Solidaridad

Sustainable Agriculture, Food Security and Linkages (Phase - II)

ANNUAL REPORT 2021

Solidaridad

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Section 1: Introduction

1.1 Executive Summary

The year 2021, marked 4.5 years of completion for the 'Sustainable Agriculture, Food Security and Linkages phase- II project (SaFaL-II)' being implemented in 7 coastal districts of Bangladesh. Since its inception, the program has empowered 106,222 coastal households or 500,000 people to improve their food security and livelihoods resiliency through adoption of good agricultural practices that increases productivity, profitability and developing market uptake of safe and healthy food. The project has supported, organized and aggregated farmers in dairy, soy, aquaculture, and fruits and vegetables. Through the formation of 80 farming clusters, 65, market structures and 1,531 producer groups, SaFaL-II has improved farm productivity and increased forward and backward market access to enhance availability, accessibility and affordability of food.

In 2021, despite the ongoing COVID- 19 wave in Bangladesh, the project continued to uphold the interest of farmers and workers through different market mechanisms through keep the supply chain active. The project introduced measures to ensure that farmer's access to both domestic and export market was not hampered during the wave. Through the various measures undertaken, the program farmers traded a total of 32,335.742 MT of fish, fruits, vegetable, and soybean and 2,818,482 liters of milk accounting for a turnover of BDT 2434.71 million (€ 26.01 million). During the period, the project continued to promote standardized farming and post-harvest management, better market access to the regional, national and international markets, and maintain partnerships with the government and private sector actors. Beyond these, the key highlights for the year 2021 can be listed as below:

Built a Roadmap to self-sufficiency for Village Super Markets (VSM): The VSMs were initiated as a means to address the inefficiencies that existed in the market models of horticulture, dairy and fisheries in Bangladesh. The objective was to streamline market processes to improve market system for trading and create a supply of safe and nutritious food. Over the years, the VSM has played a crucial role in helping farmers to access marketing knowledge, storage infrastructure, and linkages to consumers and supplier. However, the VSM also faced some internal and external commodity-specific challenges and did not reap the anticipated levels of scale and sustenance. To address these challenges in a thorough and planned manner, Solidaridad in 2021 worked with Deloitte to create a Business Plan for the VSMs. The Business Plan consisted of an in-depth analysis for each of the sectors based on three scenario analysis. Further, the most significant steps towards making the VSMs self-sufficient was transitioning the two VSMs located in Khulna and Jashore to Farmers' Cooperative Societies. With this step, the assets have been directed to the farmer community who will be responsible for managing the VSMs after the project phase out. At the same time, the project supported the farmers' cooperatives to introduce new businesses using VSM facilities like the introduction of value added dairy products.

Provided stability to soybean farmers during instable market periods: The market for edible oils in Bangladesh has been witnessing instability for the past two years due to price hikes in the international market. As per The Business Standard, one maund (40 kg) saw a rise in prices from Tk4,300-4,400 in June 2021 to Tk5,500 in November 2021[1]. Through the partnership developed with Nourish Agro, Solidaridad was able to provide a steady market for the soybean farmers during the period of 2021. The soybean farmers

[1] https://www.tbsnews.net/bangladesh/edible-oil-price-reaches-historic-high-country-366982

under the Solidaridad program avoided the brunt of the fluctuating market and price shocks as their produce was procured by Nourish Agro.

Conduction of a pilot on Regenagri: The SaFaL-II program in 2021 ran a pilot program on regenerative agriculture with 500 mango farmers. Solidaridad believes that the practices promoted under "Regenerative Agriculture" will help reverse climate change by rebuilding soil organic matter and restoring degraded soil biodiversity – resulting in both carbon drawdown and improving the water cycle. Through the pilot conducted in the Bangladesh, Solidaridad aims to showcase that the adoption of regenerative agriculture will help farmers earn a higher income and ensure decent work for the workers.

Enabled farmers to face the repercussions of COVID-19 disruptions: The SaFaL-II project has been able to enable farmers to face the repercussions of COVID-19 in two ways. Firstly, through the strong market linkages created in the past few years, and secondly through the introduction of innovative and digital solutions during the COVID-19 waves of 2020 and 2021. SaFaL-II ensured that farmers are able to sell their produce, face minimal wastage, and increase their income. While the VSM has protected the farmers from externalities and shocks, the program simultaneously introduced mechanisms that further helped farmers reach the local and export markets. The project leveraged digital innovations, created export cluster, built direct linkages with shops, and provided home delivery services during these past two years.

Other Project Highlights: SaFaL-II has ensured that the project interventions remain aligned with the long-term strategies and ambitions of Bangladesh, in particular the SDG goals, the Perspective Plan 2021-2041 and the Bangladesh Delta Plan 2100. Over the years, through the public-private engagement, the project developed and strengthened the agricultural value chains for production and supply of healthy food. Through improving efficiency in the sourcing and supply of food, the project is promoting accessibility and availability of quality and safe food for the rapidly growing population of Bangladesh. The project has been developing business linkages in between private sector and producer clusters for production and supply of safe food to the local, peri-urban and urban markets.

In the last 4.5 years, the project has been able to build a strong business model for future investment priorities through the following:

- Development of farming clusters with integrated services, information and knowledge support system on climate smart agriculture;
- Strong business linkages between private sector and farming clusters for production and supply of safe food to local, national and export markets to trigger demand driven commercial agriculture;
- Introducing innovations across production and supply chains to address key issues related to improving quality and safety with traceability, post-harvest loss, thereby improving overall market competitiveness;
- Development of local ecosystem entrepreneurs and service providers towards promotion and adoption of climate smart and nutrition sensitive agriculture to transform the agricultural productivity and food supply system more efficient that benefits the consumers at the farming clusters as well consumers at local, national and international markets;
- Policy support for public-private investment in order to trigger agribusiness growth and trading of food in the domestic and export market.
- In line with Bangladesh Delta plan 2100, the project developed Southwest Landscape Sustainability Framework that outlined collective efforts on 1) land and water use efficiency, 2) market systems

and supply chain development, 3) Business case development for investments, 4) Policy influencing and Institutional Capacity Development and 5) Partnerships and synergy with other development plans.

Taking into consideration the impact of COVID-19 pandemic, SaFaL-II was extended for one year till June 2022 for strengthening the consolidation efforts of project interventions. The specific objectives of the extension were:

- Consolidate the sustainability efforts of cluster and ecosystem based agricultural practices that are resilient and economically beneficial for the region;
- Strengthen the services in improving land and water use efficiency, market systems and food supply chain improvement.

Accordingly, a revised work plan for the period of January 2021 to June 2022 has been developed to achieve the preset objectives. The annual report for 2021 reflects the achievements during the period of January 2021 to December 2021 against the targets set in the revised work plan.

