# EU Technical Assistance Complementary Support Project – Bhutan

## Service Contract N° ACA/2019/404-700

***Developing Bhutan's draft Food and Nutrition Security Policy for 2022: meeting Food System challenges, applying transformational approaches, and integrating women at all levels***


**Final Report**
June 2022

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## ACKNOWLEDGMENTS

Thanks to the Royal Government of Bhutan (RGoB) and, in particular, the MoAF and EU-TACS counterparts and staff who informed the development of this Inception Plan. We look forward to continued cooperation and collaboration as the study moves into a Final Consultation Phase in July – August 2022.

## Policy Paper to review Bhutan's Food and Nutrition Security 2022

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## LIST OF ABBREVIATIONS

| | |
|---|---|
| BAFRA | Bhutan Agriculture and Food Regulatory Authority |
| BSE | Bhutan Salt Enterprise |
| CT | Consultant Team |
| DES | Dietary Energy Supply |
| DoA | Department of Agriculture |
| DoL | Department of Livestock |
| FCB | Food Corporation of Bhutan |
| FCBL | Food Corporation of Bhutan Limited |
| FGD | Focused Group Discussions |
| FNSP | Food and Nutrition Security Policy |
| GHG | Greenhouse Gas |
| GNH | Gross National Happiness |
| GNHC | Gross National Happiness Committee |
| HH | Household |
| HWC | Human-Wildlife Conflicts |
| IDD | Iodine Deficiency Disorder |
| IDR | Import Dependency Ratio |
| IPM | Integrated Pest Management |
| ISFM | Integrated Soil Fertility Management |
| JNKE | Junior Non-Key Expert |
| KII | Key Informant Interviews |
| KRA | Key Result Areas |
| LEDS | Low Emissions Development Strategy |
| MIC | Middle-Income Country |
| MoEA | Ministry of Economic Affairs |
| M&E | Monitoring and Evaluation |
| MOAF | Ministry of Agriculture and Forests |
| MoH | Ministry of Health |
| NFSR | National Food Security Reserve |
| NKRA | National Key Result Area |
| NLCS | National Land Commission Secretariat |
| NWFP | Non-wood forest products |
| PPD | Planning and Policy Division |
| QA | Quality Assurance |
| RGoB | Royal Government of Bhutan |
| SKE | Senior Key Expert |
| SNKE | Senior Non-Key Expert |
| SSR | Self-Sufficiency Ratio |
| TA | Technical Assistance |
| TACS | TA Complementary Support |
| TGR | Total Goiter Rate |
| VAD | Vitamin A deficiency |

## EXECUTIVE SUMMARY

The document provides an overview of the Technical Assistance (TA) provided to the Planning and Policy Division (PPD) of Bhutan's MoAF through the mechanism of the Program titled "*Renewable Natural Resources and Climate Change Response and Local Governments and Decentralization – Bhutan (EU-TA Complementary Support (TACS))*."

As established in terms of Reference (Annex 1 of the Inception Report), a two-person Consultant Team (CT) has been tasked with a series of technical analyses, leading to the preparation of a *"Draft Food and Nutrition Security (FNS) for Bhutan's 2022".* From now onwards, this is simply called the "FNS Policy."

Two consultants worked on the assignment: (1) the Senior Food and Nutrition Policy Expert SNKE (Mark Kowal) and (2) the Junior Non-Key Expert on Food Policy (JNKE) Sangay Dorji.

From the outset, it was clear that an approved and finalized FNS Policy was not an achievable goal in the six weeks or so that were available. However, the consultants dedicated very substantial levels of effort and were able to develop an advanced draft and helped design a workshop event to begin a consultation process. As a result, the draft FNS Policy Paper that is Annexed still only contains pointers, proposals, and guidelines, that will be the baseline sufficient for going on to construct an updated and approved FNS Policy 2022.

The submission of the draft Policy Paper to the Task Force was followed by a brief Consultation Phase, concentrated in three regions of Bhutan, which was led by MoAF, with the JNKE supporting in an enabling and facilitating role, carried out over the period 21st to 24th June 2022.

