

A photograph of a modern, two-story brick structure with a corrugated metal roof, serving as an agriculture storage facility. A man is sitting on the concrete steps leading to a dark doorway. The building is surrounded by a rural landscape with trees and a clear sky.

AGRICULTURE

STORAGE

## Agriculture Storage

Agri-Storage is a self-sustaining, accessible, scalable and community led model of socially responsible grain storage facilities, targeted to increase the resilience of climate vulnerable people ranging from poor marginalized farmer groups to local consumer groups, assemble market groups and trader groups. The first prototype of the model is being established in Dewangonj Upazila of Jamalpur district. These storage facilities will contribute to reduce the postharvest losses, ensuring sustainable food availability, leading to reduction of pressure on natural resources by eliminating hunger and improving farmers livelihood.

## Why agriculture storage facility?

One of the major constrains in Bangladesh agriculture sector is the lack of grain storage systems. Currently, grain storage capacity provided by the Bangladesh Government is 1.62 million tons, provided mainly through conventional granaries and warehouses where the typical shelf-life of grain is less than 1 year (Ministry of Food, 2015). Food grain storage plays a crucial role in the economies and livelihood of farmers. There is a basic need to meet average demand by storing excess supply during the harvesting season for gradual release to the market during the off-season period. As most farmers do not have access to proper storage facilities, they trade their entire harvest in bulk, usually in reduced rates, incurring loss and leaving none for selling or consumption post disastrous times. Almost every harvesting season a substantial amount of food grains is being damaged after harvest due to lack of adequate storage and processing facilities. Climatic hazards further exacerbates the situation. Significant agricultural production are impacted due to variations in periodicity and intensity of climatic events like floods and droughts, temperature and rainfall patterns, river bank erosion. FAO estimates of worldwide annual losses in stored produce have been given as 10% of all stored grain.

Post-harvest practices therefore has been there for decades, ranging from the traditional storage structures such granaries to modern ones such as silos. With changing climate and times, it is also important to change the storage structures to suit the current climatic conditions.

Farmers in Jamalpur usually keep such food grains in storage structures mainly for household consumption. The surplus grains, on the other hand, may be sold within two or three months of harvest. After harvest, the grains may be stored temporarily in bulk or in bags for a month or two before being sold. In most houses grains for personal consumptions are stored for almost a year. Locally termed **Dole or Beri**, traditionally used by almost every household in Jamalpur are made from bamboo splits, straw, raffia palm/palm fronds, closely intertwined to form a narrow opening at the top in the conical shape with a tapered oval middle section. The structure is then erected in an elevated wooden/cement platform to keep it safe during flooding events. These traditional approaches have been used for many years with little or no modification. The choice of a traditional storage system is often relevant to not just climate, but also regional availability of natural resources and customs also influence the choice of the storage methods.

## Need analysis of storage

To assess the need of agri-storage in the selected unions of Dewanganj Upazila, the methodological framework was evaluated chronologically. The climate lens analysis revealed the most vulnerable communities, whereas through the FGDs it was identified how climatic events economically cripples the community. During the Aus season, flash flooding can ruin acres of land destroying standing crops. If however farmers are able to get the crops off the field they are forced to sell at a price much lower than the market value. This phenomenon is mainly responsible for the lack of storage facilities. The surveys also reveal, if these crops are stored for a period, ranging from 15 days to 2 months, farmers are able to get a fairer market price. Hence, there is an acute need for storage facility throughout the year. Moreover, studies indicate strong potentials for climate smart agricultural practices- if modified cropping patterns are introduced in the project location, given enough storage facilities are available, the planned intervention can lead to increasing climatic resilience to the community.

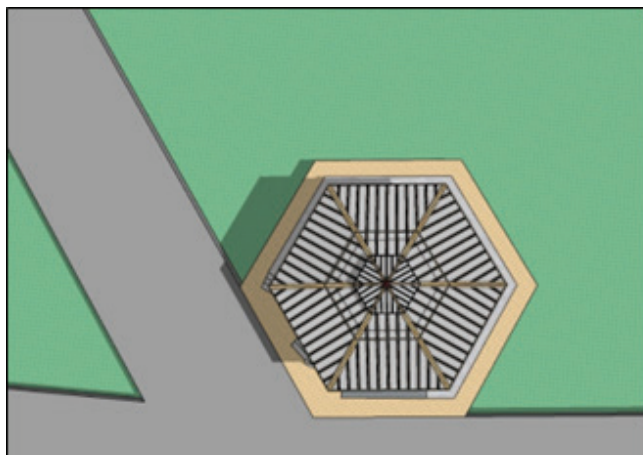
## The bottom- up approach

A strict focus on locally-led approach was followed to implement the post-harvest storage solutions aiming to increase climate resilience in the project location. Regular community consultations have been carried out to initially sketch out the livelihoods, species or ecosystems, environmental functions, services, and resources, infrastructure, or economic, social, or cultural settings of the project location. To further develop the model of the agri-structure particularly, 6 focused group discussions (FGDs) had been carried out in two unions. To ensure proper reflection and incorporation of gender sensitive perspectives, equal participation of both male and female respondents had been arranged. The purpose of this effort was to integrate the local expertise in the whole process of designing.

Finally, a modality was set for the pilot structure to provide storage support to 50 most climate vulnerable families. A management committee of 13 local members have been established to ensure the maintenance and sustainability of the storage facility.

Following is an illustration of evolution of the Agriculture Storage:

## From dream to reality



## Features of the storage:

- Structural design based on traditional structure of household storage, locally termed a 'Dole'
- Future flood level scenario taken into consideration in setting the plinth level
- Location selected given preference to accessibility and ease of mobility even in the flooded conditions
- Zero-energy structure
- Structure is divided into two separate sections: storage and office
- Provisions to organize the rice filled sacks in two levels of wooden shelves ensuring well ventilation
- The roof of the structure will be used to store light weight vegetables (dried chilli, onion), replicating the local practices