1.2 Highlights and Achievements of 2021 as per result area

KEY HIGHLIGHTS AND ACHIEVEMENTS
GOOD PRACTICES
83% farming households adopted nine or more technologies.
Overall productivity increased by **48%.**
35,615 hectares of land and waterbodies bought under good agricultural practices.
79% farm households reported increase in income
ROBUST INFRASTRUCTURE
SaFaL supported business institutes traded total **32,335.742 MT** of fish, vegetables, fruits and soybean and **2.82 million liters** of milk.
SaFaL supported supply chains generated a total of **BDT 2,434.706 million (€ 26.01 million)** of revenue in 2021.
808.5 MT vegetable and **11.36 MT** Mango exported to the EU and Middle-east countries.
SaFaL farmers mobilized **BDT 93.3 million (€ 1.00 million)** worth support from public and private sector.
5,762 producers and entrepreneurs received financial services from financial institutes and government departments, worth **BDT 994.7 million (€ 10.63 million)**
Monthly per capita income of SaFaL developed entrepreneurs reached to **BDT 11,923 (€ 127.4)**, which is **23%** higher than 2020.
67% post-harvest loss reduced.
92% of the farmers improved their bargaining position through access to multiple markets
Two Farmers Cooperatives were formed in Khulna and Jashore and are registered under the Department of Cooperatives (DOC)
2,000 farmers and Agri entrepreneurs enrolled with the cooperatives as members.
Both the cooperatives obtained trade licenses and initiated businesses. Production facilities for value added milk products and dairy feeds (TMR) have been established in VSM.

NUTRITION SECURITY
130 Community Nutrition Volunteers (CNV) have generated **BDT 39.41 million (€ 0.42 million)** of revenue by selling social products with an average monthly income of is **BDT 11,329 (€121.05)** per CNV.
Mean household dietary diversity score (HDDS) increased by **31%**.
92% of the farming households reported improvement in dietary diversity.
459,350 people were made aware on the consequences of early marriage, and incidence of early marriage reduced to **15%** in 2020 against 39% of the same in the baseline.
94% children were exclusively breastfed in the farming households
SUSTAINABLE LANDSCAPE
Development of digital cropping index for **30,000** farmers are ongoing, covering 85 villages of five unions under three Upazilas of Khulna and Jashore districts
Initiated the process of developing a brief strategy paper on '**Safe food supply system'**.
Community led planning and development of water management system was done in six communities.

Table 1: Highlights of the year 2021

Section 2: Implementation of Activities:

The activities under SaFaL-II program were implemented under four primary result areas: good practices, sustainable markets, nutrition security, and sustainable landscape.

2.1 Result Area 1: Good Practice

Despite the challenges related to covid-19 lockdown, the project was able to carry out the following activities to promote and enhance good agricultural practices:

Capacity Building and promotion of good practices:

A) Planning of Farm Business: In 2021, the project focused on improving the efficiency of production clusters for building better trade relationships with the producer groups and companies. This would aid the clusters to facilitate improved access to quality seeds, inputs, and financial services. Overall, 60 workshops were organized in 60 farming clusters covering 70,252 farmers to strengthen partnerships and engagement with public, private, local and urban stakeholders for sustaining their efforts on safe and quality food production. These workshops further aimed at supporting the farming clusters to adopt good agricultural practices, making quality inputs available for farmers, marketing of their produce, and accessing suitable financial services. The participants of the workshop included representative farmers from each producer groups under the clusters, local extension agents, and entrepreneurs of SaFaL supported SBIs, inputs suppliers and buyers' representatives, government extension officials and elected local government representatives.

B) Sustainable farming practices: 17 types of innovative climate smart technologies on soybean, fruits & vegetables, aquaculture and dairy were promoted among the 106,000 farming households with support from the research institutes and private sectors. Further, capacity enhancement sessions were organized in 1,531 producer groups to promote and scale better farming practices and post-harvest management among the farmers. During the sessions, Solidaridad ensured that evidence-based good agricultural practices in farming were promoted amongst the farming communities. A

primary step in this was that the session was led by the successful farmers and actors of the supply chains. After each of the session, a list of interested farmers was generated who gave the commitment of adopting good agricultural practices in their farming. This has resulted in adoption of good agricultural practices by the 85% PG members.

Development of the digital cropping index:

Solidaridad has initiated the development of union wise digital cropping index and landscape profiling. Data collection of 30,000 farmers of 85 villages under 5 unions of 3 Upazilas is currently ongoing in Dumuria of Khulna, Monirampur and Jashore Sador upazilas of Jashore. A user friendly interactive Mobile (Android) App for data collection has already been developed. The tool will also explore the introduction of an e-traceability system for farmers for selected export clusters, retailers and ecommerce platforms for connecting the producers with the consumers.

Launch of regenerative agriculture certification:

In collaboration with Peterson Control Union Group (www.regenagri.org), the project launched regenerative certification scheme for 500 mango farmers to regenerate and revitalize the soil and the environment. Regenerative agriculture certification will lead to healthy soil, capable of producing high quality, nutrient dense food while simultaneously improving, rather than degrading land, and ultimately leading to productive farms and healthy communities and economies. The following activities have been undertaken in this certification scheme:

I. Identification of private sector players for market uptake of Regenerative Certified Mango in local national and international market;
II. Establish internal control system and traceability in the Mango supply chain from farm to fork;
III. Ensure regenerative farming practices to restore/maintain soil health, water quality and protection of bio-diversity;
IV. Bring fairness and transparency in the supply chain, including farmers economic and workers social wellbeing;
V. Build capacity and develop resiliency of farmers for the solutions/adaptation of climate change.

Continued strengthening of partnerships:

During 2021, the project continued to strengthen its partnership with relevant government departments (DAE, DLS, DoF), private sectors (AR Malik Seeds, Compass Corporation, Russel IPM and Agro-Tech etc.) and research organizations (BARI, BINA, BSMRAU, BAU) for increasing adoption of successful models for safe and quality food production. In partnership with Bangladesh Agricultural University Research System (BAURES) a research titled *"Hydroponic fodder production: Validation trial for economic analysis and preventing fungal growth at field level"* is being conducted. The main purpose of the study is to address the issues of fungal infection occurs during summer production cycle. In addition, with support from BSMRAU, a study was conducted on *"Status, Scope and Challenges of Soybean Production in Bangladesh: Solidaridad Network Asia (SNA) Experiences".* The study is serving as a comprehensive learning document based on Solidaridad experience and farmers' perception that outlined the prevailing constraints in the soybean production and provided possible recommendation for improvement in the soybean sector, along with possible scoping for future research and development.

