

Spilled flour and blended food are normally waste.

Spilled foodstuffs can provide a good place for insects to live, from where they can move to the stacks and damage the stored commodity. All sweepings and other dirt or rubbish should therefore be destroyed as soon as possible according to local regulations. (Figure 70)



Figure 70: Burn rubbish away from the store.



Spoiled Commodities

Sometimes food in the store may seem unfit to eat - for example:

- grain may be mouldy, heated or heavily infested;
- dried skimmed milk may be caked hard;
- cans may be badly rusted, leaking or swollen;
- vegetable oil may smell rancid.

In such cases you should report the problem at once to the owners of the food. The report should state the kind of food, the particular consignment that is affected, how much seems to be damaged and the kind of damage.

The owners may send a representative to examine the spoiled food or appoint a qualified person to do this. If you are asked to provide samples of the food, ask for detailed instructions on how these samples are to be taken.

Spoiled food should be separated from the rest. If it is best moved from the main store and kept somewhere else, do not forget to record this movement in your stock records. (Section 6.6.13)

Food which is spoiled through heavy insect infestation should be treated to prevent further damage and to prevent the problem spreading to other stocks. Pest control must be done by qualified experts.

You should not dispose of spoiled food until you receive official instructions from a competent and recognised authority. Official approval of the method of disposal may be required in some cases. Action should be taken as soon as all necessary authorisation has been received. It is possible that some damaged commodities could be fit for animal feed. Such assessments will require laboratory analysis.

Remember that spoiled commodities are still the responsibility of the storekeeper until properly disposed of, and must be accounted for in the records.

Storage and Disposal of Containers

Empty sacks, cartons, tins, bottles and drums should be stored in such a way that they do not provide a hiding place for rats and mice, or a source of insect infestation.

If possible:

- clean sacks to remove food particles;
- ensure lids are fitted on tins, bottles and drums;
- old cartons flat.

The owners of the consignment should provide instructions about disposal of containers. If not needed for re-use, it may be possible to sell them in accordance with approved procedures.



6.6.10. Pest Control

Insecticides and fumigants to control insects, and rodenticides to control rats and mice are dangerous to human health and should only be used by trained staff.

Regular inspections of the stock will give early warning of attack by these pests and of the need for control.

This handbook does not explain how to use pesticides. However, the storekeeper can help the pest control treatment to be carried out effectively, and prevent injury to staff, by noting the following points:

- the store must be cleaned before insecticide spraying or fumigation treatments (*Figure 71*);
- stacks must have enough space round and between them - as advised in Section 6.6.5 (*Figure 72*);
- only people authorised to carry out the pest-control treatment should be allowed in the treatment area;
- when fumigation is used, warning notices should be prominently displayed. These must be taken down when the treatment is complete and approval to enter the store has been given (*Figure 73*);



Figure 71: Clean before fumigation.

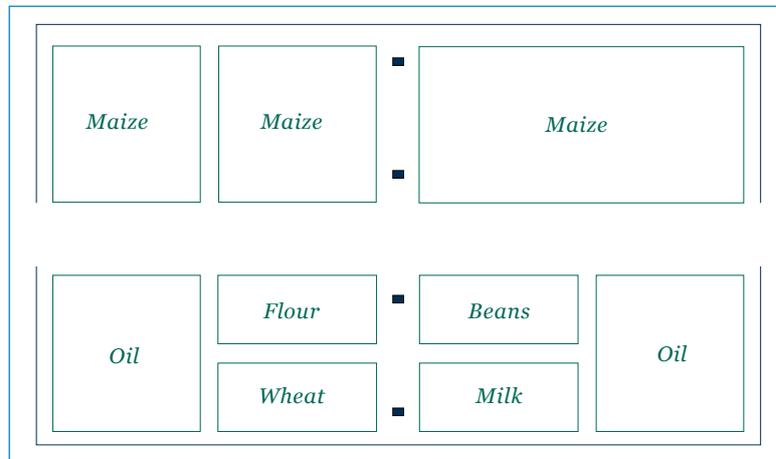


Figure 72: Ensure space between stacks.

- instructions given by authorised pest-control teams must be strictly followed;
- rodent bait placed in the store by pest controllers must not be touched or moved, unless instructed;
- if chemicals for pest control are kept on site, they should be in a separate locked store;
- keep a written record of all pesticide treatments on the stack card.



