

Transforming Agriculture and Rural Livelihoods: The Impact and Future of Multipurpose Cold Storage in Tripura

Soumitra Sankar Das¹, Sujoy Hazari^{2*}, Mamoni Kalita³, Pritam Bose⁴

Abstract

Cold storage units play a vital role in enhancing the agricultural and fishing industries, especially for farmers of rural and local communities. These facilities enable year-round supply, reducing post-harvest losses, improving produce quality, and allowing for better price negotiation, thereby fostering economic resilience. The present study examines the impact of a multipurpose cold storage facility established in South Tripura district, with the assistance RIDF which has a capacity of 2000MT, to support the storages of varied agricultural products such as potatoes, vegetables, fruits, and betel leaf etc. The findings reveal that the project has been highly effective in improving the income of the farmers, also local infrastructure, and generate employment, with a significant number of respondents acknowledging the adoption of best practices. Despite the significant outcomes from the present investigation, some challenges such as insufficient funding, maintenance issues, and inadequate training were recognized which can be overcoming by policy changes and increased funding allocation were also identified. The study also acknowledge the importance of expanding such initiatives, with 85% of respondents advocating for the development of additional similar projects. The project's significantly contribute to the economic growth of the state, making it a crucial tool for both sustainable agricultural development and environmental impact reduction.

Received: 08 December 2025

Accepted: 23 December 2025

Published: 24 December 2025

Keywords: Multipurpose cold storage, RIDF project, Chi-square test.

Introduction

Cold storage units are a crucial component of the agricultural and fishing industries, providing farmers and fishers with a way to preserve their crops and catches for longer periods of time. This is particularly important for farmers and fishers in local and rural communities, who often struggle to negotiate fair prices for their produce due to the limited availability of fresh produce during certain times of the year. One of the main benefits of cold storage units is that they allow farmers to supply produce year-round, rather than just during the growing season. This means that farmers can negotiate better prices for their crops, as they are able to supply fresh produce even when it is not in season. This is particularly beneficial for farmers in developing countries, where there is often a lack of access to modern storage facilities. Another benefit of cold storage units is that they can help to reduce post-harvest losses. These losses can be significant, particularly in developing countries where there is a lack of infrastructure and resources to properly store and transport produce. Cold storage units can help to keep produce fresh for longer periods of time, reducing the amount of produce that is wasted. The use of cold storage units also helps to improve the quality of produce. Properly stored fruits and vegetables can retain their nutritional value and taste for longer periods of time, which can increase the appeal of the products to consumers. This can help farmers to command higher prices for their produce, which in turn can

^{1, 2 & 4}Assistant Professor, ICFAI University Tripura, Kamalghat-799210; ³Associate Professor, ICFAI University Tripura, Kamalghat-799210; *Corresponding Author: sujoyhazari@iutripura.edu.in

improve their livelihoods. In addition to the benefits already mentioned, cold storage units also have a positive impact on the environment. By reducing post-harvest losses, cold storage units can help to decrease the amount of food waste that ends up in landfills. This not only helps to conserve resources, but it also helps to reduce greenhouse gas emissions from decomposing food. Another environmental benefit of cold storage units is that they can help to reduce the need for transportation of produce. When farmers and fishers have access to cold storage units, they can store their produce for longer periods of time, which means that they do not need to transport it as frequently. This can help to reduce the carbon footprint of the agricultural and fishing industries, as well as reducing the costs associated with transportation.

Cold storage units are a vital tool for farmers and fishers in local and rural communities. They provide a way for farmers to supply produce year-round, which can help them to negotiate better prices for their crops. They also help to reduce post-harvest losses and improve the quality of produce, which in turn can increase the appeal of the products to consumers. Agriculture in Tripura has undergone notable transformation, particularly in crop productivity and value-chain diversification over the past decade (Hazari & Kalita, 2022; Roy & Hazari, 2023). However, limited post-harvest infrastructure continues to constrain income stability and quality management.

Methodology

The present study was conducted in the state of Tripura. The geographical coordinates of the state are 23.745127° N latitude and 91.746826° E longitude. The present study was carried out using a survey-based descriptive method, comprising both qualitative and quantitative approaches. The main objective of the study was to document the good practices and assess the impact of RIDF Multipurpose Cold Storage projects in South Tripura. Simple random sampling is used in the study and 60 numbers of household were selected randomly. from lists of targeted families obtained from local government agencies. The purpose of the questionnaire was to obtain data on people's awareness of the projects, how they were carried out, the advantages they secured, and their degree of community inclusion. The questionnaire included both closed-ended and open-ended questions. The collected data were filtered and analyzed using Microsoft Excel and SPSS software. The statistical tools used for data interpretation included frequency, percentage, and the Chi-square test.

