



## Sustainable Agriculture and Value Chain Development SSTC Cities Project Pilot Initiative in Nepal (March 2021-May 2022)

# Summary Report



**WFP Centre of Excellence for Rural Transformation**

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## I. Overview

A demand-driven Initiative on Sustainable Agriculture and Value Chain Development (hereinafter referred to as the *project*) in Khajura Rural Municipality (the KRM) of Nepal was implemented by WFP China Centre of Excellence for Rural Transformation (WFP China COE) with funding support from United Nations Office of South-South Cooperation (UNOSSC) from March 2021 to May 2022. The project is a part of the efforts within the framework of UNOSSC South-South and Triangular Cooperation Cities Project. The project aims to advance sustainable agriculture value chain development in the KRM and improve local stakeholders' horticultural and livestock production skills. Through this project, South-South knowledge exchanges and technology transfer among concerned institutions was strengthened.



The project was implemented from March 2021 to May 2022 by WFP China COE, UNOSSC Cities Project team and the KRM authority in coordination with UNDP Nepal, WFP Nepal, with the technical support from the Foreign Economic Cooperation Centre of the Ministry of Agriculture and Rural Affairs of P. R. China (FECC).

The needs assessment of horticulture and livestock production in the KRM was completed in October 2021 upon the data collection, through two types of pre-survey circulated among smallholders and government officials. The theme of training and virtual tour was tailored for vegetable cultivation and poultry raising. Due to the COVID-19 pandemic situation, training video courses were pre-recorded by 14 Chinese experts,



and the study tour was taken virtually upon the consensus of all stakeholders. The on-site training in Nepal was organized by the KRM authority with the support from UNDP Nepal, and 40 participants joined the 7-day technical training. The post-survey was circulated during the training for impact analysis. Field demonstration in the KRM was conducted to showcase tomato cultivation techniques upon the technical guidance from Chinese expert team. UNDP Nepal provided important support to the field demonstration in the KRM.

There were three workshops and one review meeting organized by WFP China COE to discuss the

project workplan and review implementation progress with all stakeholders. The performance of this project was monitored according to the project Result Framework. Upon the extension of this project to May 2022, the Action Plan and Result Framework were updated accordingly. A total of four quarterly progress reports were completed to reflect the project progress in detail.

## Key Results

- ❖ **1** Needs Assessment Report completed
- ❖ **1** Factsheet and **1** Good Practice prepared
- ❖ **1** demonstration site with **500 sqm** constructed
- ❖ **3** technical guidance on tomato and onion cultivation and chicken raising developed
- ❖ **2** surveys circulated and **1** analysis reports completed
- ❖ **3** workshops and review meeting convened
- ❖ **3** city and institutions joined the UNOSSC Cities Cluster and **2** institutions are in process
- ❖ **5** project progress and summary reports completed
- ❖ **6** agencies involved in the project, including UNOSSC, WFP China COE, WFP Nepal, UNDP Nepal, FECC and the KRM authority
- ❖ **14** experts from **4** academic institutions and universities in China invited to share knowledge and techniques on vegetable cultivation and poultry raising
- ❖ **28** hours of training video courses and virtual tour developed
- ❖ **40** participants joined the on-site technical training in the KRM
- ❖ **200** indirect beneficiaries benefited from the on-site technical training
- ❖ **230** smallholders to be engaged in field demonstration with technical guidance



### III. Project Performance

#### Deliverable 1: Needs Assessment

Since the cooperation agreement was signed between UNOSSC and WFP, the consultation with different potential technical partners had been conducted. After several rounds of discussion, FECC has been confirmed to provide technical support for the project implementation.

Upon the discussion and exchange with FECC and experts, as well as the consultation with the KRM authority, WFP China COE developed two types of pre-survey targeting the government officials and smallholder farmers in April 2021. When the KRM authority has enforced a complete lockdown from May to June 2021 due to COVID-19, the pre-survey circulation took longer time. Finally, **50 pre-surveys for smallholders** and **7 pre-surveys for government officials** were collected from the KRM until July 2021.

The Needs Assessment Report overviewed the agriculture development in the KRM and stated technical gaps of horticulture and livestock production in the KRM, upon the comprehensive quantitative analysis. For horticulture, challenges are low yield and less developed field cultivation. For poultry raising, the production patterns are still traditional, causing less economic return. The Report suggested three main technical interventions for horticultural and livestock production in Nepal, including

- 1) increasing knowledge of agricultural technology and techniques of tomato and onion cultivation
- 2) enhancing skills of field management
- 3) improving knowledge of feed, disease prevention and control on chicken production.