Figure 73: Use warning notice after fumigation.



6.6.11. Outdoor Stacks

When warehouse capacity is not enough for the amount of food to be stored, it may be necessary to store some outside. This can be acceptable for whole-grain cereals and pulses, and for vegetable oil, but should never be used for flour, blended food, milk powder or canned food.

Effective outside storage needs:

- a suitable site;
- a prepared stacking platform;
- dunnage and a waterproof groundsheet;
- waterproof covers (tarpaulins);
- ropes for tying down tarpaulins.

Site

The site should be:

- secure, with a boundary fence or wall;
- accessible to trucks;
- firm, flat ground, ideally with a slight slope for drainage;
- not likely to flood.

Platform

The stack should be built on a level platform raised above the general ground level. For temporary use this base may be made of compacted earth, 0.3 to 0.6 m high (Figure 74).

If possible, use gravel to make the platform, especially in wet areas. Remove top soil, and lay gravel to a height of 0.3m, with larger stones at the bottom and smaller on top.

Dig drainage ditches around both earth and gravel platforms, so that they drain away from the stack.

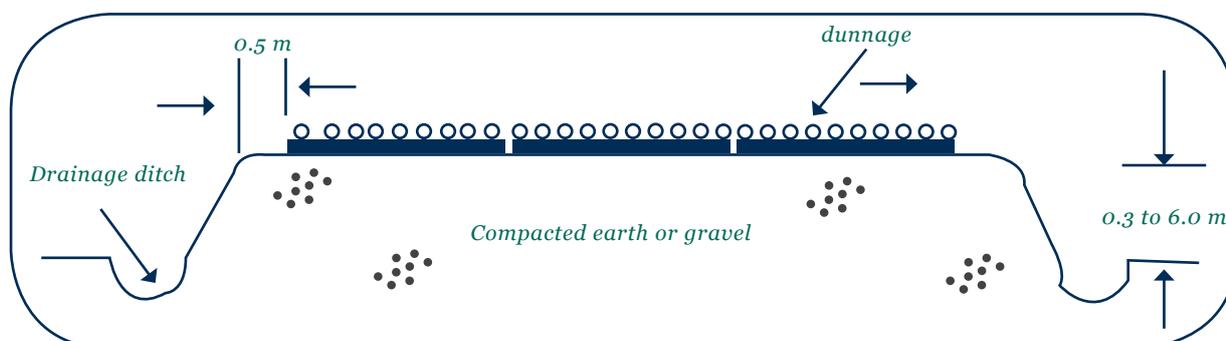


Figure 74: Cross-section of earth platform.

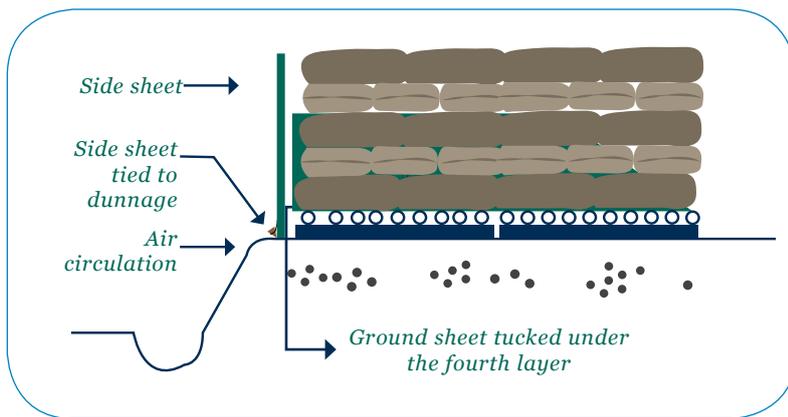


Figure 75: Dunnage and ground sheet.

Polythene or PVC sheet used as a groundsheet should be placed on top of the dunnage under the first layer of bags. The groundsheet should extend beyond the base of the stack, and the edge should be tucked in between the third and fourth layers to protect against groundwater (Figure 75).

