

SAVING
LIVES
CHANGING
LIVES



WFP's support to Climate Resilient Food Systems and Agriculture in Bhutan



World Food
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1. National priorities for the agriculture sector

In the 12th Five Year Plan (FYP) 2018-23, the Royal Government of Bhutan has drawn strategies to promote commercialization, agribusiness development and diversification while ensuring food self-sufficiency. **The Renewable Natural Resources (RNR) theme for the 12th FYP is “Enhancing food self-sufficiency and spurring RNR sector transformation while ensuring sustainable natural resource management”.**

The RNR sector continues to be important for Bhutan with about 60% of the population employed in agriculture and contributing to 13% of GDP (2020). **Bhutan import about 50% of its total food consumption**, is 61% self-sufficient in staple cereals, and 47% self-sufficient in rice (2019). The growth rate of the sector was 3.4% in the 11th FYP implying some slowdown in terms of diversifications and innovation. Considering these scenarios, the approach in 12th FYP is to achieve national food self-sufficiency while asserting commercialisation and market intensification programs across the agriculture value chain.

2. Issues and challenges in the agriculture sector

Bhutan faces food security issues and is dependent on food imports from India, due to limited arable land available for agriculture (2.6% of the land). The country remains highly vulnerable to natural hazards and increased climate variability and change, including an increase in extreme weather events, and has limited investments in research, innovation and technology due to the overall decrease in the share of investment in the sector. Agriculture production costs in Bhutan are high compared to India.

Some of the broad **issues and challenges for the RNR sector identified in the 12th FYP** are as follows:

- a. Rural-Urban Migration and farm labour shortages
- b. Human wildlife conflict
- c. Limited access to assured irrigation and poor water management
- d. Limited aggregation of production and inadequate marketing system
- e. Limited agro-enterprises and commercial farming
- f. Distinct geographical conditions, climate and disasters
- g. Limited agricultural land resource
- h. Import dependent economy
- i. Limited access to credit and subsidies
- j. Increasing pressures on biodiversity



Employment in agriculture consists mainly of self-employed small-scale subsistence farming with low productivity and often very limited value addition/processing. Women make up about 62% of farmers (2019) and educated youths are often migrating to urban centres in pursuit of other vocations than farming. Due to terrain and scattered farms, **marketing of agriculture produce remains a challenge** in terms of aggregation, quality assurance, post-harvest handling & packaging, storage, transportation and connecting to viable markets. Knowledge management, documentation of lessons learned and scale-up of successful agriculture models have not yet been fully leveraged in the agriculture sector.

The **Covid-19 pandemic has not left Bhutan's food system untouched**. Price fluctuations and rising food prices, restricted supply of productive inputs, reduced labour force, scarcity of certain food commodities, market limitations and increasing food loss and waste for some food commodities have been some of the most significant marks that the pandemic so far has left on Bhutan.

In response, the **Government is incentivizing increased national production and food self-sufficiency** through various national schemes as part of the Economic Contingency Plan and national Build Back Better agenda for enhanced national resilience. While focus initially was put on production, it is gradually expanding to more systematically including demand, marketing and post-harvest management as critical areas for a sustainable and economically viable agriculture sector. While the pandemic is an era-defining challenge to the nation, it is also perceived as an opportunity to turn "the need of the hour" into "the need of the nation" and address structural issues while pursuing opportunities for a deep-rooted transformational change of Bhutan's agriculture sector.

3. WFP's Systemic Food System (a global approach)

The Strategic Plan 2017-2021 of WFP aligns well with Agenda 2030 and the Sustainable Development Goals (SDGs), particularly SDG 2 – Zero Hunger. **WFP strategic objectives focus on ending hunger, improving nutrition, improve food security and production, ensure climate-resilient and sustainable food systems, capacity strengthening & policy coherence.**

WFP's experience and analysis point to three deeply rooted and related systemic problems in food systems. They are 1) the bad year or lean season problem; 2) the last mile problem; and 3) the good year problem. When ignored, the three systemic problems generate food and nutrition insecurity. By weakening food systems, these problems also increase the risk that food systems will collapse under shocks. The resilience and overall performance of food systems hinge on how effectively these problems are handled.

1) The “bad year” or “lean season” problem

Large numbers of vulnerable households lack sufficient & regular supplies of food to meet their needs. Due to low incomes and poverty, they also lack the purchasing power to fully meet their food and nutrition needs. Such households regularly face “hungry months”, which develops into complex food and nutrition issues. The quality and quantity of food declines, and nutrient-rich but more expensive meats, dairy products, and vegetables are easily swapped for cheaper and less nutritious starchy food.