2.2 Result Area 2: Sustainable Market Development:

With the ambition to develop an efficient input supply system and market connectivity, the project has been facilitating trade relationships among the farmers, rural and urban traders and retailers. The project has been contributing towards inclusive and sustainable agriculture and food supply system and trading at the local, national and export market. For the period of January to December 2021, the following activities were accomplished under this activity line:

Strengthen capacities of the SaFaL Business Centers *SBC)

SaFaL-II continued supporting SaFaL Business Institutions (SBI) in 2021, including during the lockdown period, for expanding their service coverage and increasing their trade volume. The project provided business planning and business operation support to 15 SaFaL Business Centers (SBC) and 5 Soybean Trade and Service Centers (ST&SC) to improve the market efficiency. During the reporting period, the project facilitated visits of potential buyers and quality input producers to the SBCs and ST&SCs for strengthening the forward and backward market linkages. The project organized 31 meetings with SBI entrepreneurs and 88 meetings with the farmers of 60 clusters to increase their service coverage and trade volumes of project supported business institutes. Project also facilitated linkages with the financial institutes for accessing suitable financial services. After the lockdown eased, business revival support was given to SaFaL business institutes to get back to business operations upfront. During this reporting year, a total of 32,335.742 MT of products were traded along with 2.9 million liters of milk by the SaFaL business institutes. The total amount of revenue generated through this trading was BDT 2,434.71 million.

The project further enhanced the capacities of the farmers of 15 safe and exportable fruits and vegetable production clusters and engaged new exporters and national buyers for investing in contract farming system. During the year, a total of 808.5 MT of vegetables were exported to the international markets from these clusters with engagement of 41 exporters and the traded amount was BDT 9.62 million.

To further promote sustainable markets, the project facilitated trade relationships among the farmers, rural and urban traders, and retailers. The project supported developing local Business Centers who bridge the gap in supply side and mitigate trade related constraints to improve efficiency in the supply of safe food to local, national and international markets and in the reporting year project closely supported 60 clusters out of 80 clusters.

Building a self-sufficient model for VSM

In consultation and advisory support from the EKN, Solidaridad developed an exit strategy for the VSM for the next 5-10 years. The exit strategy was built with a prime focus of transferring the VSM ownership to farmers and capacitating the farmers of the cooperatives to operate and manage the VSMs and gradual takeover the VSM by 2028.

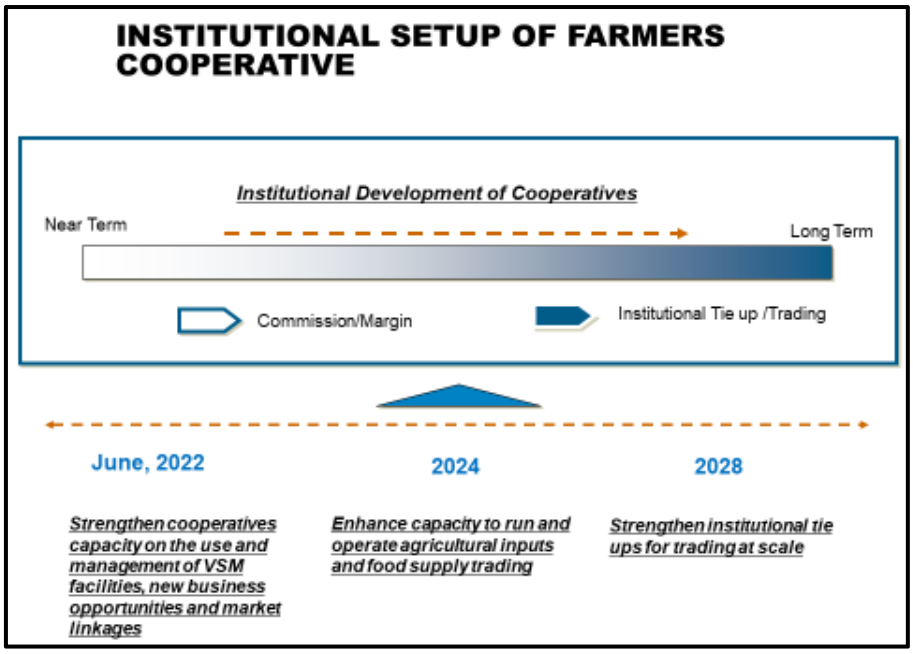
A) Formation of a business plan with Deloitte

In 2021, the project undertook an intensive activity to create a robust business plan for the VSMs. Prior to creating a revitalized business plan, a study was conducted to analyze the issues affecting the VSMs. Based on the study results and evaluations, possible strategic options were developed that would help drive viability of the VSM. This was undertaken for each of the commodities and a plan was created that took into

consideration the key revenue and cost levers. Subsequently, six recommendations for building an optimal business plan was provided.

B) Transitioning VSM into a Farmer Cooperative Society

To ensure that the ownership of the VSMs is transferred to the farmer by 2028, the project mobilized farmers from the VSM catchment areas and formed two Farmers' Cooperative in Khulna and Jashore. These Farmers' Cooperatives are registered under Department of Cooperative (DOC). Both the cooperatives have started enrolling members based on defined criteria and at present have enrolled more than 2,000 farmers and entrepreneurs. Both the Cooperatives have opened their bank accounts and obtained trade licenses from the local authority for operating the businesses. The Cooperatives are further supported to connect with potential private sectors. The cooperatives have already signed two agreements with Pure Enterprises and Agora Limited. Both the cooperatives have initiated their businesses with support from the project team. Production facilities for value added milk products and dairy feeds (TMR) have been established in the VSM. The cooperatives are also being supported to be linked with 60 SBIs and 60 production clusters to encourage trading of inputs and outputs. In 2021, the VSM facilitated a trading of BDT 342.4 Million **(€ 3.64 million).**



C) Capacity Building of Farmers to take over the cooperative

SaFaL-II developed a comprehensive capacity building plan for the governing body of Farmers' Cooperatives for VSM business operation and management. A training curriculum has already been developed that focuses on governance, business operation and management, negotiation and conflict management skills and financial management. During the reporting period, two batches of training were organized for the governing body members and potential leaders of both the cooperatives. A total of 40 members, including 15 governing body members are covered in the training programmes from two cooperatives.

D) Introduction of new business and services through development of improved marketing and sales channels

During the year 2021, the project supported the farmer cooperatives to initiate new businesses using VSM facilities. Details of some of the initiated businesses are given below:

- **Raw Milk Supply**: During 2021, total 885,755 Liter of milk was supplied to national markets through BRAC Dairy.
- **Dairy Value-Added Products:** A production unit has been established in Khulna VSM for production of value-added milk products. After a process of quality testing, the branding and marketing strategy of '*SaFaL Mithai*' is being developed. An outlet has been established in the Khulna VSM with another one in Khulna city is under process. Simultaneously, online platform for branding and marketing of

value-added milk product is already functional.