Covers

Waterproof covers may be made of canvas or plastic. Canvas is preferred to plastic because it allows the stack to breathe and does not normally cause sweating or condensation in hot weather. The covers should be as large as can be handled comfortably, and should be provided with reinforced eyelets for attaching ropes. Sufficient tarpaulins should be available to completely cover the top, sides and ends of the stack, allowing for ample overlaps at joints. Check the condition of sheets well before they are needed and arrange any necessary repairs in good time.

Ropes

Needed for tying down the covers - any thin rope is suitable. The ropes may be attached to the dunnage, to pegs in the ground, or to old car tyres used as weights.

Stacking

The same principles apply as for stacking in a warehouse. Often the walls of the stack are made to slope inwards slightly to improve stability, although this makes it difficult to count the number of bags. A pitched roof helps rainwater to run off the stack, and is very important for outdoor stacks (Figure 76).

Sheeting

Often tarpaulins are not large enough to go right over the stack, covering

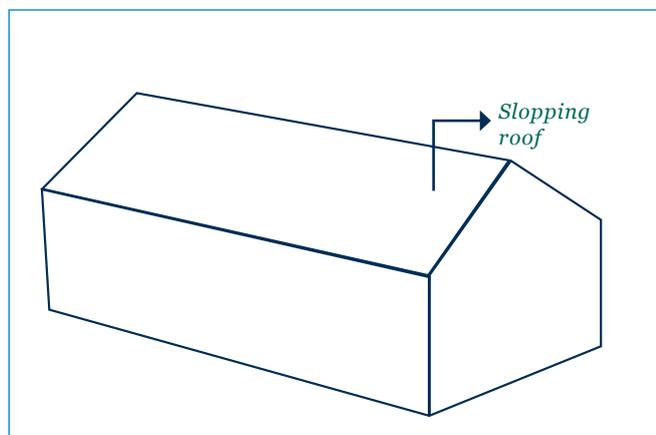


Figure 76: Pitched roof on outdoor stack.

A permanent installation could be built with brick retaining walls, on proper foundations, around the outside, with hardcore filling and a concrete, brick or asphalt top surface.

Dunnage and Groundsheet

Pallets or two layers of poles are commonly used for dunnage (see Section 6.6.5).





both sides and top. In this case the following system may be used:

- fix the side tarpaulins at the bottom of the sides; (Figure 77)
- draw up as far as possible and fix, either with ropes right over the stack or by tucking in between layers of bags;
- cover the top, allowing the top tarpaulin(s) to overlap the side sheets; (Figure 78)
- tie down the edges of the top tarpaulin to dunnage or pegs.

Where tarpaulins need to be joined, two methods are possible:

- simple overlap of at least 1 m, against the prevailing wind; (Figure 79)
- rolled joint. (Figure 80)

Management

Stacks should be inspected daily. Look especially for:

- water penetration;
- broken or loose tie ropes;
- blocked drainage channels.

During fine weather the upper tarpaulins should be rolled back during daytime, to allow any moisture accumulated at the top surface of the stack to evaporate.

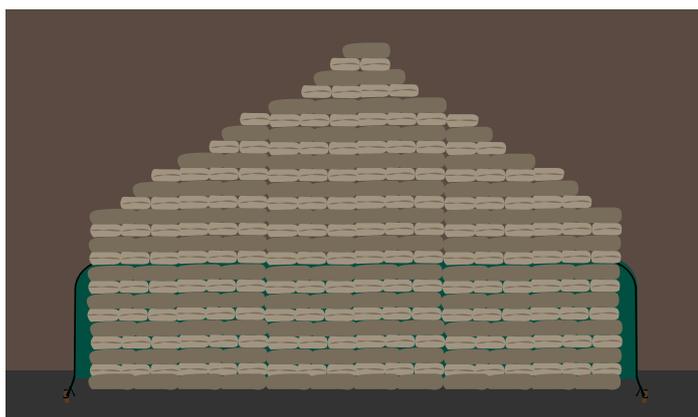


Figure 77: Sheeting: Fix the sides of the tarpaulins at the bottom of the sides.

