Food and Agriculture Organization of the United Nations

INTEGRATED AGRICULTURAL DEVELOPMENT FOR NUTRITION IMPROVEMENT IN THE NORTH-WESTERN REGION OF BANGLADESH

February 2022

SDGs:

Country:	Bangladesh
Project Code:	TCP/BGD/3707
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Contact Info:	FAO Representation in Bangladesh FAO-BD@fao.org

Implementing Partners

Department of Agricultural Extension (DAE), Ministry of Agriculture.

Beneficiaries

Farming households (FHHs) in three target districts (Kurigram, Rajshahi and Kushtia).

Country Programming Framework (CPF) Outputs

Country Programming Framework 2019-2020

Pillar 1: Healthy, Safe and Nutritious Foods (HSNF).

Output 1.1: Nutrition sensitive interventions promoted in the agriculture, fisheries, health and livestock sectors.

Pillar 2: Sustainability of Productive Ecosystems (SPE).

Output 2.1: GoB's capacity strengthened in sustainable land and water resources management, conservation and ecosystem productivity.

Pillar 3: Resilient and Inclusive Agro-Economic Growth (RIAG).

Output 3.1: Risk informed strategies and practices for diversification of agriculture production (crop, livestock, fisheries) supported in disaster and climate vulnerable hotspots.

Output 3.2: Market opportunities, mechanization and value addition of primary produce promoted for rural non-farm income and reduction of harvest loss and food waste.

Background

Crop production in the northwestern region of Bangladesh is challenged by a number of climatic factors and natural disasters. The region is characterized by extreme temperatures (high during summer and low during winter) and low rainfall, compared with the average conditions of the country, and suffers from drought during dry season and floods during monsoon season. In addition, the outbreak of diseases and insect pests was occurring in the region, possibly because of the effects of climate change. For example, a recent blast disease outbreak in wheat and Fall Armyworm (FAW) in maize caused significant crop loss in an area known to make a major contribution to wheat and maize production of the country. Thus, agricultural production, including crop, livestock and fisheries in the region is often affected, and the livelihoods of local communities are threatened as a consequence.

Food security in the region is also constrained by low levels of productivity and profitability, and a high yield gap. The reasons include relatively slow uptake of new technologies, inadequate levels of private-sector investments in the agricultural value chain, fluctuations in agricultural production, and limited resources for building resilience to climate change. There is also a high degree of post-harvest losses, and inadequate processing, storage and marketing facilities.

Against this background, the project aimed to improve the livelihood and nutrition situations of beneficiaries in three target districts (Kurigram, Rajshahi and Kushtfia) in the northwestern region of the country, through agricultural development, nutrition improvement, and value chain development.

Impact

The project interventions contributed to increased agricultural production, leading to improved livelihoods, and a significant increase in the income levels of beneficiary households in the three target districts.

Post-harvest losses of crops were greatly reduced for all of the agricultural commodities, including cereals, pulses, oilseeds, vegetables, fruits, milk and fish.

As a result of the nutrition-sensitive agricultural practices introduced, and the promotion of dietary diversity, the project contributed to enhanced health and well-being in beneficiary households. This included a significant increase in the consumption of food items such as meat, fish, pulses, fruits, vegetables, eggs, and milk.

Achievement of results

The project highlighted the adoption of nutrition-sensitive agricultural practices, through the integration of crops, aquaculture and livestock at farm household level, for better and more efficient utilization of farm resources, and improved productivity, profitability and nutrition.

The knowledge and capacities of beneficiary farmers, and field-level officers of the DAE, the Department of Fisheries (DoF), and the Department of Livestock Services (DLS) were greatly enhanced as a result of the training organized during the project.

A total of 600 FHHs was provided with training and inputs to facilitate homestead, field crop, fish farming, poultry and livestock production. Improved agricultural production techniques were introduced, comprising the use of improved crop varieties and seed; modern cultivation techniques, such as line sowing, appropriate weed control, integrated pest management, and the use of organic manure. Training was also organized on post-harvest loss minimization; the development of proper market linkages; and value addition opportunities of crops, aquaculture and livestock.