- **High quality and SFP Post Larvae (PL) supply chain**: The project facilitated agreement in between Farmers' Cooperative and PL Producing Companies (Desh Bangla and Balaka Hatchery) for developing high quality and SFP Post Larvae supply chain. Contract agreement with the sales agents has also been signed and branding and campaigning for promoting high quality and SFP Post Larvae is undergoing. The operation is expected to commence from March '22 with a sales target of 137.77 million PL in 2022.
- **Date Molasses**: Farmers' Cooperative of Jashore started piloting a business model for supplying safe date molasses to the national market. The supply was launched with Agora and GAgro at the end of 2021 and a total of 1000 kg date molasses were supplied to national markets.
- **Cattle Feed:** Farmers' Cooperative signed a dealership agreement with Pure Enterprise as distributor of Minamix (quality salt mineral) for the entire southwest region. The agreement is expected to foster the distribution and availability of quality salt mineral 'Minamix' for dairy livestock. Further, facilities for producing TMR (Total Mix Ration) was established in the VSM and production and marketing of TMR by Farmers' Cooperative.

E) Continual strengthening of business linkages for the VSM entrepreneurs

The project continued to undertake measures to strengthen business linkages for the VSM entrepreneurs with local, regional and national buyers to develop alternative supply chains in collaboration with private sectors and relevant government department. Altogether 61 meetings were conducted with *arotdars*, large aqua farmers, cooperative members, buyers and producers of VSM catchment areas to increase product supply and participation of local, regional and national buyers in the VSM trading. Further the project facilitated series of visits for the national and international buyers, input producing and marketing companies and high officials from different government departments and ministries.

Capacity building of local market actors on food safety and post-harvest management

Training on safe and exportable vegetable production: SaFaL-II developed 10 safe vegetable production and 4 safe fruits (mango and Jujube) production clusters and introduced contact farming system with engagement of private sectors (exporters) and relevant government departments. In 2021, 1,608 farmers were trained in 59 batches on food safety and post-harvest management. The objective of the training was to reduce post-harvest loss of vegetables and fruits and enhance the efficiency of the labor for supplied quality vegetable and fruits according to exporters' demand. In addition, project organized a visit for the SBC entrepreneurs of export clusters to Central Pack house of DAE to have exposure on the quality assurance methodology of the pack house.

Trade facilitation to national and international buyers for direct sourcing of safe food from the food production clusters: The project engaged 41 exporters with the 14 safe and exportable fruits and vegetable production clusters. During 2021, a total of 808.5 MT of vegetables were exported to the international markets from these clusters with the trading amount of BDT 9.62 million. In addition, project engaged institutional buyers for sourcing the products directly from farmers. In soybean, partnership with Nourish Bangladesh supported 2,470 farmers to supply 992 MT of soybean worth of BDT 47.10 million (€ 0.48 million) revenue. 125.4 MT of black tiger shrimp was directly sourced by Luna Seafood Ltd. from 1,110 farmers with BDT. 86.9 million (€ 0.89 million) revenue.

Safe food supply system: The project has taken initiative to develop a concept on 'Safe Food supply system' in line with the experiences of the project and sharing the concept with local and national level stakeholders to promote production, marketing and consumption of safe foods. As part of that initiative, project organized

8 workshops in different working Upazilas with support from the local officials of Food Safety Authority. Stakeholders from government departments, local government representatives, and local actors of food supply chain and farmers' representatives took part in the workshop. Based on the outputs from the workshops, a strategy paper on safe food supply system is under process. The draft strategy paper will be shared with regional level and national level stakeholders through organizing roundtable and will be finalized based on the findings from those workshops.

Development of micro entrepreneurs and micro-enterprises within selected supply chains: To enhance operational capacities and business growth of the entrepreneurs, project continued to support 786 entrepreneurs to improve their business linkages and participation in local, regional and national food supply chains. Each of the 786 entrepreneurs were supported to review their business plan focusing on reviving the businesses disrupted during the pandemic. 57 meetings in the farming clusters were organized to connect the farmers in the periphery with these entrepreneurs. The project also facilitated linkage with buyers and quality input manufacturer for strengthening backward and forward linkages of the entrepreneurs.

Development of micro entrepreneurs and micro-enterprises within selected supply chains: Project organized 56 meetings with producer clusters to share information on suitable financial services and government-declared incentive packages with the farming communities. The process for getting access to those suitable finances and government incentives was also discussed elaborately to connect them with those financing opportunities. Project also organized 10 workshops with the officials of financial institutes and government departments for increased inclusion of project-supported farmers and entrepreneurs in the incentive package and suitable financial services to invest in their farming and businesses.

2.3 Result Area 3: Nutrition Security

During 2021, the project focused to develop interlinkages of food system and nutrition sensitive agriculture resulting in positive nutrition related outcomes.

Strengthening capacities of CNVs to provide nutrition, health, hygiene and SRHR education and services: In 2021, 44 meetings were organized with Community Nutrition Volunteers to define the issues of household counseling and issues related to their business growth. Out of total 130 CNVs, 127 CNVs have been promoted to Nutrition Entrepreneurs that provide basic health care services to the communities along with promoting and selling family planning and hygiene products to the community. SaFaL-II provided business plan review and business growth support to the 127 Nutrition Entrepreneurs. During the reporting year, altogether 130 CNVs provided services to 81,500 community people with a service value of BDT 39.41 million (€ 0.42 million) and average monthly income of per CNV reached to BDT 11,329 (€ 121.05) per month.

Knowledge building on nutrition, dietary diversity, SRHR, IYCF, health & hygiene:

The project used Behavioral Change Communication materials based on defined issues for household counselling to bring behavioral changes at household level. Accordingly, project supported 130 CNVs to improve dietary diversity and improved nutrition practices with particular focus on children, pregnant mother and elderly members of the targeted households. Altogether, 130 CNVs have paid visit to 97,561 households for counselling during the period.

Collaboration with key stakeholders on nutritional interventions: SaFaL continued to build linkages with relevant government departments, local government representatives and community leaders to ensure their support in delivering nutritional interventions. With the aim to sensitize the Upazila and Union level stakeholders on the importance and role of nutrition-sensitive agriculture in ensuring sustainable food

security, workshops were organized in 8 working Upazilas. Further, given the COVID-19 situation, the project organized 47 hand-washing events in the farming clusters to observe *Global Handwashing Day* with participation from all relevant stakeholders. In addition, *International Women's Day* was celebrated in 11 working upazilas in collaboration with relevant government department and CSOs.