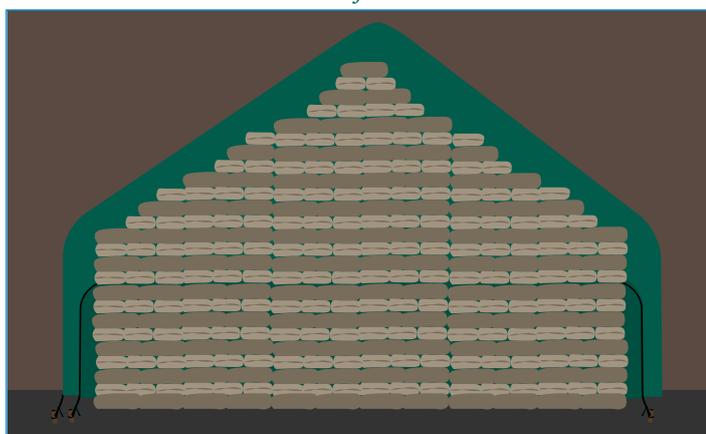


Figure 78: Sheeting: Cover the top to overlap the sides.

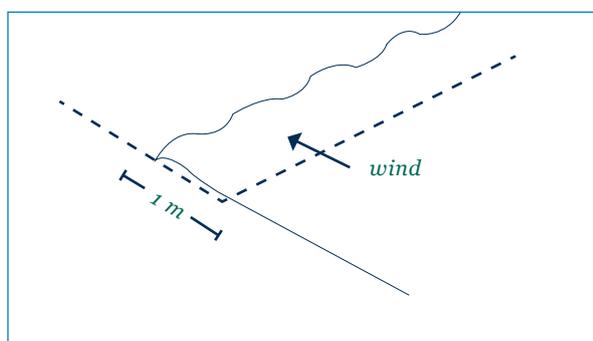


Figure 79: Simple overlap against the wind.

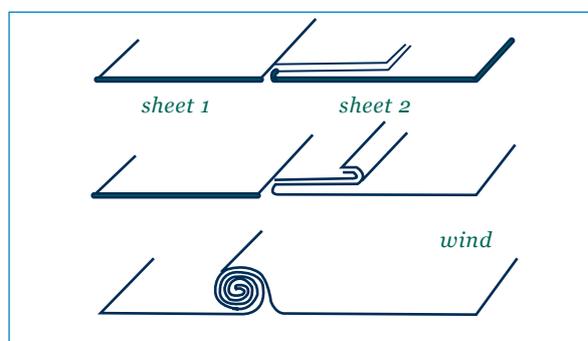


Figure 80: Rolled joint.



6.6.12. Emergency Storage

Prefabricated Warehouses

During emergencies it is often necessary to store quantities of food aid that far exceed the capacity of the available conventional warehouses. Some can be stacked outdoors (see Section 6.6.11), but it is frequently preferable to use prefabricated stores that can be erected quickly and moved from site to site as required (*Figure 81*).

These stores are well designed for emergency use, but can become very hot unless they are well ventilated. Improved air movement can be achieved by opening the end doors or by fitting electrically operated fans. Efficient storm drains will be required to prevent surface water entering the stores. Condensation dripping from the roof beams on to the stored food can be a problem if the ground on which the store is erected is not cemented or otherwise sealed against moisture. Rodents and termites may be more of a problem than in conventional warehouses. Pallets are essential. Frequent inspection is necessary.



Figure 81: Pre fabricated warehouses.

Use of Shipping Containers

Shipping containers can provide very secure storage for higher-value commodities such as vegetable oil. They will get very hot if they are not shaded. If enough are available they can easily be stacked. (*Figure 82*)