As mentioned above, the training sessions were attended by field level officers of the DAE, the DoF and the DLS, enhancing their knowledge and skills in relation to the adoption of sustainable, climate-resilient and nutrition-sensitive agricultural systems in the project districts and *upazilas*.

The inputs provided to the beneficiary FHHs included seeds, fruit saplings, small agricultural items of equipment, fertilizers, and feeds for poultry, ruminants and fish.

Nutrition-sensitive agricultural practices were introduced, as well as dietary diversity in the beneficiary households. In this context, homestead gardening was given priority for year-round production of nutritious and healthy vegetables and fruits, to address micronutrient deficiencies of the beneficiary households. This included a training session on homestead gardening for both farming households and field-level officers of the DAE. In addition, a nutrition specialist delivered lectures covering various aspects of nutrition concepts, different nutrient elements and their functions, the formulation of a balanced diet for different sex and age groups, the processing and cooking of foods following proper hygiene practice, etc. Cooking demonstrations on nutritious food were also organized for beneficiaries in the three target districts.

Implementation of work plan and budget

Almost all of the activities were implemented on time. The implementation of some of the field-level activities was delayed, because of the countrywide restrictions introduced by the Government on travelling and physical gatherings (from April to July 2020 for the first wave of COVID-19, and from April to August 2021 for the second wave). However, all of the activities were carried out immediately after the restrictions were lifted, with some adjustments. These included the planned one-day training sessions on aquaculture, livestock and integrated farming respectively, which were grouped into a single two-day training session, covering most aspects of the different training sessions. In addition, some adjustments were made to reduce the number of training batches (two batches instead of three) in each *upazila*, to accommodate all the activities of the two-day training session on "Integrated farming systems for smallholder farms with better farm productivity, nutrition and income". All the project activities were implemented within the planned budget.

Follow-up for government attention

The project was successful in increasing homestead gardening and field crop productivity, adopting integrated farming practices, and improving farm incomes and household dietary diversity of the beneficiary farming households, which was reflected in the baseline and endline survey reports of the project, as well as in the remarks made by the beneficiary farmers at the closing workshop of the project. The guests at the closing workshop, from the Ministry of Agriculture, the DAE and the DLS, also acknowledged the success of the project and recommended that the Government take the initiative to upscale the project activities, in terms of the adoption of integrated farming and nutrition-sensitive agricultural practices, not only in the northwestern region of the country, but also in other climate-vulnerable areas. The success of the project should be considered for upscaling in other ongoing future government and FAO interventions in the six Hotspot Zones of Bangladesh, as designated in the Delta Plan 2100 of the country

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SUSTAINABILITY

1. Capacity development

In order to make the project results sustainable, national systems, organizations and procedures were used during the project as much as possible.

The project was executed by the DAE, in collaboration with the DLS and the DoF. The DAE appointed one staff member as national project coordinator. The DAE, DLS and DoF had their own staff set up at district, *upazila* and village level, who were involved in implementing the project activities, including the selection of project beneficiaries and various training activities. Given that the DAE, the DoF and the DLS were active partners in the project and have the mandate and capacities, they will be able to facilitate the project beneficiaries to continue with the project activities without further technical assistance.

Partnerships and alliances in project formulation and implementation were established by FAO and the DAE, by engaging various government organizations and stakeholders, comprising Sher e Bangla Agricultural University, Rural Development Academy (RDA), Bogura; resource persons from public universities, such as Bangladesh Agricultural University, Islamic University, Kushtia Institute of Science & Technology and Jashore University of Science & Technology; and researchers from government organizations, such as Bangladesh Agricultural Research Institute (BARI), Bangladesh Livestock Research Institute, and Bangladesh Institute on Research and Training on Applied Nutrition (BIRTAN). This collaboration with various organizations and stakeholders contributed to the sustainability of the project.


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2. Gender equality

The project was gender-sensitive. Women-headed farming households were given priority during the beneficiary selection of the project. Of the 600 project beneficiaries, 161 (almost 27 percent) were female. Emphasis was also given to young women in the selection of the participants for livestock provider training, and 13 of the 30 participants (over 43 percent) were women.

