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SUPPORTING INTENSIVE VEGETABLE PRODUCTION IN SELECTED URBAN AND PERI URBAN AREAS TO MITIGATE THE IMPACT OF COVID-19 CRISIS

November 2022

SDGs:



Country:

Bhutan

Project Code:

TCP/BHU/3801

FAO Contribution:

USD 266 000

Duration:

5 May 2020 – 30 September 2022

Contact Info:

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Implementing Partner

Department of Agriculture of the Ministry of Agriculture and Forests.

Beneficiaries

351 youths in urban and peri-urban areas and laid-off employees from the tourism and hospitality sector.

Country Programming Framework (CPF) Outputs

CPF (2019-2023) Priority Area 2: Transformation of the agriculture sector towards a value chain-based and market-oriented sustainable system for enhanced income, gender-responsive rural livelihood and employment.

CPF Priority Area 3: Food self-sufficiency and nutrition security enhanced.



BACKGROUND

The COVID-19 pandemic had important consequences on international trade and food supply chains, which were all the more damaging for countries with import-driven economies, such as Bhutan. Reliable food provision and economic prospects in Bhutan were hindered by the sudden isolated situation in which the country found itself. In particular, the quality and quantity of fresh vegetables, fruits and meat imports were in peril, given the long queues of trucks at the border with India. In addition, Bhutan's tourism and hospitality sector, an important part of its economy, was hit hard by the COVID-19 pandemic, which caused rising unemployment rates, especially in cities, where 77 percent of residents work in the services sector.

To face the agricultural and economic challenges related to the pandemic, the Government requested the support of FAO to enhance intensive urban and peri-urban farming practices and provide greater economic and food security for the population. The project was set up to develop urban and peri-urban agriculture in 65 converted acres of land, developing the agriculture capacity of young people and laid-off employees from the tourism and hospitality sector to produce and supply vegetables to urban markets and ensure alternative streams of income.

IMPACT

The project contributed to enhancing the cultivation of urban and peri-urban farming culture to mitigate the impact of the COVID-19 crisis in Bhutan. The project contributed to broadening the economic base of residents by providing vocational training to youths and laid-off employees and supplying them with the necessary agriculture knowledge and equipment to ensure greater economic and food and nutrition security.

ACHIEVEMENT OF RESULTS

The project contributed to strengthening sustainable vegetable production in urban and peri-urban areas in Bhutan to mitigate the negative impacts of the COVID-19 crisis on unemployment and food provision. The project carried out all planned activities and achieved all three of its outputs above expectations. Ninety-seven acres of fallow land, 32 more than anticipated, were converted to farming land. The land was terraced, shrubs and bushes were uprooted and the installation of reliable irrigation facilities overseen. In addition, 157 greenhouses were supplied. Moreover, exceeding the original target, 351 youths and laid-off employees from the tourism and hospitality sector were trained in agronomy practices, organic farming and smart irrigation technology to cultivate vegetables on farming areas. Essential farming tools and equipment were introduced and handed over to farming groups, including greenhouses, farmyard manure, mulching materials, drip irrigation systems and high-yielding vegetable seeds. During the project period, a cumulated total of 233 megatonnes (MT) of assorted vegetables were produced from the converted vegetable farms.

Elements of success included the decentralization of activities to the field level to ensure their rapid and efficient implementation. For example, the project adopted the training of trainers (ToT) model to ensure a more horizontal learning approach and greater ownership of urban and peri-urban agriculture knowledge on the part of officers of the Department of Agriculture, volunteering individuals and Desuups. Furthermore, the project team demonstrated adaptability during the project implementation phase. To minimize potential crop failures caused by frequent lockdowns, establishment of priority vegetable nurseries was fast-tracked and produce marketing materials were created with farming group members.



IMPLEMENTATION OF WORK PLAN AND BUDGET

The project was subject to reprogramming due to the challenges resulting from the COVID-19 pandemic. Lockdowns put in place to contain the pandemic delayed a number of the planned activities requiring in-person presence for trainings and vegetable cultivation. In addition, since international experts could not travel to Bhutan because of COVID-19-imposed travel restrictions, efforts relating to botanical, biopesticide and micronutrient provisions were reconsidered. Thanks to national expertise, supplies to organically control pests were provided, however micronutrients could not be delivered. Given these challenges, the project was extended by six months without additional costs.

FOLLOW-UP FOR GOVERNMENT ATTENTION

It is recommended that the Government develop guiding frameworks for urban and peri-urban agriculture and incorporate these agricultural practices into the revision of the 2022 food and nutrition security policy of Bhutan.