2.4. Result Area 4: Sustainable Landscape

Crop Production Index: Registration of farmers and data collection is ongoing for Union wise crop production index covering 85 villages of five Unions under three Upazila of Khulna and Jashore districts. Crop production index will be developed for around 30,000 farmers (in collaboration with Gagro).

Safe Food Supply System: Development of a brief strategy paper on 'Safe food supply system' for southwest landscape in line with Solidaridad strategy and approaches and based on the learning from SaFaL has been initiated. Two workshops were organized in southwest landscape to sensitize key stakeholders and policy makers to promote safe food production, marketing and consumption through organizing workshops and roundtables at national and local level.

Piloting on Innovative and Adaptive Farming Practices: As part of the innovation of adaptive farming for the southwest landscape, successful piloting was done to produce Golda PL in the earthen pond and white fish by using Biofloc method (GIFT Tilapia, Sing) with support from Khulna University. In 2021, two farmers were able to produce Golda PL commercially and 500,000 Golda PLs were supplied to farmers.

Community Lead Water Management: Community lead renovation of water management system were established in 4 communities with active participation of contribution from respective communities. The planning for water management system in the *gher* areas were done through consultation with all relevant stakeholders.

Section 3: Achievements of Results

3.1 Result-1: Farmers Implemented Good Agricultural Practices That Optimize Their Social, Environmental and Economic Performance

Outcome Indicator	Target (for 2021)	Actual (for 2021)	Percent achieved	Cumulative Target till 2021	Cumulative Achievement till 2021
% increase in yield	40%	48%	8%	40%	48%
% household increase in income	75%	79%	4%	75%	79%
Number of Hectares/land or water area of land under good agricultural practices	32,000	35,615	11.3%	32,000	35,615
Volume of crops and produce produced through GAP (MT)	1,50,000	173,451	16%	505,000	541,047

Table 2: Target Vs Achievement under Result 1 (Good Practice)

3.1.1 Scaling Sustainable Farming Practices

SaFaL identified a set of proven technologies for each of the commodities in consultation with relevant experts and extension specialists. On an average there are 17 recommended technologies under each of the commodity. 100% PG members adopted at least one recommended technology. The adoption of technology is highest in dairy sub - sector with 92% dairy farmers adopting at least 10 or more recommended technologies. The adoption rate for the aquaculture sub-sector is 90% and 82% for fruits & vegetables. Again, 73% soybean farmers adopted nine recommended technologies.

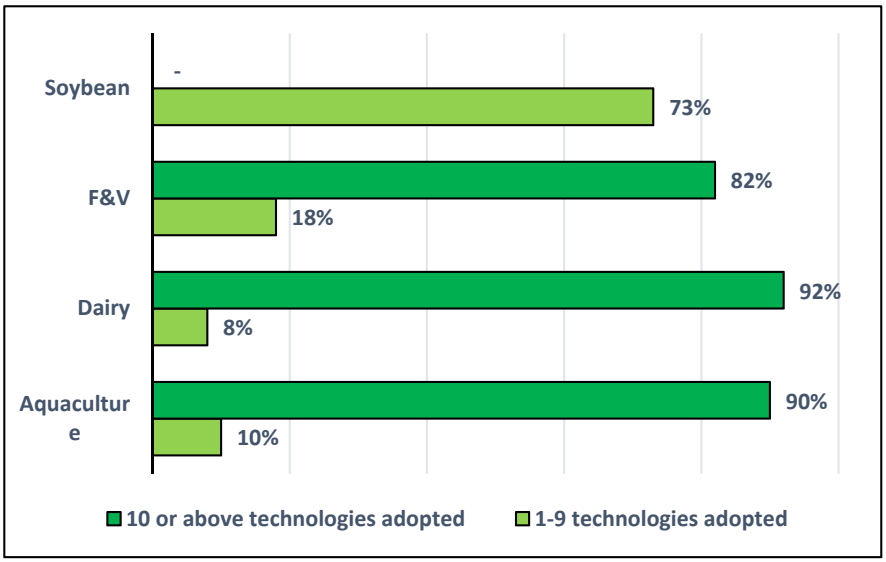


Figure 1: Sub-Sector wise Technologies Adoption rate by PG member

3.1.2 Land and Production under Gap

During 2021, a total of 35,615 hectares of land and water bodies were covered under sustainable agricultural practices, where 19,184 hectares of water bodies are in the aquaculture subsector, and 2,396 hectares of land under fruits and vegetable and 14,035 hectares of land under soybean. 173,451 MT of crops have been produced by adopting good agricultural practices in aquaculture, fruits and vegetables and soybean and 40815.84 MT, 90,135 MT and 42,500 MT crops produced respectively.

3.1.3 Farm Productivity

During 2021, the project supported 106,222 farm households to achieve higher levels of productivity through promotion of sustainable farming technologies and better post-harvest management. Promotion of good practices resulted in increase in the yield of crops and milk. The overall yield increased by 48% over the baseline. The increase in the production of vegetables ranged from 26-76%. For instance, the mango production increased by 26.3%, and soybean production increased by 51% over the baseline. At the same time, the shrimp and prawn production witnessed an increase by 27% and 32% over the baseline. The overall milk productivity increased to 5.13 liters/cow/day from the baseline value of 3.5 liters/cow/day in baseline. The overall milk production has by increased 23% over the baseline.

3.1.4 Reduction in Post-Harvest Loss

To reduce post-harvest loss, Solidaridad continued to build the capacity of farmers and other supply chain actors like traders, labor and transporters on better post-harvest management. Better understanding on crop specific appropriate maturity stage, harvesting time, proper harvesting methods, appropriate storage, packaging and transport techniques increased profitability for farmers and supply chain actors. In 2021, average reduction of post- harvest loss was 67% for all commodities. The highest reduction of loss was found in aquaculture at 78% and milk which at 93% over the baseline.

3.1.5 Income of the Farmers

Increase in farm production, decrease in production cost, and post-harvest loss supported by improved access to market through project developed supply chains resulted in increased household income of SaFaL supported households. According to M&E data, the average annual income of SaFaL beneficiary is around BDT 267,657.24 which is 42% higher over the baseline. 79% household reported increased income where 89% aquaculture farming households' income increased 52% over the baseline, 69% dairy farming households' income increased 43% over the baseline, 76% Fruits and vegetable farming households' income increased 54% and 75% soybean farming households increased their income by 23%.