Efforts were made (especially in the beneficiary selection and selection of participants for the training) to benefit women and men equitably. As guided by the project design, higher participation of women in the groups was encouraged, with a view to enhancing gender integration in productive spheres, and women's empowerment.

3. Environmental sustainability

The Initial Environmental Review (IER) was performed, and provided adequate explanations to the assigned environmental category of the project. The project included interventions for improving agricultural production of crops, aquaculture and livestock in the climate-vulnerable ecosystems of the country, through the adoption of climate-resilient systems in the three target districts. The impact of the project on the environment in the project area is considered positive, as it is a part of Good Agricultural Practices (GAPs), promoting the use of climate-resilient technologies and agricultural systems.

4. Human Rights-based Approach (HRBA) – in particular Right to Food and Decent Work

The project adopted the HRBA, namely it aimed at the realization of human rights, applied human rights principles, and promoted the concepts of rights and obligations. In particular, it contributed to achieving the right to adequate food, in accordance with international standards and based on the Right to Food Guidelines adopted by FAO in 2004. The project promoted decent rural employment, aiming at the progressive realization of the right to decent work for rural people, in accordance with the Decent Work Agenda endorsed by the UN World Summit of 2005.

In addition, work hours were greatly reduced, as a result of replacing the traditional agricultural system with modern cultivation and mechanization.

5. Technological sustainability

The technologies used in the project, in relation to the adoption of sustainable and nutrition-sensitive agricultural systems, are very location-specific, appropriate, and flexible to the existing ecological situation. The technologies adopted through the project interventions concerned the needs of the area and addressed the climate-change issues affecting agricultural production.

6. Economic sustainability

During the closing workshop of the project, representatives from the DAE, the DoF, the DLS and the Ministry of Agriculture acknowledged the contribution of the project and realized the importance of scaling up the project in other areas of the country. Regular activities of the DAE under the Ministry of Agriculture, and the DoF and DLS under the Ministry of Fisheries and Livestock have provisions for the mobilization of resources to the sector. The DAE, the DoF and the DLS could reach beneficiaries and stakeholders with all products and services, as they have a root-level monitoring system.

DOCUMENTS AND OUTREACH PRODUCTS

- **FAO.** 2020. Proceedings of the Stakeholder Consultation Workshops. 91 pp.
- **FAO.** 2020. Proceedings of the Inception Workshop in Kushtia. 28 pp.
- **FAO.** 2020. Proceedings of the Inception Workshop in Rajshahi. 24 pp.
- **FAO.** 2020. Proceedings of the Inception Workshop in Kurigram. 23 pp.
- **FAO.** 2020. Proceedings of the Training on "Homestead Gardening towards Nutrition Sensitive Agriculture and Healthy Diet". 116 pp.
- **Sher-e-Bangla Agricultural University (SAU).** 7 June 2021. Letter of Agreement ([LoA] 1507649) report on Baseline Study of the Project on Integrated Agricultural Development for Nutrition Improvement in the North-Western Region of Bangladesh. Dhaka. 58 pp.
- **Sher-e-Bangla Agricultural University (SAU).** 7 June 2021. LoA (1507649) report on Endline Study of the Project on Integrated Agricultural Development for Nutrition Improvement in the North-Western Region of Bangladesh. Dhaka. 89 pp.
- **RDA.** 8 June 2021. LoA (1507648) report on Training on Livestock Service Provider. Bogura. 17 pp.