The technical capacity building could focus on three aspects as suggested, including

- 1) delivering operational agricultural knowledge and techniques of tomato and onion cultivation and chicken raising
- 2) sharing adaptive techniques of tomato and onion cultivation, field management, and chicken raising
- 3) showcasing practical agricultural technologies through virtual tour.

## Deliverable 2: Technical Training



### 2.1 Training courses and virtual study tour

According to the Needs Assessment Report, the structure of the training courses is divided into two parts: the theoretical part and the virtual study tour, covering the sessions of horticulture and livestock production. A total of **14 Chinese experts** from Beijing Academy of Agriculture and Forestry Science, Chinese Agricultural University, Shandong Academy of Agricultural Science and Poultry Disease Branch of the Veterinary Association are invited to present lectures for the training courses development.



A series of video training courses in total **28 hours** was presented by the end of December 2021. The theoretical part includes **10 courses of vegetable cultivation techniques** and **11 courses of poultry raising techniques**, while each course lasts 1-2 hours.

The virtual study tour includes **40-mint video of vegetable cultivation and management practice** and **60-mint video of chicken raising and management practice**.



The virtual tour was recorded in field, which could provide the online visiting experience and vivid demonstration image for audience.

The package of training courses was delivered to the KRM with the support from UNDP Nepal in January 2022. The training package includes Introduction of the courses, Video courses, Experts Bios, Course PPTs, and Recommendable Schedule for On-site Training.

## 2.2 On-site technical training

Upon consultation with the KRM authority and Chinese experts, a seven-day training schedule was recommended for the on-site training. The KRM authority organized the on-site technical training with support from UNDP Nepal from 23 to 29 March 2022. In total, **40 participants** took part in the training, while **14 participants are female**.



Four of them from government and the rest are smallholder farmers. Agricultural experts from the KRM facilitated the training in local language to present knowledge and techniques from video courses. The then Mayor of the KRM, Mr. Kismat Kumar Kakshapati, also attended the training.



The post-survey was circulated among all participants on the last day of on-site training. Feedbacks were collected on training organizing, session and result. The Post-survey Analysis Report was prepared with quantitative analysis. The result indicates that all participants are satisfied with the training, especially, training sessions on programmatic skills were highly appreciated. Participants also expressed their expectation for in-person training and field instruction.

## 2.3 Online exchange

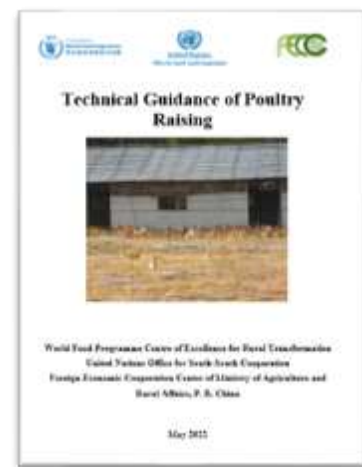
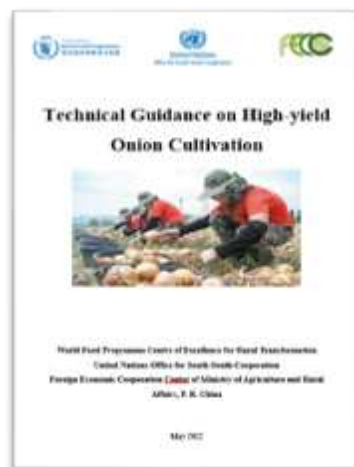
Following the on-site training, the online exchange was organized by WFP China COE on 29 April 2022. A total of 12 representatives from UNOSSC Cities Project team, the KRM authority, UNDP Nepal, WFP Nepal, FECC, Chinese expert team and WFP China COE joined the online meeting.



To facilitate the online exchange in an efficient way, a list of technical questions from smallholders was shared by the KRM authority with Chinese experts in advance. During the online exchange, Prof. Liu Wei from Beijing Academy of Agriculture and Forestry Sciences, answered questions about fertilizer usage, field management under high temperatures, disease and pest control, tomato root problems, etc.<sup>1</sup>

## 2.4 Technical guidance

Combined with training courses and online exchange, three technical guidance are developed focusing on tomato and onion cultivation and chicken raising. The technical guidance provides solutions of agricultural production for smallholders and agricultural technicians, particularly on most difficult technical issues such as chicken disease control and vegetable field management. The technical guidance will be circulated among **230 local smallholder farmers**.



## Deliverable 3: Workshops

Two Workshops and one Review Meeting were organized to support the project implementation and monitoring. Two working-level meetings were held to discuss specific themes. The communication and exchanges between WFP China COE and partners took place to tackle issues and facilitate project activities.