2) The “last mile” problem

A defining feature of hungry poor is their physical, economic, social and political isolation. In both rural and urban areas, they are “hard to reach” and can themselves “reach out” only at great cost. In rural areas, low-return subsistence-oriented livelihood and high unit cost are continually affirmed. Hand to mouth livelihoods, featuring low capacities to purchase food and maintain adequate nutrition are thus the norm.

3) The “good year” problem

The good year problem is paradoxical in that it relates to a desired outcome – production of food surpluses. But the inability to adequately or profitably dispose of

surpluses can be just as devastating as the “bad year”, “lean season” and “last mile” problems. Food systems serving vulnerable households typically have gaps in storage capacity, transport infrastructure, post-harvest management technologies and practices and trade financing. These gaps are coupled with harvest-time cash constraints faced by producers. Together, these elements translate into insufficient capacity to handle large food surpluses. They result in distress sales, plunging prices, waste, spoilage and blunted incentives for future investment. The political content of food policy often presses governments into statements and actions that exacerbate the good year problem, while absorbing public funds in efforts that typically fail to make a significant impact on the problem.

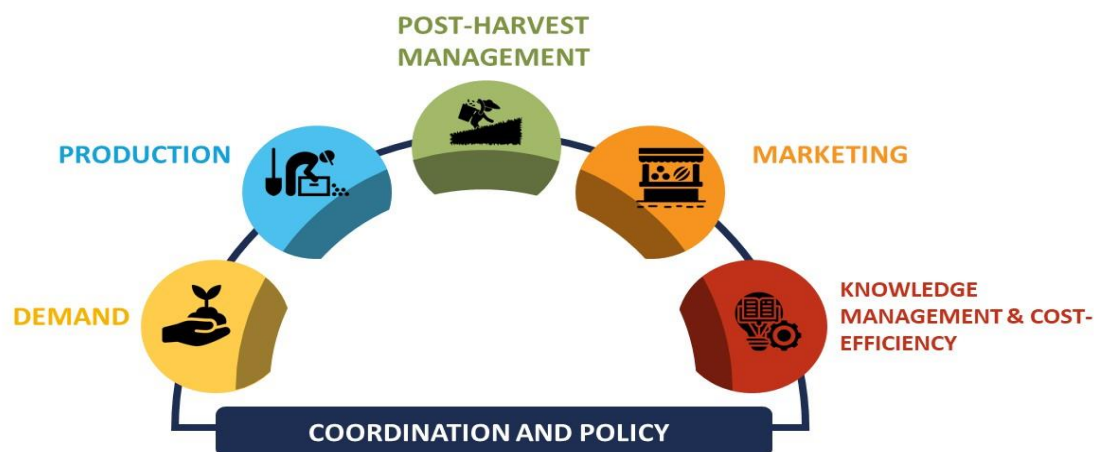
To overcome the systemic problems, suitable interventions via complementary investments, enhanced capacities, transformative partnerships, institutional innovations and policy reforms are designed. This system is typically operationalised via the five operational areas – a) climate action, b) safety nets and social protection, c) smallholder market support, d) nutrition and e) supply chain.

4. WFP's system approach to agriculture value chain development in Bhutan

Building on its partnership with the Government, WFP is well placed to help Bhutan in enhancing food and nutrition self-sufficiency and agriculture sector transformation through the Country Strategic Plan 2019-2023.