ACHIEVEMENT OF RESULTS - LOGICAL FRAMEWORK

Expected Impact	**Sustainably improved livelihoods emphasizing food security and nutrition in NW region**	
Outcome	Improved livelihoods through agricultural development, nutrition improvement and value chain development in NW region	
	Indicator	1. Number of sustainable and nutrition-sensitive agriculture systems adopted (crops, aquaculture and livestock). 2. Frequency of crop varieties grown by type (number per annum per household). The term 'type' indicates crop categories such as cereals, pulses, oilseeds, spices, vegetables (leafy, root, etc.) and fruits. 3. Dietary diversity: Varieties of food group and food intake per household. 4. Enhanced knowledge & skills on food selection, preparation & cooking, and infant and young child feeding practice for improved nutrition, including food safety and hygiene practices. 5. Income per pilot producer.
	Baseline	1. Baseline survey result. 2. Figure from BRRI survey, baseline survey results. 3. Baseline survey. 4. Baseline survey. 5. Household Income and Expenditure Survey (HIES), baseline survey.
	End Target	1. 10% increase over baseline (for crops, aquaculture and livestock). 2. 10% increase over baseline. 3. 10% increase over baseline. 4. 20% increase over baseline. 5. 10% increase over baseline.
	Comments and follow-up action to be taken	1. Six hundred beneficiary FHHs received training on "Value-chain-based crop production technology, post-harvest loss management and value addition"; and "Integrated farming systems for smallholder farms with better farm productivity, nutrition and income". Thirty-six field level officers from DAE, DoF and DLS participated in all of these training sessions. The beneficiary FHHs also received input support. As a result of the interventions, the mean number of improved agricultural production techniques known by households (HHs) during the agricultural season increased significantly, from 3.9 practices to 6.39 practices between the baseline and endline surveys; while the mean number of improved agricultural production techniques adopted by HHs during the agricultural season increased significantly, from 3.2 practices to 6.19 practices between the baseline and endline surveys. The adoption of homestead gardening improved remarkably in the endline survey, at about 45.83%, compared with 7.43% in the baseline survey. Similarly, the mean number of improved practices adopted in fish farming increased from 3.2 practices in the baseline survey to 6.19 practices in the endline survey, including proper pond preparation; improved mono/polyculture; maintaining stock density; providing supplementary feed, etc. When compared with the baseline figures, the percentage of HHs with knowledge and adoption of livestock and poultry-rearing technologies was found to be relatively higher in the endline area. For example, the adoption of balanced feeding, deworming and vaccination in livestock increased to 33%, 43% and 46% respectively during the endline survey, from the baseline data of 17%, 21% and 26% respectively. 2. There was a substantial increase in the total cropped area. As a result of the interventions (training and input support for demonstration), the overall estimates for cropping intensity grew from 6.9% to 12.4%. The beneficiary members experienced an increase in cropping intensity, which was almost 9.4 percentage points higher than their non-beneficiary counterparts. In terms of improvement in cropping intensity, the top district was Kurigram (12.4%), followed by Kushtia (8.9%), and Rajshahi (6.9%). Overall, the three target districts experienced significant progress towards increasing the cropping intensity during the project.

Expected Impact	**Sustainably improved livelihoods emphasizing food security and nutrition in NW region**	
Outcome	Improved livelihoods through agricultural development, nutrition improvement and value chain development in NW region	
	Comments and follow-up action to be taken	3. Consumption of most of the food items, including meat, fish, pulses, fruits and vegetables, increased significantly in the study areas in the HHs that participated in the intervention. The percentage of households that consumed fish in 24 hours was only about 47% before the intervention, and this increased to more than 70% following the intervention. Similarly, per capita consumption of leafy vegetables, non-leafy vegetables and fruits per day stood at 75.68 g, 74.15 g and 52 g respectively during the endline survey, from the baseline status of 41.77 g, 50.50 g and 26.1 g respectively. Overall, the Household Diet Diversity Score (HDDS) increased by 1.94 points, rising from 4.41 at baseline to 6.35 at endline. The Women Diet Diversity Score (WDDS) among the beneficiary HHs also increased from 4.91 at baseline to 6.30 at endline. The higher endline than baseline HDDS and WDDS in all districts, with statistically significant differences, suggested that the project positively influenced dietary diversity. 4. Knowledge and skills on improved nutrition of beneficiary HHs were increased through a day-long training session on "Homestead gardening towards nutrition-sensitive agriculture and healthy diet". The increased knowledge and skills was reflected in the change in the pattern of HH dietary consumption before and after the intervention. The percentage of HHs that consumed the food items always increased at the endline status, as compared with the baseline status. The highest increase was for fish (from 47.2% to 70.8%); followed by pulses (from 20.5% to 35.7%); eggs (32.9% to 45.8%); milk and dairy (23.6% to 35.4%); vegetables (80.7% to 92.3%); and meat (15.0% to 24.9%). 5. All 600 beneficiary HHs were provided with training, as well as inputs, as pilot producers for the demonstration. The objective was to facilitate their homestead and field crop production, fish farming and poultry and livestock production, with the ultimate aim of increasing their incomes. Compared with the baseline data, the endline survey showed a yearly increase of BDT 14 314 per household, which was more than a 9% increase in their annual incomes.