<sup>1</sup> More information about this online exchange will be available on UNOSSC Cities Cluster (<https://www.southsouth-galaxy.org/cities-clusters/>).



### 3.1 Inception Workshop

The inception workshop was conducted on 25 March 2021. Representatives from UNOSSC Cities Project team, WFP China COE, UNDP Nepal, and the KRM authority attended the workshop. FECC joined the workshop as the technical supporting agency. The workshop discussed the project workplan, set up the timeline of project implementation and established the working mechanism.

### 3.2 Mid-term Workshop

The mid-term workshop was held on 09 November 2021. Representatives from UNOSSC Cities Project team, WFP China COE, FECC, Chinese expert team, WFP Nepal, UNDP Nepal, and the KRM authority took part in the workshop. This workshop is consisted of four sessions: 1) project progress review and outlook 2) brief on Needs Assessment Report 3) brief on training courses 4) discussion.



Based on the needs assessment brief, Prof. Liu Wei and Prof. Chu Qin from Beijing Academy of Agriculture and Forestry Sciences elaborated the structure and content of the training courses on vegetable cultivation and poultry raising. WFP Nepal, UNDP Nepal and the KRM authority provided feedbacks and raised technical questions. The KRM Mayor acknowledged the project implementation and expressed that the local government would fully support the on-site training in collaboration with UNDP Nepal. Next steps were also presented and discussed, including the video course filming and delivery arrangement.

### 3.3 Review Meeting



The review meeting was held in UN Compound in Beijing on 01 March 2022 to summarize project implementation and discuss future engagement. Representatives from UNOSSC Cities Project team, WFP China COE, FECC and Chinese expert team attended this meeting. WFP China COE

shared an overview of the project, briefed the project implementation and forecasted into the next a few months. FECC reviewed the whole progress of technical support and shared long-term vision towards local agricultural sustainability in Nepal. Two expert



representatives on vegetable cultivation and poultry raising flagged professional views on technical training and field demonstration. The meeting also highlighted some suggestions about field demonstration facilitation.

### 3.4 Concluding Workshop



The concluding workshop will be held in June 2022 as agreed to review project outputs and summarize experience and lessons upon field demonstration which started in April 2022.

Two working-level meetings were held with all stakeholders respectively in March and April 2022 to confirm the project progress, discuss the existed and potential problems, and clarify required technical support at different phases. WFP China COE, as the project manager and coordinator, kept communication and exchange with different partners to facilitate the project implementation.

### Deliverable 4: Field Demonstration

Upon discussion and clarification of field conditions and actual needs in the KRM, the demonstration for tomato cultivation technology was decided. To facilitate field demonstration, two Recommendable Material Lists were shared with the KRM authority in April 2022 for tomato seedling culture and cultivation demonstration, upon consultation with Chinese experts from Beijing Academy of Agriculture and Forestry Sciences.

**Table 1 Recommendable Material List I**

| Tomato Seedling Culture Technology Demonstration<br>(3-4 square meters per household) |                      |   |  |
|---|----------------------|---|--|
| No.   | Item                 | Specifications/Requirements   | Number   |
| 1   | Seed                 | Tomato seed (Local common varieties could be selected)  | 1500 seeds   |
| 2   | Plug tray            | 72-cell plug tray   | 20   |
| 3   | Medium               | Peat and Vermiculite  | Peat 60L, Vermiculite 40L  |
| 4   | Fertilizer           | 1) N-P-K Compound fertilizer (15-15-15) or<br>2) Urea and KH <sub>2</sub> PO <sub>4</sub>                                     | 1kg  |
| 5   | Irrigation equipment | A sprayer, watering can, or spray head with tiny sprinklers   | 1  |
| 6   | Facility             | Suggest to planting seedlings in greenhouses or plastic shed to reduce the negative impact of pests, diseases and bad weather |  |
|   |                      |    |  |
|   |                      | Pic 1. 72-cell plug tray  | Pic 2. Seedling  |