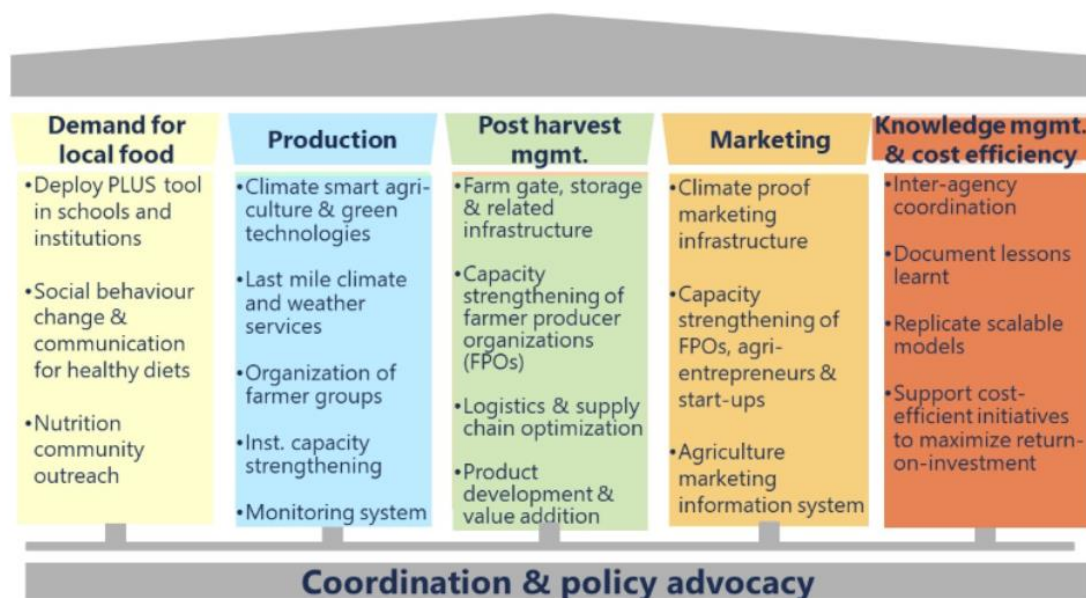
WFP has a strategic system approach to food systems and agriculture development and is investing USD \$7 million in supporting the Government across the agriculture value chain.

Agriculture value chain:



Based on the diagnosis of key issues and challenges, **WFP Bhutan has developed a strategy to provide, policy, technical and infrastructure assistance in the agriculture sector** along the sector value chain. The assistance will be implemented through various programs and activities addressing agriculture demand, production, post-harvest management, marketing, knowledge management & cost efficiency and coordination & policy. The focus is on transforming resources into a tangible development results through past lessons, sharpened focus and consolidation.

WFP’s approach to food systems and agriculture value chain development in Bhutan:



5.1 Demand

It is necessary to increase the share of local and nutritious food products in order to increase the "farm share" of each Ngultrum going to farmers; to incentivize more local food production; to increase local food access for all consumers; to protect the working landscape; maintain and build social capital; and to encourage healthy eating habits. Moving away from a mindset of food production towards a more balanced production and provision of nutritious food should underpin the demand side.

With the Ministry of Education, WFP is deploying the **PLUS Tool to strengthen market demand for local, nutritious and fresh foods, especially from public institutions including schools and hospitals**. The PLUS Tool is an online software that, through an advanced mathematical algorithm, calculates the most nutritious school feeding menu, at the lowest cost with the highest proportion of food from Bhutan. A pilot in Punakha demonstrated that school meals can be designed at a 20% lower cost with the same nutrition value to school children but with 70% higher proportion of food sourced directly from small-holder farmers (from 10 to 17% of total school food sourced from small-holder farmers). Thus, PLUS can help substitute imported foods with locally produced food to stimulate the local economy while ensuring that children eat healthy and balanced diets. Design of school menus to 108,000 school children, using PLUS, will start in 3rd quarter of 2020.

WFP is partnering with Tarayana Foundation on a **rural nutrition community outreach** on how to stay and eat healthy with local nutritious food to meet the nutritional needs and boost the immune system during the COVID-19 pandemic.

To pursue a sustainable and **long-term change of dietary habits towards higher consumption of local, diverse and nutritious food**, WFP has partnered with the Ministry of Education and Ministry of Health and contracted an international social behaviour change campaign (SBCC) company to develop a national SBCC strategy for all school-age children (6-18 years) and communities. The campaign will be based on extensive formative research to understand preferences and dietary habits of different age groups, bottlenecks and triggers for consumption of more healthy and local food. **By mid-2021, the SBCC campaign will be launched nationwide and is expected to start a change in eating habits for Bhutan's 168,000 children while contributing to a reduction of malnutrition rates** among the children.

As part of transition towards consumption of more nutritious and local food, there is a need to link the new demand based on nutrition and local/seasonal markets to the annual production cycles.

5.2 Production

Bhutan could further leverage its **spatial agriculture production opportunities** with seasonal markets and access to high-value product value chains; while on the other hand provide **social safety nets** and increased nutritious foods for those communities with limited opportunities beyond self-sufficient farming.



To invest in a sustainable solution for Bhutan's agriculture sector, it will be increasingly **important to understand how climate change impacts will affect agriculture and food systems in the future**. This would inform identification of overall adaptation strategies, policies and investments needed now for the agriculture sector and to prevent some of the expected impacts on crops and support long term adaptation.