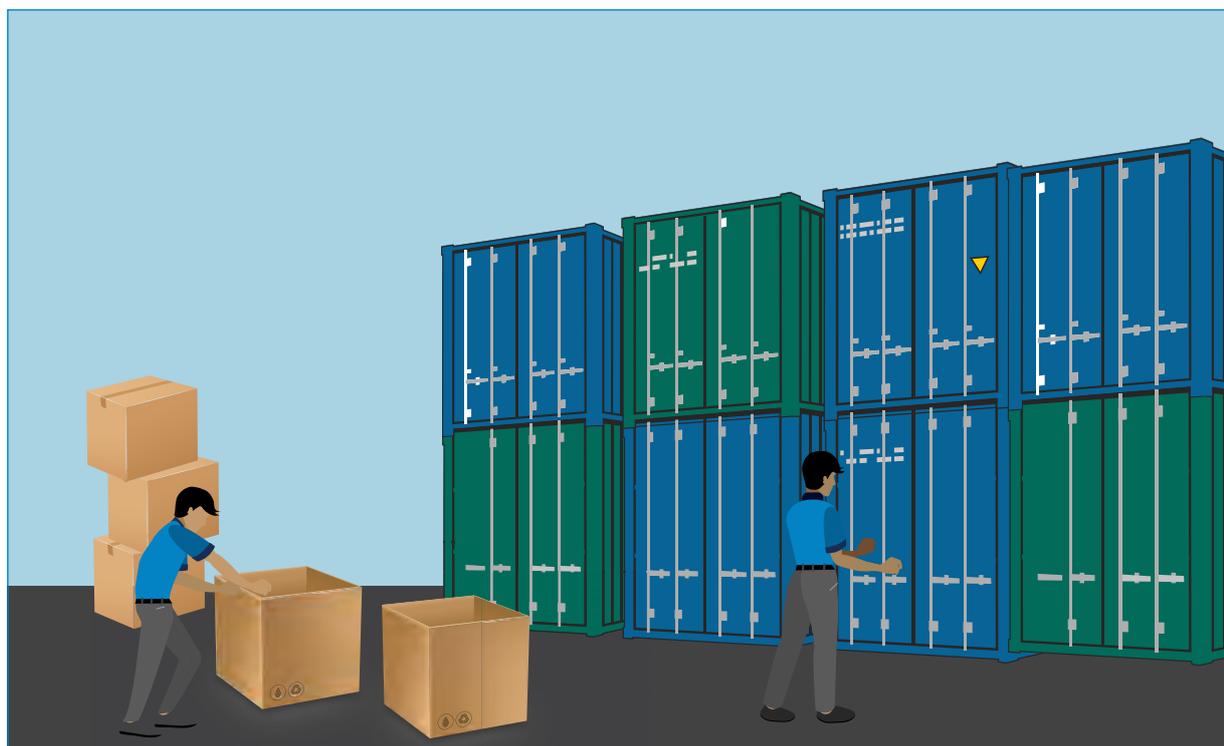


Figure 82: Shipping containers stacked too high.

6.6.13. Documentation and record keeping

Documentation and reporting provide the information that enables management to make the correct decisions. Without an effective documentation and reporting system management decisions will be impaired or made impossible.

The **overall objective** is to provide a commodity tracking system from first receipt to final discharge. This is sometimes known as an audit trail.

The **specific objectives** of record keeping include:

- maintaining an accurate record of goods received and goods despatched;
- maintaining an accurate record of commodity stocks by keeping stack cards and warehouse ledgers or stock ledgers;
- maintaining effective control of non-commodity supplies, e.g. empty sacks, pallets, twine, weighing scales;
- informing management on a regular basis, e.g. daily, weekly, monthly.

Principal warehouse clerical and administrative functions include:

- establishing and maintaining a warehouse stock control ledger;
- establishing and operating procedures for receiving and despatching stock;



- establishing and maintaining stack cards;
- establishing and maintaining inspection reports;
- assisting auditing/stock-taking procedures;
- assisting with procedures for writing-off stock.

Key Documents

Many documents are used to record and control the movement of food stocks from one place to another. They are often specifically designed to suit the documentation systems followed in particular organisations.

Independent discharge survey forms are issued at the time of unloading ship, or opening containers which could occur either in port or in the warehouse.

Waybills, sometimes known as delivery notes, are issued when the consignment leaves the port or warehouse. They are very important documents used to control the transfer of the consignment and sometimes change of ownership.

They authorise the release of commodities and hence all copies are valuable and must be accounted for. Signing a waybill is a formal acceptance of the consignment, therefore, it is important to check that the consignment matches exactly the description on the waybill. If it does not, then all shortages and damage must be recorded on the waybill before it is signed.

Stack cards (coloured blue) record any movement into or out of the stack and display the current stock level. The person responsible must note the details and sign the stack card immediately. Stack cards should record 'units', i.e. number of bags or cartons and not weight. Stack cards are used to record details of SI or CR numbers, inspections, audits and pest control conducted on the stack, and any other relevant information. They are made of thick paper or card and are positioned on the side of the stack in a prominent position.