3.2 Result-2: Sustainable Market Development: Farmers and Supply Chain Actors Unlocked Their Market Potentials and Have Greater Access to Inputs and Services, and to Sell Their Products

Outcome Indicator	Target (for 2021)	Actual (for 2021)	Percent achieved	Cumulative Target till 2021	Cumulative Achievement till 2021
Amount of private sector & public sector investment in the supply chain (Million BDT)	80	93.3	17%	143	174.5
Volume of trade generated in crops (MT)	28,000	32,335.7	15%	146,300	171,701
Volume of trade generated in dairy (Million Liter)	1.9	2.8	48%	6.2	9.3
Financial value of trade generated (Million BDT)	1,900	2,434.7	28%	4,089	9,398.93
Share of women in decision making position within the farming cluster (% of women)	40%	45%	13%	45%	45%
Number of FHH availing Business services from SaFaL institutions	37,000	47,600	29%	37,000	47,600

Table 4: Target vs. Achievements under Result 2 (Sustainable Market Development

3.2.1 SaFaL Business Institutions for Trade Facilitation

The 65 market structures established by Solidaridad connected producers directly with the end market. The linkage resulted in bridging the gap between the agricultural production and the demand of safe and sustainable food for the consumers at local and export market. SaFaL business institutions have been playing a significant role in unlocking market potentials and ensuring efficient business services through market development/linkages and management system. 509 entrepreneurs engaged in SaFaL business institution and 312 Women farmers were supported and capacitated to make decisions regarding business linkages and negotiating with other business actors. Altogether, the market structures created employment for 4,091 people both in backward and forward market chains.

3.2.2 Volume of Commodity Traded

SaFaL-supported business centers are bridging the gap in supply side and mitigating trade related constraints to improve efficiency in the supply of safe food to local, national and international markets. During 2021, a total of 32,335.742 MT of fish, fruits, vegetable, soybean and 2,818,482 liters of milk were traded through the project supported supply chains with total turnover of BDT 2434.71 Million (€ 26.01 million). 808.5 MT of vegetables were supplied to the international markets with total traded amount of BDT 9.62 million (€ 102,785.61). 1,032 vegetable producers were linked with international supply chain with the engagement of 32 exporters in ten export countries.

3.2.3 Market Linkage through SaFaL-Supported Market Infrastructures

During the reporting year 2021, 92% farmers were able linked with multiple markets which contributed to increasing income. In 2021, 45% farming households availed business services from SaFaL institutions.

3.2.4 Entrepreneur Development and Employment Generation

With an aim of creating improved employment and entrepreneurship opportunities in the supply chain, SaFaL developed 984 (32% women) entrepreneurs who have been successfully operating their micro-enterprises. In the reporting year 2021, SaFaL connected the entrepreneurs with potential clusters for increasing trade volume and income. According to M&E data, the average monthly per capita income of the entrepreneurs was BDT 11,923 (EUR 127.4), which is an increase of 23% over the average income of 2020.

3.2.5 Access to Finance

During the year 2021, a total of 5,672 farmers received financial services from different financial institutes and government departments amounting BDT 994.7 million (EUR 10.6 million). Linkages with the government's line departments were also facilitated for connecting SaFaL supported farmers with government incentives.

3.2.6 Public-Private Engagement

The project engaged 75 public and private sectors both at the backward and forward market. The total investment from public and private sector was BDT 93.28 Million (€ 1.00 million), out of which BDT 50% from private sector and BDT 50% from public sectors (Details in Annexture: 1).

3.3 Result-3: Improved Nutritional Status and Food Security among the Stakeholders and Farming Households

Outcome Indicator	Target (for 2021)	Actual (for 2021)	Percent achieved	Cumulative Target till 2022	Cumulative Achievement till 2021
% decrease in women aged 19-24 years	30%	52%	73%	30%	52%
% of girls getting	85%	93%	9%	85%	93%
% increase in breast feeding for the	75%	94%	25%	75%	94%

Table 3: Target vs. Achievement under Result 3 (Nutrition and Food Security)

3.3.1 Improved Knowledge on Nutrition

SaFaL-II promoted behaviour change around dietary diversity, nutrition and health issues through 130 trained Community Nutrition Volunteers (CNVs). They have created awareness among household members about health and nutritional requirement to induce behaviour change and contribute to better dietary consumption. An average of 96% of the farm households are now aware of dietary diversity, hygiene practices, prevention measures of COVID-19 spread, sexual reproductive health (SRH) and impact of early marriage.

3.3.2 Business Promotion of Community Nutrition Volunteers

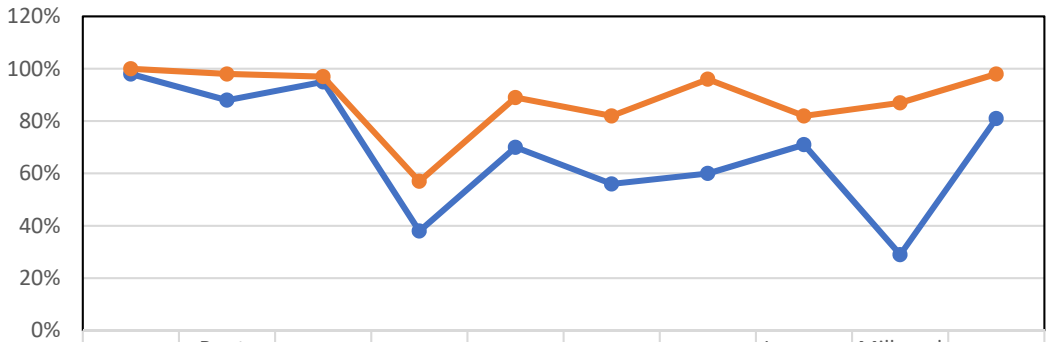
In 2021, the project transformed 127 Community Nutrition Volunteers (CNV) into Nutrition Entrepreneurs. The Nutrition Entrepreneurs provided basic health care services along with promoting and selling social and hygiene products to the community. During the reporting year, 130 CNVs provided services to 81,500 community people with a service value of BDT 39.41 Million BDT (€ 0.42 million). On an average the CNVs earned a monthly income BDT 11,329 (€ 121.05).

3.3.4 Change in Food Consumption

Food consumption pattern among the project beneficiary households reflected significant improvement. 57% of the households consumed meat in the reporting year compared to 38% in the baseline. The

consumption of milk and milk products reached 87% in the reporting year, against the baseline of only 29%. Further, 96% beneficiary households consumed fish in the reporting year against the baseline of 60%.