SUSTAINABILITY

1. Capacity development

The project team provided vocational training to 351 young people and laid-off employees to enhance their capacity on vegetable production and intercultural operations. A close working relationship between FAO, implementing partners and farming groups ensured an effective capacity-building dynamic. As the project objectives are in line with the Department of Agriculture's mandate, it is expected that results will further be institutionalized.

2. Gender equality

Women were equally represented in the farming groups, with 180 women beneficiaries out of 351 stakeholders. Significantly, women were the majority during group discussions and training programmes, taking on an active role during project implementation.

3. Environmental sustainability

Environmental sustainability was an important element of the project as urban and peri-urban gardening trainings followed organic farming principals. For example, farmers were discouraged from burning land or using synthetic chemicals. In this sense, environmental preservation and protection was introduced together with notions of good vegetables cultivation practices.



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

The Right to Food and Decent Work was a cornerstone priority of the project. In this regard, the project provided employment prospects in the agriculture sector. During the pandemic, laid-off employees had the opportunity to produce vegetables for themselves and urban market buyers.

5. Technological sustainability

Novel technologies such as polytunnels, line seed-sowing, mulching technology, use of organic pesticides, drip irrigation and protected farming were disseminated through field demonstrations. The irrigation materials supplied have been handed over to landowners to carry out vegetable cultivation. The technologies introduced were affordable, user-friendly and eco-friendly. Most of the beneficiaries interrogated were confident that they would continue farming with the tools developed and the technical support of the Department of Agriculture and district agriculture sectors.

6. Economic sustainability

Bhutan's authorities have made it their priority to convert fallow land and engage youths to take on commercial farming, with cost support from the Government.



DOCUMENTS AND OUTREACH PRODUCTS

- ❑ Wangmo, C. 8 May 2020. *Urban agriculture initiative rolls out in Thimphu*. Kuensel online newspaper. 1 p.
- ❑ Wangmo, C. 27 July 2020. *Urban agriculture products face no dearth of market*. Kuensel online newspaper. 1 p.
- ❑ Wangmo, C. 29 August 2020. *Urban agriculture initiative supplies 500 kg of vegetables during lockdown*. Kuensel online newspaper. 1 p.
- ❑ Department of Agriculture. August 2021. **Department of Agriculture Highlights 2020-21**. Thimphu, Bhutan. 72 pp.
- ❑ Dema, C. 2 April 2022. *More urban residents embrace agriculture*. Kuensel online newspaper. 1 p.

ACHIEVEMENT OF RESULTS - LOGICAL FRAMEWORK

Expected Impact	Cultivation of urban and peri-urban farming culture in Bhutan, helping to broaden the economic base of the country		
Outcome	Strengthened sustainable vegetable production in urban and peri-urban areas		
	Indicator	Urban and peri-urban vegetable production and supply at commercial scale.	
	Baseline	0	
	End Target	65 acres	
	Comments and follow-up action to be taken	In total, 97 acres of fallow land were converted to vegetable farms. The project outcome will be continued with the technical support of the Department of Agriculture and district agriculture sectors.	
Output 1	Urban vegetable cultivation developed with all necessary facilities		
	Indicators	Target	Achieved
	Area of urban and peri-urban vegetable gardens developed.	65 acres.	Yes
Baseline	0		
Comments	A total of 97 acres of fallow land were converted to vegetable gardening areas with food production activities expected to continue with the technical support of the Department of Agriculture and district agriculture sectors. Other private individuals and youths are expected to be encouraged to venture into similar kinds of farming.		
Activity 1.1	Land development and field preparation (fuelling of heavy machines, tractors and power tillers)		
	Achieved	Yes	
	Comments	Almost 70 percent of the converted land was fully or partially developed at the current stage. The land was terraced and shrubs and bushes were uprooted as part of the land preparation and development upkeep. Currently, most of the privately owned land is still cultivated to grow vegetables.	
Activity 1.2	Labour charges for the installation of irrigation system for efficient water use (support reservoir tanks, hosepipes, high-density polyethylene (HDPE), drip systems and sprinklers)		
	Achieved	Yes	
	Comments	All of the land identified for the project implementation was connected to irrigation facilities. Some lands were provided with large Sintex reservoir tanks to store water, while others were connected to spring water and drip irrigation systems. The materials supplied have been handed over to the landowners for continued production.	
Output 2	Capacity of group members built on vegetable production and its intercultural operations		
	Indicators	Target	Achieved
	Number of laid-off employees and youths trained in vegetable production.	200	Yes
Baseline	0		
Comments	In total, 351 youths and laid-off employees were engaged and trained in agronomy practices, organic farming and smart irrigation technology to cultivate common vegetables. In addition, 35 selected individuals and 15 Desuups volunteers took part in ToT programmes on greenhouse installation.		
Activity 2.1	Training a minimum of 200 laid-off employees and youths in intensive vegetable production		
	Achieved	Yes	
	Comments	In total, 351 youths and laid-off employees were engaged and trained on agronomy practices to cultivate common vegetables (chilli, leafy vegetables, carrot, zucchini, pumpkin, broccoli, cabbage, cauliflower, brinjal, onion, mushroom, etc). They were also trained on organic farming and smart irrigation technology. In addition, 35 selected individuals and 15 Desuups volunteers took place in training of trainers (ToT) programmes on greenhouse installation.	
Activity 2.2	Demonstration of improved vegetable production technologies for urban and peri-urban dwellers and organization of exchange visits		
	Achieved	Yes	
	Comments	In each project site, one greenhouse was installed as a demonstration infrastructure with all the improved vegetable technologies attached, such as drip irrigation system, bed-making technologies, mulching, nursery-raising plant protection, soil nutrient management and electric fencing.	