Warehouse ledgers (or stock cards - coloured white) provide an overview of the total stock position in the warehouse. They provide a cross-check on the stack cards but must be updated whenever there is any movement of commodities.

Stock-taking or physical audit forms record the result of independent physical checks on stock levels. Details of previous audits must be retained so as to provide a basis for subsequent checks, e.g. if the January audit recorded 900 tonnes and the April audit recorded 200 tonnes then the auditor will know that distribution records for 700 tonnes must be found.

Loss or damaged cargo reports (coloured pink) provide full details of the problem and any action taken to repackage or reconstitute. The report must identify who had responsibility for the stock.



Inspection reports provide full details of the condition of the warehouse or the commodity. An example is given in Appendix 2.

Certificate of destruction describes authorised action taken to destroy or dispose of unfit commodities.

When a **final distribution report** is made to the donor it will be supported by copies of many of the above documents.

Basic warehouse equipment

- Brooms;
- Fire extinguishers;
- First aid box;
- Ladders;
- Repackaging equipment e.g. sack needles and twine (or stitching machine), empty sacks, cartons, oil containers, adhesive tape;
- Sampling spears;
- Shovels;
- Sieves;
- Tools and materials for store repair and simple maintenance;
- Torch;
- Weighing scales.



Appendix 2.1: Commodity Inspection Report

To: _____ Project number: _____

Store address: _____

Date: _____ Time: _____

Name of storekeeper: _____

Are there any other matters which need attention, e.g. security of store, access, conditions of site, storage machinery, etc.? _____

COMMODITY INSPECTION			
COMMODITY IN STORE	QUANTITY IN STORE AT THE TIME OF INSPECTION	LENGTH OF TIME IN STORE	IS IT IN GOOD CONDITION?

If a commodity is not in good condition give the reasons why, e.g. the rice is being eaten by insects, the cans of oil are leaking, etc.:

Record of pest control treatments:

Signed: _____

Inspector



Appendix 2.2: Store Inspection Report

To: _____ Project number: _____

Store address: _____

Date: _____ Time: _____

Owner of store: _____

Warehouse or Depot Manager: _____

Name of storekeeper: _____

Weather at time of inspection: [rain] [dry] [sunny] [cloudy] [windy] [calm] *

* Cross out words or letters which do not apply

Premise Inspection Report

Degree of loading: [full] [75%] [50%] [25%] [empty] *

Total volume/capacity of the store: _____ cubic metres _____ tonnes

1. Area Surrounding Store

Condition

a) Conditions of

Access good _____ fair _____ poor _____

Drainage good _____ fair _____ poor _____

Security good _____ fair _____ poor _____

Cleanliness good _____ fair _____ poor _____

b) Vegetation adjacent to store

None _____ Cut _____ Uncut _____

2. The Building

general condition: good _____ fair _____ poor _____

a) Type of construction (wood, brick, metal, etc)

Walls good _____ fair _____ poor _____

Roof good _____ fair _____ poor _____

Floor good _____ fair _____ poor _____

b) Dimensions Length _____ Width _____ Height _____

c) Capacity (specify type of commodity)

d) Ventilators (number) ___ **[Screened]** **[Unscreened]***good _____ fair _____ poor _____

e) Number of doors _____ good _____ fair _____ poor _____

f) Electricity available? [yes] [no] * _____ Lights good _____ fair _____ poor _____

g) Is water available? [yes] [no]

3. Building Condition — EXTERNALLY

a) Cracks in walls or roof

b) Signs of rodent activity

c) Broken or damaged gutters or drains



4. Condition of building — INTERNALLY

- a) Is the store waterproof?
- b) Describe any signs of entry of rainwater
- c) Are there any signs of rodent or bird entry/damage?
- d) Are there live insects on the walls and floors?
- e) Is the store clean, particularly the floor?

Signed: _____

Storekeeper



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- 1. Warehouse Management Source:** <http://wiki.wfp.org/logisticsmanuals/index.php?oldid=2438> Contributors: Joan.Agoya
- 2. Warehouse Management Source:** <http://wiki.wfp.org/logisticsmanuals/index.php?oldid=1244> Contributors: Joan.Agoya
- 3. Warehouse Management Source:** <http://wiki.wfp.org/logisticsmanuals/index.php?oldid=1249> Contributors: Joan.Agoya
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