Result and Discussion

The development of cold storage infrastructure in an affordable, reliable, and sustainable way is critical to enhance the contribution of agriculture to the economy. The government of Tripura, with RIDF assistance, has created a 2000MT capacity multipurpose cold storage facility at Belonia, South Tripura for the storage of potatoes, vegetables, fruits, betel leaf, etc.

Many farmers from different gram Panchayet/ Village councils are benefitted from the storage infrastructure. The farmers are now reaping the benefits of better price realization for their products.



Figure 1: Multipurpose cold storage (South Tripura), Date: 25/10/2023



Figure 2: Multipurpose cold storage (South Tripura), Date: 25/10/2023

Table 1: Status of Multipurpose cold storage centre project in South Tripura

Sl. no	Scale	Frequency	Percentage	Chi sq.	p value
1	Gender				
a	Male	32	53.33		
b	Female	28	46.67	9.600	0.002
2	Implementation of Multipurpose cold storage project under by Department				
a	Yes	45	75		
b	No	15	25	15.000	0.000
3	Adoption of specific best practices in the implementation of cold storage projects				
a	Yes	48	80		
b	No	12	20	21.600	0.000
4	Impact of best practices on the overall success of the projects				
a	Highly effective	46	76.67		
b	Moderately effective	14	23.33	17.067	0.000
c	Somewhat effective	0	0		

d	Not effective	0	0		
5	Percentage of Multipurpose cold storage projects incorporated these best practices				
a	0-25%	0	0		
b	26-50%	9	15	9.300	0.010
c	51-75%	24	40		
d	76-100%	27	45		
6	Best practices implemented across the Multipurpose cold storage project				
a	Widely	33	55		
b	Moderately widely	27	45	0.600	0.039
c	Somewhat widely	0	5		
d	Not widely	0	0		
7	Characters used to assess the impact of Multipurpose cold storage projects				
a	Employment generation	18	30		
b	Improved infrastructure	21	35	8.400	0.038
c	Income enhancement	15	25		
d	Increase in trade activities	6	10		
8	Positive impact of Multipurpose cold storage projects				
a	Very high	33	55		
b	High	21	35		
c	Moderate	6	10	18.300	0.000
d	Low	0	0		
e	Very low	0	0		
9	Primary challenges faced by beneficiaries of Multipurpose cold storage projects				
a	Lack of proper maintenance	17	28.33		
b	Insufficient funding	21	35		
c	Inadequate training for beneficiaries	12	20	21.100	0.000
d	Limited access to markets	10	16.67		
e	Regulatory hurdles	0	0		
10	Importance of policy changes for addressing challenges				
a	Extremely important	33	55		
b	Very important	21	35	18.300	0.000
c	Somewhat important	6	10		
d	Not important	0	0		
11	Recommendation on changes in funding allocation				
a	Yes	38	63.33		
b	No	22	36.67	4.267	0.039
12	Plans to expand additional Multipurpose cold storage projects in the near future				
a	Yes	55	85		
b	No	5	15	41.667	0.000
13	Role of Multipurpose cold storage projects in boosting the economic growth of state				
a	Extremely significant contribution	46	76.67		
b	Significant contribution	8	13.33		
c	Moderate contribution	6	10	50.800	0.000
d	Minimal contribution	0	0		
e	No contribution	0	0		

Table 1 shows that 53.33% of the responses were in male group, 46.67% of responses were female and 75% of the respondents agree that their department implemented this project under RIDF and only 25% of respondents said department did not implement this projects. This table also reveals that 80% of the respondents agree to the adoption of any specific best practices in the implementation of this project under. Apart from this, the significantly highest percentage (i.e. 76.67%) has said that this project is highly effective followed by 23.33% has said moderately effective. About 85% of the respondent informed that they have incorporated best practices and 55% of respondents said that best practices had been implemented across this project widely followed by 45% said moderately widely. According to this table, 30% of respondents said their employment generation increased, 35% said local infrastructure improved, 25% said their income increased and 10% said the increase in trade activities occurred due to the implementation of this project. Significantly highest percentage i.e. 55% of the respondents said that the positive impact of this project is very high followed by 35% of respondents who said high and lastly 10% that the impact is moderate. When it comes to challenges 28.33% of respondents said lack of proper maintenance was the main problem, 35% mentioned insufficient funding followed by 20% Inadequate training for beneficiaries, and 16.67% of respondents said limited access to the market was the main challenge. This table also reveals that 55% of respondents said that policy changes are extremely important for addressing challenges followed by 35% saying very important and 10% said somewhat important. 63.33% of respondents recommended changes in funding allocation while 36.67% said changes in funding allocation are not necessary. The significantly highest percentage (i.e. 85%) has said that there is a plan to expand or develop an additional similar project in the near future. Majority of the respondent i.e. 76.67% are agree with that the role of this project in boosting the economic growth of the state is significantly extremely high. The positive relationship between storage access and income growth aligns with earlier findings on agricultural productivity responses to infrastructure and climatic variability in Tripura (Chakraborty & Hazari, 2017; Hazari & Kalita, 2022).