WFP is already applying **climate smart agriculture** practices to help increasing production system resilience to extreme weather and benefit farmers, producer groups, rural and remote communities, private sector parties involved in climate smart technologies, products and services and Ministry of Agriculture

and Forests (MoAF) agencies.

Promotion of **climate smart green technologies**, through climate resilient seeds / varieties, green technologies like drip / sprinklers, solar products (e.g. pump sets, crop dryers), bio-gas and bio inputs such as bio pesticide and manures would accrue significant benefit while reducing cost of



farming. Further, this would enable the rural producers to add value to their products and facilitate establishment of for instance solar power small/medium businesses.

Last mile climate and weather services: WFP has extensive experience in last mile climate services to support farmers better prepare, manage and cope with climate and weather variability, including how to support better dissemination of reliable information and advisories through different ICTs and digital platforms. Bhutanese small holder farmers increasingly face huge challenges as a result of increased climate variability and extreme weather as a result of climate change. They still rely on traditional methods to understand weather predictions. Localised weather data is essential for farm-based decisions such as when to plant, harvest and undertake irrigation preparation and a key tool in supporting farmers planning and taking better decisions.

Strengthening farmer groups: Small holder farmers need to be trained and better organised to join forces and produce marketable commodities at scale. Farmer groups need to coordinate better in terms of pooling ideas and resources for land pooling and management, investment in joint irrigation and water management, procurement of farm inputs, hiring of farm machinery and aggregation of produce to viable scale. Community oriented post-harvest treatment, product development, value addition and commercial enterprises should take root. Promotion of group-based (youth) entrepreneurs in agricultural production should be prioritized next to traditional farmer groups.

For this to successfully happen, the capacity strengthening of farmer groups is important vis-à-vis technical and material support by government and development agencies.

Capacity building of government agencies providing technical services to farmers must be upgraded and must be in sync with market-led system. Research & development focused on production must be closely accompanied by market-led initiatives. Increased partnerships and service outsourcing to private sector and civil society is critical along with strengthening of local governments.

Monitoring system: Farmer monitoring system is an important requirement to keep track on production performance, yield of commodities, jobs created, income generated, information on market related aspects, and to assess the contribution of agriculture to local and national economy. WFP is partnering with the MoAF to improve the existing farmer monitoring system to track yields of more commodities, more frequent reporting and to enable documentation of farmer income and job creation.

5.3 Post-harvest management

Globally, approximately 1/3rd of all food produced for human consumption is lost or wasted annually. This amounts to about 1.3 billion tons of food. These numbers present a stark contrast to



the rising levels of hunger across the globe. Food loss and waste is the decrease in quantity or quality of food along the food supply chain. Food loss occurs along the food supply chain from harvest up to, but not including, the retail level. Food waste occurs at the retail and consumption levels. Over the years, **WFP has worked extensively along the upstream of agriculture value chain supporting small holder farmers, strengthening the local supply chains, adopting disruptive innovative technologies and changing lives in the process.**

Central and Southern Asia report the highest level of food loss at ~21%. Postharvest losses during storage manifest in reduced quantity and quality of stored food commodities, resulting in decreased household incomes and reduced food availability. These high levels of losses are largely the result of improper handling, transportation and packaging, poor storage and weak basic and post-harvest specific infrastructure; and they result in substantially diminished returns to producers while reducing the net availability of these food commodities for consumption. One of the main causes is the limited awareness and knowledge base of stakeholders in the traditional supply chains, coupled with an extension system that traditionally has focussed on production increase, with less attention to linking production to (local) markets. Actions needed includes improving post-harvest infrastructure, food transport, processing and packing, increasing collaboration along the supply chain, training and equipping producers, and educating consumers (Eat-Lancet Commission Report, 2019).

To mitigate food loss, concerted efforts must be made in post-production technologies that have been proven elsewhere, which can be applied to improve local technologies in terms of proper harvesting, handling, pre-treatment, storage, milling, processing and transportation through series of studies, trials, researches and development. It is important to promote and support rural food processing enterprise in the areas of handling, drying, pickling with improved and successful post-production technologies. It will be important to also understand the future impacts of climate change, linked to temperature and increase in extreme weather to ensure climate proofing of food processing systems and related infrastructures.

Possible strategies could include a) capacity strengthening of farmers on best practices to minimize post-harvest loss (during sorting, grading, handling, packaging etc), b) infrastructural support for producers e.g. farm level storage structures, cold storage, reefer trucks, c) value-addition & related support to transform surplus agro-commodities into value-added longer shelf life products, d) logistics and supply chain optimization models and e) establishment of appropriate market linkages between farmers and entrepreneurs.