**Table 2 Recommendable Material List II**

| <b>Tomato Cultivation Technology Demonstration</b><br>(300 to 400 square meters of land per 1,000-1,200 tomato Seedlings) |                                     |  |               |
|---|-------------------------------------|--|---------------|
| <b>No.</b>  | <b>Item</b>                         | <b>Specifications/Requirements</b>   | <b>Number</b> |
| 1   | Organic fertilizer                  | Chicken manure or other organic fertilizer   | 1000 kg       |
| 2   | Drip irrigation pipe                | Optional (if drip irrigation pipes cannot be installed, furrow irrigation is also acceptable)  | 1000m         |
| 3   | Plastic film                        | 1.5m in width *Optional  | 400m          |
| 4   | String (bamboo or similar material) | Prop up the tomato plants  |               |
| 5   | Fertilizer                          | N-P-K Compound fertilizer (15-15-15), urea, KH <sub>2</sub> PO <sub>4</sub> , or other fertilizers used as topdressing                     | 10 kg         |
| 6   | Yellow stick board (Optional)       | For pest control   | 100 pieces    |
| 7   | Pesticides and fungicides           | Depends on the occurrence of disease   |               |
| 8   | Facility                            | It is highly recommended to be cultivated in greenhouses or plastic sheds to reduce the negative impact of pests, diseases and bad weather |               |

**Suggestions:**

- 1. Those smallholders who have knowledge and experience on vegetable cultivation are suggested to be the leading farmers of the demonstration activities.**
- 2. Greenhouse or plastic shed is the better choice than field for the tomato cultivation.**

In early May 2022, the tomato seedlings were cultured and plan to be duly transplanted into two plots of 500-600 sqm on demonstration site in the KRM: one under plastic shed about 300 sqm, and the other in open plot. This is helpful to check difference in plant growing progress and assess the effects of two methodologies. Tomato is expected to harvest at the end of August 2022. The procurement of some small field tools has been completed. UNDP Nepal is in charge of local procurement in the KRM with funding support from UNOSSC.

Targeted beneficiary will be **30 smallholders** for the demonstration and about **200 smallholders** in the same community will benefit from the field demonstration. Technical guidance of the project will be distributed to these local smallholders.

## IV. Challenges and Experience

- **On-site Engagement**

Due to global COVID-19 pandemic, project implementation keeps ongoing without on-site engagement by Chinese experts. Remote support through video training courses and virtual study tour were extended with online exchange. The preparation of on-site training and field demonstration took months and was slowed down by the presidential election in Nepal. Efficient correspondence and communications among stakeholders were kept facilitating the project implementation. Feedbacks from trainees are satisfactory. The project implementation could be more effective if the on-site engagement and management are strengthened.



- **Language Challenge**

Video training courses are delivered in English, while agricultural experts, technicians and smallholders in the KRM attended the on-site training. Since English is not the preferable language for local smallholders, the agricultural experts supported training delivery in Nepali and local language. The language challenge restrained the video from being shared with more smallholders. The video courses could be translated into local language by the local experts. More Trainings for Trainers are expected to benefit more people.



- **Sustainability of Project Impacts**

One year seems too short to achieve solid outputs of any agricultural projects and evaluate actual impacts of agricultural value chain development. To promote the sustainability of demonstration and strengthen the impact of the project, WFP China COE, FECC and Chinese experts will continue to follow the field demonstration progress in the KRM, providing the technical guidance and support until the tomatoes are harvested.

WFP China COE will keep on leveraging expertise for horticulture and livestock production in Nepal, with the technical support from academies and specialized institutions, such as

Tibet Academy of Agricultural and Animal Sciences, which is the implementing agency of China-Nepal Bilateral Agricultural Cooperation Project.

The long-term and large-scale field demonstration is recommended for vegetable cultivation and poultry raising, which could make more contribution to the sustainable agricultural production.

Facilitating more cooperation between Chinese and Nepalese counterparts would be another important step of way forward, including in-person study tours in China and other possible modalities such as exchange and expert deployment, to support the sustainable impact of this project.



## V. Recommendation

Experience and lessons have been achieved from the project implementation and cooperation with partners. To support and enhance the management and implementation of similar projects in future, there are three pieces of recommendation as follows.

- **Longer project cycle motivates sustainable impact of the agriculture project.** Agriculture is the industry with characteristics of long cycle and low retribution. The longer agricultural project cycle could provide more opportunities for smallholders to learn agricultural technologies at different crop stages and to deepen the understanding of technology application. It also strengthens the result and sustainability of the agriculture project.
- **More extensive knowledge sharing expands the influence of South-South Cooperation.** The coverage of the current project is modest, but knowledge products could reach as many people as possible. The video courses can be replayed, and the technical guidance can be shared with more smallholders beyond the project beneficiaries. National and international media could play the important role to facilitate the sharing of knowledge products widely.
- **Stronger local coordination mechanism enhances the multi-stakeholder project implementation.** The coordination mechanism in the field would encourage different stakeholders to be involved proactively and plunge more resources into the project, which could improve the effective project implementation further. More efficient local coordination could benefit the local needs assessment, project progress monitoring and evaluation.