Figure: Percentage of households consuming different food groups



	Cereals	Roots and tubers	Vegetables	Meats	Fruits	Eggs	Fish	Legums, nuts and seeds	Milk and milk products	Oil and fats
Baseline	98%	88%	95%	38%	70%	56%	60%	71%	29%	81%
Progress in 2021	100%	98%	97%	57%	89%	82%	96%	82%	87%	98%

3.3.5 Household Dietary Diversity Score (HDDS)

The project has measured Household Dietary Diversity Score (HDDS) following FAO guidelines for measuring household and individual dietary diversity with 24 hours recall period. The survey indicates the gradual improvement in dietary diversity among the beneficiary households. The HDD score reached 9.2 in 2021 which was 6.9 in baseline and 33% increase over the baseline. The HDD score improved for 92% beneficiary households which was 80% during the baseline.

3.3.6 Early Marriage and Juvenile Pregnancy

The survey in 2021 indicated that 93% of girls got married at the legal age which is a massive improvement from only39% at baseline. Further, the survey findings also showed that the prevalence of juvenile pregnancy reduced to 52% in 2021 over the baseline.

3.3.7: Increase in Exclusive Breastfeeding Practice

Inclusive breastfeeding to children aged less than 6 months increased to 94% in the reporting year against the baseline of 65%.

3.4 Result-4: Sustainable Landscape (SW Bangladesh Landscape Stakeholders Adopt Sustainable Management of Land and Water Resources to Improve Agricultural Productivity and to Improve Environmental Performance)

3.4.1 Crop Production Index

In partnership with a private sector (GAgro Ltd), the project introduced a mobile based app for the development of Union wise crop production index and landscape profile. The registration of farmers and data collection is ongoing in 85 villages of five Unions under three Upazila of Khulna and Jashore districts. Crop production index will be developed for around 30,000 farmers.

3.4.2 Strategy paper on 'Safe food supply system'

Development of a brief strategy paper on 'Safe food supply system' for southwest landscape in line with Solidaridad's strategy and approaches and based on learning from SaFaL project is under process. Two workshops were organized in southwest landscape to sensitize key stakeholders and policy makers to promote safe food production, marketing and consumption through organizing workshops and roundtable at national and local level.

As part of the innovation of adaptive farming for the southwest landscape, successful piloting was done to produce Golda PL in the earthen pond and white fish by using Biofloc method (GIFT Tilapia, Sing) with support from "Center of Excellence''. In 2021, two farmers were able to produce Golda PL commercially and 500,000 Golda PLs were supplied to farmers.

3.4.3. Renovation of water management systems

Community lead renovation of water management system was done in 4 communities with active participation and contribution from respective communities. The planning for water management system in the *gher* areas was done through consultation with all relevant stakeholders including farmers of the catchment areas, local government officials, and local elected representative. WMG/WMA members, NGO representatives etc. With these small scale 4 community lead water management systems, efficiency in water management would be improved in 895 Acres of land and a total of 1135 farm households would be directly benefitted.

Section 4: Project Management

The project is being managed and operationalized through 3 regional offices and a team strength of 120 staff directly employed and through partners. In addition, a total of 786 extension agents are the 'Boots on the Ground', advising farmers and producers.

The regional teams are comprised of sector-wise commodity managers, supply chain officers, M&E officers, and finance and admin positions to implement the project. The regions are coordinated through the country office team, broadly under the leadership of the country manager. Gender focal persons are assigned in every region to ensure gender equality and equity throughout the project.

Section 5.1 Lessons and Learnings from SaFaL II Till 2021

Cluster based farming approach

Reorganizing commodity-based producer groups into production clusters and adoption of cluster-based farming approach has appeared as an effective approach to produce and supply safe and quality farming

products to the markets. The production clusters became the platform to connect farmers with markets through dependable supply chain actors and also contributing to strengthen market system.

Farmer-to-farmer (F2F) model

Farmer to farmer model for production and sales of high-quality soybean seed is a successful model for wider dissemination of new soybean varieties among the farmers and benefitted both farmers, sellers and buyers.

The adoption of smart technologies

The project has continued to transfer knowledge for the adoption of climate smart farming technologies. The M&E data shows that at the end of 2021, 100% farm households under the project adopted at least one climate smart technology in their farming.

Farmers' Cooperative

From the series of consultation sessions with the farming communities and local supply chain actors for forming Farmers' Cooperative, it has been found that a kind of vibration and huge interest among the farmers were generated around VSM catchment areas to join in the cooperatives. Facilitation of this consultation and engagement of local officials of Department of Cooperative in the formation process, made this complex process of Cooperative formation and getting registration from the DOC comparatively convenient for the project team. Till date, around 2000 farmers and entrepreneurs have enrolled as member of the cooperatives.

Youth Men and Women as Digitalization Agent in the farming communities

SaFaL-II engaged 50 young men and women in the process of developing Crop Production Index who are responsible for regular updating of farming information in a mobile based app. They are serving as connection point between the digital platform and other relevant agricultural stakeholders predominantly the farmers. Throughout the process, SaFaL realized that engaging youth as agents of change in the transformation process is the key.

5.2 Challenges Emerged During 2021

Climate Change

SaFaL is being implemented in the coastal region of Bangladesh where the climatic condition is a huge obstacle toward economic resiliency. The region is facing a number of ecosystem challenges arising from water vulnerability and climatic issues, that are impacting people and their livelihoods. Climate change has been adversely affecting the poverty situation, agricultural productivity, food security and income and employment.

During 2021, significant challenges were faced due to water logging, excessive rainfall and other weather conditions which has been mitigated through constant follow-up and time to time information dissemination among the farming clusters.

At the end of the reporting year sudden rain causes a tremendously damage to field crops, especially on winter early variety crops. The exportable cabbage field was damaged due to rain in winter that results a great loss for the cabbage farmers. The sudden rain not only hampered the early variety crops but summer vegetables too. Sudden heavy rain also caused enormous losses for aqua farmers. A few regions remained

water logged for a long duration for which the community nutrition volunteers of those areas faced difficulties to run their business smoothly.

Continuation of the pandemic and countrywide lockdown

During 2021, the country witnessed an ongoing COVID-19 pandemic. The pandemics and subsequent lockdowns resulted in movement and trade restrictions, hampering the movement of agricultural goods, inputs, and food industry workers. The price of food witnessed volatility leading to further disruptions in the supply chain.

Section 6: Sustainability

Sustainable Business Models: The clusters, cluster-based business institutes and services developed by the project will continue to sustain in the communities for the business interest of the farmers and entrepreneurs. The VSM graduation process that has been developed in consultation with the Embassy of the Kingdom of Netherlands will consolidate the greater marketing goals of the project and serve the farmers in the vicinity to a greater extent. Further, the business plan created in consultation with experts from Deloitte will help build a sustainable model for VSMs. The self-reliant business model of SaFaL has supported many local agro-entrepreneurs who are expected to support the local business ecosystem beyond the project and integrate with the mainstream agricultural market system. Further, the creation of the farming clusters has immense potential to continue to grow and scale.