Output 1	Benchmarking of current food production systems (for crops, aquaculture and livestock subsectors), nutrition situation, and development of a IADNI plan for the three districts	
	Achieved	
	Yes	
Activity 1.1	Desk study performed, questionnaires for field base-line survey and focus group discussion developed, and survey interviewers trained on undertaking surveys & focus group discussion with key informants and local farmers	
	Achieved	Yes
	Comments	A desk study was conducted to understand the current production systems in crops, aquaculture and livestock in the selected districts of the project. For the selected pilot *upazilas* (two *upazilas* in each of the three target districts), a matrix was prepared based on poverty rate (%), extreme poverty rate (%), population in bottom 40%, underweight children (%), severely underweight children (%), stunted children (%), severely stunted children (%), and cropping intensity (%). An LoA was undertaken with the Department of Agricultural Statistics, Sher-e-Bangla Agricultural University, Dhaka to conduct the baseline survey. The questionnaire for a face-to-face survey and the checklist for Focus Group Discussion (FGD) were accordingly prepared to cover the following aspects: – Food production systems and practices for crops, including farmers' preferred crops (field crops and homestead gardening), aquaculture and livestock subsectors, operated specially by smallholder farmers. – Food supply chain analysis and efficiency, productivity nutrition-sensitivity of value chains for local nutrient-dense food production and post-harvest losses. – Quantitative food intake, dietary diversity for infant and young children, and women of reproductive age, food culture and taboos, consumer awareness of food and nutrition, food safety and hygiene, affordability of diets, etc. among the local people, including pregnant women, lactating women, children under 2 and 5 years old, etc. – Potential marketing channel/value addition, including nutrition value path for agricultural produce. – Opportunities and challenges for diversification by moving towards nutrition-sensitive agriculture and integrated farming practices, for better integration of various components in the farming systems, such as crops, livestock, fish, and homestead gardening. The enumerators were trained by the experts of the Baseline Survey Team, before conducting the survey of the farmers and FGDs.
Activity 1.2	Survey and focus group discussions conducted, results compiled, analyzed and reported for	
	Achieved	Yes
	Comments	A survey team of Sher-e-Bangla Agricultural University conducted the baseline survey with 300 beneficiary farmers (50 farmers in each *upazila*) and 300 non-beneficiary farmers (50 farmers in each *upazila*). Six FGDs (one in each *upazila*), and a number of Key Informant Interviews (KIIs) were done to capture qualitative information and views about the system of practising by government officials, local representatives, representatives of farmers, civil society members, etc. Different types of statistical tools, such as descriptive statistics, frequencies, mean, percentage; inferential statistics such as analysis of variance (ANOVA), correlation analysis, multiple regression analysis, test of hypothesis, regression analysis were used for data processing, analysis and presentation. Based on the survey a baseline survey report was prepared and submitted.
Activity 1.3	A detailed work plan developed for each subsector	
	Achieved	Yes
	Comments	A detailed work plan for each of the four subsectors, namely homestead gardening, field crops, aquaculture, and livestock was developed with the following activities: – A pre-implementation meeting was done, involving all the government officers of the DAE, the DoF, and the DSL in the selected three districts, and all *upazilas* of the three districts. – Six stakeholder consultation workshops (one in each of six *upazilas*- Godagari and Tanore in Rajashahi District; Daulatpur and Bheramara in Kushtia District; and Fulbari and Charrajibpur in Kurigram District) were organized, involving all the government officers of the DAE, the DoF, and DSL, representatives from the farmers, input dealers, entrepreneurs, private sectors, Non-governmental Organizations (NGOs), development partners, researchers, local representatives, etc.