WFP has extended its assistance to the MoAF in supporting national guidance, capacity strengthening and advocacy on food safety and quality for government partners and private traders/retailers through equipment and proper food handling – food safety guidance documents,

training, inventory management, SoPs and pamphlets developed and distributed to various government and private partners. As part of this support, **WFP has brokered a partnership with the Confederation of Indian Industry's Food & Agriculture Centre of Excellence, and companies such as Cargill, Big Bazaar, Spencer's**, to curate a customized online module on industry best practices on food safety and quality management during warehousing, transportation, distribution and retail.

WFP is providing mobile storage units with storage capacity of 500 MT each to the Government for strategic prepositioning of food to address immediate storage deficit and logistics support in response to COVID 19. The assistance will help the Government to meet the food needs of Bhutan's entire population for at least six months during a complete lock-down scenario.



To prevent post-harvest loss and spoilage of food

produce in schools, WFP is supporting the construction of 23 new kitchen and stores as well as refurbishment of 36 existing school kitchens in selected locations to ensure food quality and safety, improve shelf life and hygiene of food products. WFP is also developing national standards for school kitchens stores and kitchen structure, utensils and other equipment and will support the construction and refurbishment of school kitchens and stores. Training of mess-in-charges and cooks in food preparation, food handling and hygiene is also provided as an important aspect of food safety and nutrition.

5.4 Marketing

Market led production must be carefully considered for agriculture produce in order to achieve the national goal of enterprise development and commercialization of agriculture.

Some of the main issues revolve around the following: a) lack of marketing knowledge and unity among farmers, b) lack of organised marketing system, c) lack of financing resources, d) lack of storage facilities, e) transportation cost and availability, f) poor quality and lack of standardization, g) poor market information system, h) poor coordination between market development agencies and RNR sector agencies working with farmers and i) lack of localised and seasonal marketing strategies.

Material support in terms of creating **climate proof marketing infrastructure** (pack houses,



storages, transport support, farm roads, etc), **product development & value addition**, backed by temporary suitable policies (minimum support price, buy-back, certification, etc), **technical support** (capacity strengthening of farmer groups/ cooperatives, agribusiness support, etc) and **risk reduction** through pro-poor contract agriculture models and supportive innovation investments would ensure small holders' continued interest and motivation in commercialization of agriculture.

Agriculture market information system is another key requirement for farm enterprises to succeed. Frequent updated information via user-friendly digital platforms on market rates, quantity/quality subscription, road and traffic information, political information (e.g. bandhs in India), and market forecasts would provide critical info to small holder farmers, often located in remote corners of the country with days of driving distance from the major national and auction markets.

5.5 Knowledge management and cost-efficiency

WFP has agreed to take up a knowledge management role in terms of building inter-agency networks and harvesting lessons and knowledge through inter-project coordination. Lessons learnt and scalable models from such interactions are useful for national level scale up including development of successful brands.

To maximise returns on investment across the entire value chain, **WFP supports national cost-efficiency initiatives** to further leverage national and development partners' programmes and services. This includes for instance, cost reduction of school feeding programme with PLUS, logistic cost optimization and reduction of post-harvest losses.

5.5 Policy and coordination

It is common knowledge that rural development and a strong agricultural sector reduce poverty and form the basis for sustainable economic development at all levels. There is strategic importance of agriculture as this sector provides employment and income and improves food and nutrition security.



All the above sections of the agriculture value chain are elements of an integrated and evolving interdependent system. The Royal Government of Bhutan's 12th Five Year Plan acknowledges that the public sector's institutional design at times is following above elements with some degree of fragmentation with different departments responsible and with some limitations in coordination between departments, ministries and government, private and civil society. If the agricultural sector is properly integrated with other economic sectors, it can grow again into a driving force for overall economic and social development.

Against this backdrop, it is imperative for the Government, development partners, civil societies and private sector join forces and coordinate well the policies and programs for agriculture development in Bhutan. **WFP is providing coordination support to development partners engaged in agriculture (EU, FAO, IFAD, IFC, ITC, JICA, UNDP, WB, WFP) in terms of facilitating mapping of agencies' investments and roles in the sector; lessons learned and best practises; joint assessments, review missions and programming.**

As part of this role, WFP is acting as pen holder for development partners' input to Bhutan 21st Century Economic Agriculture Roadmap and engage with the Government on further development of the agriculture roadmap. WFP will continue to liaise and collaborate with the Government and other development partners to provide policy support, for instance, inputs to RNR strategy 2040.