Output 3	Urban vegetable production and supply by the registered laid-off employees and youths		
	Indicators	Target	Achieved
	Quantity of urban vegetable production and supply.	100 MT per season.	Yes
Baseline	0		
Comments	A cumulative total of 233 MT assorted vegetables were produced from the project areas during the project period.		
Activity 3.1	Promote protected cultivation and alternative technologies (greenhouses)		
	Achieved	Yes	
	Comments	A total of 157 greenhouses were supplied, consisting of 51 low-cost greenhouses, 69 sets of large galvanized greenhouses (20 x 5 m), 37 sets of smaller galvanized greenhouses (10 x 5 m) and 45 rolls of green shade nets. Practical demonstration workshops took place to promote protected cultivation and alternative technologies. As mentioned above, one greenhouse was installed in each project site to showcase protected agriculture examples. Early nursery-raising technology using polytunnels was presented to all group leaders who followed the ToT approach of learning. In addition, proper uses of greenhouse technology with insect nets were introduced to the group leaders of each farm site. Demonstrations on how to apply shed house technology for heavy rain monsoon protection were also carried out.	
Activity 3.2	Promote assorted high-yielding vegetable seeds		
	Achieved	Yes	
	Comments	High-yielding varieties of broccoli, cabbage, cauliflower, carrot, cucumber, onion and chilli were promoted by distributing 702 packet supplies. In addition, other open pollinated vegetable seeds were also provided to the members (in total, 3 547 packets were circulated).	
Activity 3.3	Support producer groups with essential agricultural tools and equipment, farmyard manure, mulching, and post-harvest materials		
	Achieved	Yes	
	Comments	A total of 230 spades, 141 garden rakes, 180 sickles and 90 pickaxes were supplied as farm tools to farming groups. Similarly, locally produced farmyard manure and vermicompost were procured and supplied to each group for soil fertility improvement. A total of 88 rolls of mulching plastic and 1 700 plug trays were supplied to the various farming groups. 335 harvesting crates were distributed to beneficiaries and two groups received vegetable dryers.	
Activity 3.4	Support with botanical, biopesticides and micronutrients		
	Achieved	Yes	
	Comments	Since international experts could not travel to Bhutan due to COVID-19 pandemic travel restrictions, the project relied on the limited national expertise to carry out this activity. The project team could only provide neem oil and EM fermented plant extracts to control pests organically. Micronutrient provisions could not be secured.	
Activity 3.5	Support growers with water reservoir tanks, water pumps, HDPE and hose pipes, watering cans, sprinklers, drip irrigation and watering cans		
	Achieved	Yes	
	Comments	All sites were appropriately set up with irrigation facilities such as drip irrigation. A total of 19 sets and 102 HDPE pipe rolls were provided, and 33 Sintex water reservoir tanks with the capacity of 1 000 to 3 000 litres were installed. Furthermore, the project procured 19 water pumps, 135 watering cans and 172 sprinklers for irrigation for the farming groups. For the sake of visibility, short videos on the importance of urban and peri-urban agriculture were also produced.	

Partnerships and Outreach

For more information, please contact: Reporting@fao.org

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