Development of the Southwest Landscape Sustainability Framework: The progress of the project beyond the intervention period is further witnessed in the Southwest Landscape Sustainability Framework developed that will influence the policy advocacy initiatives around sustainable use of land and water resources. These efforts around landscape development are expected to create pathways for the implementation of Bangladesh Delta Plan 2100, Bangladesh food and Nutrition policy, etc. Overall, the whole food system around the delta region will be supported by the framework developed by SaFaL. Advocacy initiatives to ensure safe food production will also create consumer awareness, which in turn will enhance the demand of safe food and drive the production of the same. Hence, the demand-based production of safe food will be established at scale, by which more farmers will be motivated for eco-efficient agriculture and protection of the local ecosystem, more land and water will be brought under sustainable landscape. This way, the sustainability of the project interventions will be carried over by the stakeholders in the Delta.

Strong capacities of the farmers: Since its inception, SaFaL has empowered its farmer base and the community to adopt good practices and linked them to forward and backward markets. As the farmers have witnessed the gains of the practices, it is perceived that the continuation of practices will be undertaken even after the project ends.

Creation of strong market linkages: Across the commodities and sectors of SaFaL, strong partnerships have been developed with private sectors that will help continue the market uptake. SaFaL formed strong market collaboration with companies like Nourish, BRAC, Lenk Seafood etc, who will continue to demand and procure sustainable produce from the farmer base.

Continuation of funding opportunities: The program team is undertaking efforts to find new funding opportunities for the continuation of SaFal. The team is confident that given the priorities of the government, new funding will be secured soon.

Section 7: Cross-cutting

Achieving Empowerment of Women

Since its inception, the project has been promoting gender equality and women's socio-economic empowerment at every stage of its interventions. As a result of the efforts, changes are being visible during 2021. In the producer groups, 47% of the members are women. 45% of the key decision-making positions in the producer groups are represented by women. During the year, 420 women are being engaged in small enterprises, which was 82 during the baseline. 45% women are participating in decision making within the farming clusters, compared to that of 35% during the baseline.

Climate Impact

SaFaL-II has been pursuing a holistic approach to promote climate smart agriculture in the coastal landscape of Bangladesh. Through the 80 farming clusters and 1531 producer groups, the project provided a platform to improve the capacities of farmers to adapt with the climate change while simultaneously increasing productivity. The project undertook an ecosystem-based approach to promote climate smart agriculture for soy, aquaculture, fruits and vegetables and dairy to make the farming communities more resilient through the development of crop calendars and technologies such as short duration varieties, water use efficiency and bio-fertilizer. The crop calendar helps the farmers to decide different cultivation steps and harvesting time, helping them to protect their harvest climate related natural disaster. It has integrated landscape-level elements centered on sustainable practices that conserve biodiversity, increase productivity income, provide greater long-term stability to all value chain and supply chain stakeholders. A total of 471 trained Lead Farmers are providing technical support to the producer group members to adopt eco-friendly, sustainable farming and help them enter into new business ventures in the supply chain.

SaFaL-II is also contributing to climate change adaptation in many ways. The probiotic in shrimp farming helps reduce methane emission and nitrogen release. Use of sex pheromone trap and vermin compost in horticulture-farming increases production with less input and thus help farmers to produce more without harming the ecosystem. The production of saline tolerant green grass and hydroponic fodder promoted by the project as livestock feed is helping to improve feed productivity and quality as well as adaptation to climate change and reduction of both direct and indirect GHG emissions.

Section 8: Integrity Issues

Solidaridad maintained integrity and values across the organization and with its partners, beneficiaries and stakeholders. SaFaL-II project has been able to uphold trustful relationships with the partners and project beneficiaries to internalise the project objectives and the integrity issues in the day to-day operations and in use of resources. The project followed the HR rules and code of conduct as per the HR manual to guide and implement the project. Solidaridad developed a standard operation procedures adherence to WHO Infection Prevention and Control Guidelines to continue delivery of project interventions during the pandemic and project staff worked from during lockdown period and upheld performance and integrity. The organization also issued relevant circular related to project implementation. No major concerns related to integrity have been witnessed during the reporting period.

Section 9: Efficient Use of Resources

With a cost-effective approach, the programme delivery ensured efficient use of resources. In the reporting year, total audited expense of the project was €1,998,038 against the total approved budget of €2,907,575. The fund utilization rate was 69% and per beneficiary project delivery cost was €18.81. The total financial value of trade generated by project supported supply chains in the year 2021 was BDT 2434.706 million (€ 25.628 million). In the year 2021, the public and private sectors altogether invested a total of BDT 93.28 million (€ .9818 million) in the project.

Section 10: Risk Update

Anticipated risks	Possibility as predicted during proposal submission	Did the risk Occur?	Mitigation steps undertaken
Covid-19 induced impact: The COVID-19 pandemic posed risk on agriculture and food system might be continued. Solidaridad and PWC study indicates that Covid-19 is likely to push two to four million farmers into extreme poverty in the agriculture sector alone.	Medium	Yes	Project developed a number of innovative supply chains for fresh agricultural produces during the pandemic which have been strengthened further in this year to ensure food supply in the rural and urban communities. Project supported 60 producer cluster to develop realistic business plan, including production and marketing of demand-based commodities and strengthening supply chain for access to quality inputs. Project coordinated with relevant government departments, private sectors and financial institutions to enhance access to government declared incentive packages and suitable financial services.
National and local stakeholders' legitimacy and efforts: National and local stakeholders' willingness to collaborate and effectively participate in the initiatives for enhanced impact could be a challenge	Low	No	
Natural calamity induced vulnerabilities: Flood, cyclone, tidal surge, salinity intrusion and waterlogging	Medium	Yes	As outlined in the sustainability framework for southwest region, project has been promoting adoption of climate smart technologies to minimize risk of crop loss or damage

may adversely affect the project interventions.			due to natural calamity. The project also enhanced capacity of the farming communities to adapt short duration early crop varieties, saline resilient variety, production technologies and crop protection measures. Development of community lead water management system enabled farming communities for efficient water management and protect their crops form natural hazards.
Market volatility: Shift in consumer choices due to economic transformation or recession might hamper desired business models	Low	Occurred during the pandemic period.	Project experienced some shift in product demand and choice particularly during the pandemic. To address the issue, project strengthened the capacities of 60 production clusters for demand driven production and marketing of safe and quality food. During the pandemic, project continued supporting supply chain actors for sourcing safe and quality products from the safe and exportable vegetable and fruits production clusters.