Output 2	Capacity development for selected farming groups and agriculture extension workers on diversified and sustainable agricultural production	
	Achieved	
	Yes	
Activity 2.1	Pilot farmers' groups selected	
	Achieved	Yes
	Comments	One hundred FHHs from each *upazila* (totalling 600 FHHs from the six target *upazilas*) were selected as project beneficiaries. To facilitate interventions on integrated farming practices, FHHs were selected from the three concerned government departments, i.e. DAE, DoF and DLS. In each u*pazila*, 50 FHHs were selected through the DAE, 25 FHHs through the DoF, and 25 FHHs through the DLS. FHHs were selected covering landless, marginal and small farm categories. Priority was given to FHHs with the possibility of integrated farming, covering crop, livestock, fisheries. and homestead gardening. Women-headed FHHs and FHHs with disabled/vulnerable people were included on a priority basis. FHHs that were already beneficiaries of other ongoing projects were not considered for the project.
Activity 2.2	Inception Workshop	
	Achieved	Yes
	Comments	Three Inception Workshops (one in each of the three target districts) were organized, involving all the government officers of DAE, DoF and DSL, representatives from the farmers, input dealers, entrepreneurs, the private sector, NGOs, development partners, researchers, local representatives, etc. in the concerned districts. The developed work plan was shared with them and finalized with the feedback and suggestions from the stakeholders of the Inception Workshop in the concerned districts.
Activity 2.3	Agricultural diversification, and training for agriculture extension workers and farmers	
	Achieved	Yes
	Comments	To promote the development of nutrition-sensitive, climate-resilient diversified agricultural production, 600 beneficiary farmers attended a day-long training course on "Value chain based crop production technology, post-harvest loss management and value addition"; and a two day-long training course on "Integrated farming systems for smallholder farms with better farm productivity, nutrition and income". In addition to the government officers of DAE, DoF and DLS at district and *upazila* level, renowned university professors and researchers were invited as resource persons in the training programmes. Field-level officers of DAE, DoF and DLS also attended these training sessions. They covered various aspects of modern cultivation techniques, including disease control and prevention, post-harvest loss minimization, and value addition of crops, aquaculture and livestock. The training also highlighted the principles and practices of integrated farming, for better utilization of farm resources, with improved productivity, profitability and nutrition.
Activity 2.4	Regular support to farmers provided through local extension agencies	
	Achieved	Yes
	Comments	District-level DAE, DLS and DoF Officers were involved in the training programmes as resource persons; and they provided support to the beneficiary farmers at district, *upazila* and field level, as needed, together with the FAO national lead agronomist.