Conclusion

The multipurpose cold storage project in Belonia, South Tripura, has proven to be a transformative initiative for local farmers and fishers, contributing significantly to the agricultural economy. The facility has enabled farmers to store a variety of crops and products year-round, reducing post-harvest losses and enhancing the quality of produce, which in turn has allowed them to command better prices in the market. The positive impacts on income, employment, and local infrastructure are evident, with a majority of respondents reporting a high level of satisfaction with the project's effectiveness.

However, challenges such as insufficient funding, lack of proper maintenance, and inadequate training for beneficiaries highlight areas for improvement. The need for policy changes, particularly in funding allocation and the provision of additional resources, is critical to sustaining and expanding the project. Most respondents expressed strong support for the expansion of similar initiatives, emphasizing the importance of such cold storage facilities in fostering sustainable agricultural practices and bolstering local economies.

In conclusion, while the cold storage project has made a significant contribution to the economic development of the region, addressing the identified challenges and ensuring the continued expansion of such infrastructure will be crucial for maximizing its long-term benefits. The project stands as a vital tool for improving the livelihoods of rural farmers and promoting economic growth, making it a model for other regions to replicate.

References

- Bery, S. K., Gupta, D. B., Krishna, R., & Mitra, S. (2004). *The nature of rural infrastructure: Problems and prospects* (No. 94). National Council of Applied Economic Research.
- Chakraborty, B., & Hazari, S. (2017). Impact of climate change on yields of major agricultural crops in Tripura. *Indian Journal of Agricultural Research*, 51(4), 399–401.
- Eswaran, R., & Prema, M. G. (2019). Role of NABARD in agriculture and rural development. *Think India Journal*, 22(14), 2434–2444.
- Fox, W. F., & Porca, S. (2001). Investing in rural infrastructure. *International Regional Science Review*, 24(1), 103–133. <https://doi.org/10.1177/016001760102400106>
- Hazari, S., & Kalita, M. (2021). An economic analysis of chilli production in Tripura, India. *Agricultural Science Digest*, 42(4), 459–463. <https://doi.org/10.18805/ag.d-5319>
- Loksha, M. N., & Mahesha, M. (2017). Economic benefits of road infrastructure on agricultural development and rural road infrastructure development programmes of India and Karnataka. *Journal of Research in Business and Management*, 4(11), 42–48.
- Morris, S., & Morris, A. (2003). *The Rural Infrastructure Development Fund: A review*.
- Patel, A. (2014). Infrastructure for agriculture and rural development in India: Need for a comprehensive program and adequate investment. *Retrieved*, 1, 13.
- Rajeev, M. (2008). Ensuring rural infrastructure in India: Role of Rural Infrastructure Development Fund.
- Rajeev, M. (2008). Rural Infrastructure Development Fund: Need for a track change.
- Rao, K. S., & Reddy, P. I. (2012). Rural infrastructure development in India: A study on RIDF. *Kushagra International Management Review*, 2(1), 69–74.
- Roy, P., & Hazari, S. (2023). Agricultural value chain in the North-East Region of India: Present scenario and future prospects. *Agricultural Science Digest*. <https://doi.org/10.18805/ag.D-5723>
- Samanta, P. K. (2015). Development of rural road infrastructure in India. *Pacific Business Review International*, 7(11), 86–93.
- Satish, P. (2007). Rural infrastructure and growth: An overview. *Indian Journal of Agricultural Economics*, 62(1).
- Vaidyanathan, A. (2003). Rural infrastructure. In *India Infrastructure Report: Ensuring value for money* (pp. 3–22). 3iNetwork and Oxford University Press.