Output 3	Improved food consumption for better nutrition through improved knowledge and skills on diversifying diets, nutrition, food selection, preparation and cooking among households of farmers	
	Achieved	
	Yes	
Activity 3.1	Training modules on nutrition developed	
	Achieved	Yes
	Comments	A training module on nutrition, entitled "Homestead gardening towards nutrition-sensitive agriculture and healthy diet", was developed. In terms of nutrition, the module covered essential nutrition concepts, including micronutrients, balanced diet, gender and growth-wise (for adult, growing children, pregnant and lactating women) dietary requirements, and nutrition-sensitive agriculture. A balanced diet chart of different age and sex groups, such as adult male, adult female, pregnant women, lactating women, adolescent boys and adolescent girls, children (7-12 years), and infant (1-6 years) was also developed, and included in the Proceedings of the training on "Homestead gardening towards nutrition-sensitive agriculture and healthy diet".
Activity 3.2	Training on improved nutrition knowledge and skills through cooking demonstration	
	Achieved	Yes
	Comments	A day-long training session was held for all 600 beneficiary FHHs and 36 field level officers (subassistant agricultural officers) of the DAE on "Homestead gardening towards nutrition-sensitive agriculture and healthy diet". In addition to providing training on essential nutrition concepts and dietary requirements, the production of nutrition-sensitive and nutrient-dense vegetable and fruit production was emphasized, using the area-wise appropriate production model. The trainees were shown how to prepare nutritious *khichuri* (a common food item used by rural households in Bangladesh) by a chef, in each *upazila*, as per recipes provided by the BIRTAN, as well as how to clean, cut and preserve the ingredients involved.
Output 4	Post-harvest loss (PHL) along different stages of the food supply chains are identified and intervention proposed	
	Achieved	
	Yes	
Activity 4.1	Capacity needs assessed for post-harvest handling in the food supply chain	
	Achieved	Yes
	Comments	The current status of post-harvest losses of agricultural products at different stages was assessed during the baseline survey of the project. The training needs for minimizing post-harvest losses were also analysed.
Activity 4.2	Capacity development planned and conducted based on the needs identified	
	Achieved	Yes
	Comments	The 600 beneficiary FHHs were provided with training on the introduction of post-harvest losses and different stages of post-harvest losses of crops. This comprised the determination of appropriate maturity, harvesting time and methods; and proper ways of cleaning, sorting and grading, packaging, transportation and marketing, to minimize post-harvest losses of crops. In addition, all beneficiary FHHs were given two silos for better storage of their products, especially for seeds and grains.
Activity 4.3	Pilot producers selected and value addition introduced to their products	
	Achieved	Yes
	Comments	The 600 FHHs were given 12 types of vegetable seeds and six types of fruit saplings, to promote vegetables and fruit production in the homestead area. They were also provided with water melon/sweet gourd seeds for field cultivation in one 0.33 acre of land, together with the required fertilizers (Diammonium phosphate, Muriate of Potash and Vermicompost). To facilitate crop production, small items of equipment were supplied, such as spades and watering cans (for homestead irrigation), and low-lift pumps (for field irrigation). The FFHs were also supplied with feed for cattle, poultry and fish. In addition, training was held on the development of proper market linkages and value addition opportunities of farm produce.

Output 5	Strengthening effectiveness of project implementation by developing a nutrition implementation framework that includes operational strategies, impact pathways and measurable indicators – these help generating evidence-base and lesson learned for future upscaling across the three regions	
	Achieved	
	Yes	
Activity 5.1	Set up a nutrition implementation framework	
	Achieved	Yes
	Comments	The Food Planning and Monitoring Unit (FPMU) of the Ministry of Food, and the Ministry of Health and Family Welfare jointly formulated National Dietary Guidelines 2020, through the technical contribution provided by FAO during the "Meeting the Undernutrition Challenge (MUCH)" project. The guidelines clearly describe the food items for a well-balanced diet, such as a variety of foods at each meal, moderate consumption of fats and oils, limited intake of salt and condiments, among other things, within the Bangladesh context, which was also quite appropriate for people living in the project area.
Activity 5.2	Monitoring the processes and outcome of implementation	
	Achieved	Yes
	Comments	During the training programmes, all beneficiary FHHs were connected with district, *upazila* and field level officers of DAE, DoF and DLS for the implementation of the project activities, as well as the follow-up activities. The FAO national lead agronomist followed up the training activities, in cooperation with the DAE, DLS and DoF officers. The project activities and their implementation were also monitored and supervised by a Project Implementation Committee, comprising the Director-General of the DAE as chair, and members of the Ministry of Agriculture, the Planning Commission, the Economic Relations Division of the Planning Commission, DoF, DLS, BARI, BRRI, BIRTAN, etc.
Activity 5.3	Conduct Endline survey and End-of project workshop	
	Achieved	Yes
	Comments	The endline survey was done through an LoA with the team of the Department of Agricultural Statistics of Sher-e-Bangla Agricultural University that conducted the baseline survey. The survey questionnaire and checklists were prepared by the team, and shared with FAO for feedback. The questionnaire and checklists were then finalized, and a survey was conducted with the recruited enumerators and the survey team. After compiling and analysing the data, the draft endline survey report was submitted to FAO for evaluation. The final report was then prepared and submitted. The project was evaluated at an end-of-project workshop held on 21 December 2021 at Bangladesh Agricultural Research Council, Dhaka, which was attended by 74 participants (53 men, 21 women), comprising high-level government officials from the Ministry of Agriculture, DAE, DoF, DLS, university teachers, researchers, NGO personnel, representatives from the private sector, and beneficiary farmers from the project area.

Partnerships and Outreach
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