As clearly stated, this work has not been fully concluded. Still, it requires considerable work to validate, incorporate comments, and amend the text sufficiently so the content can be passed to the GNHC for approval. *Usually, the elaboration of an FNS Policy, from start to finish, does not take less than six months, and that would be under the very best of circumstances.*

As the two consultant contracts are finalized at the end of June 2022, a system has been set up that permits PPD to continue working on the draft. The procedure involves sending an email to around 100 Bhutanese officials, with careful instructions, requesting their inputs into the Online Version of the Draft FNS Policy over two weeks concluding in mid-July.

PPD Director Mr. Karma Tshering and all other concerned staff in the PPD will need to continue pushing for comments from all stakeholders that we have contacted.

The online format allows for the "live reworking" of the draft FNS Policy, with PPD experts tackling concerns as these emerge and reworking the text iteratively to account for incoming comments.

Alongside a prospective assignment by the lead SNKE to Bhutan to support stakeholders in late July and August (outside the context of the EU-TACS project which ends on 29th June 2022 and with potential support from FAO), these methods will prepare a new FNS Policy for 2022 in time for it to contribute to the 13th FYP, covering the period 2023-2028.

Looking backward now, the study has used a mixed-methods analytical approach by gathering information from an in-depth Literature Review of secondary documents, sectoral studies, agricultural information, nutrition information, and policy issues. Qualitative data were collected from approximately 20 Key Informant Interviews (KIIs) as primary sources to extract information on the sufficiency of the Key Result Areas listed in the existing 2014 FNS document. An Annex to the Inception Report presents the KII questionnaire which was used.

The future national consultations (to be arranged by PPD) will conclude with a wrap-up validation workshop, likely to be held in August 2022. The final step will involve incorporating comments, suggestions, and feedback and finalizing a short Technical Policy Paper and the revised FNS Policy annexed to the report.

# 1 INTRODUCTION

This assignment has begun a series of significant contributions that will lead to a transformational enhancement of the Food and Nutrition Security Policy of the Kingdom of Bhutan.

A draft FNS Policy Paper will be delivered as the primary output of the two-person Consultant Team (CT).

This has provided insights into all those specific FNS-related policies and results in areas required for effectively guiding actions that will strengthen food security and improve the Bhutanese people's nutrition in all relevant aspects.

The effective length of this consultancy was only around six weeks, and only 55 person-days were available over that period. However, much work remains to be done through the PPD and the FNS Task Force.

The final draft as Annex (Annex 1) contains a proposed FNS Policy that still requires significant tailoring so that it can be fully formulated in the format required for submission to the GNHC and then accounted for in upcoming five-year plans, starting with the 13th FYP (2023-2028).

The overall goal is that the FNS 2022 Policy will provide critical strategic and programmatic elements that will realize and sustain Bhutan's FNS.

A further Phase of work is needed that will continue face-to-face consultations and complete any missing elements in the earlier FNS Policy Paper draft due to lack of time.

An Outline Terms of Reference is attached as Annex 2.

Additional items to be consolidated include sharpening the focus on the kilo-calorie requirement by age group for the Bhutanese population, among other things, accounting for the situation and status of the agriculture sector, considering production capacity and productivity, commercialization potential, land availability, investment requirements, marketing, value addition, and employment generation.

The revised Policy will also inform observations about the national self-sufficiency rate for priority crops that the relevant sectors should pursue and how to address localized chronic or seasonal food and nutrition insecurity issues.

# 2 ELEMENTS TO BE ADDRESSED DURING PHASE 2 OF FNS POLICY REVIEW

The **FNS Policy of Bhutan 2014 is the crucial guiding policy document for the Ministry of Agriculture and Forests** for addressing poverty and achieving food and nutrition security.

Cited as the "**mother policy of the MoAF"**, it is an essential policy document that provides an overarching vision, goals, and objectives and guides the sector's **plans, programs, and interventions for addressing poverty and achieving FNS**.

The FNS Policy is organized according to the following Policy Goals and Objectives structure: each of the Objectives is to be achieved through a range of Policy Measures (PMs), which mandate particular institutional actors to undertake specific processes and actions. The Policy Goals, Objectives and Measures remain at a draft stage.

The revised FNS Policy is expected to provide increased clarity in terms of **stakeholder concerns**, with due consideration to the following parameters:

***Constructing responses to the scores, even hundreds of comments on the draft FNS Policy.***

To be a **comprehensive and inclusive Policy Paper that lays the ground for a complete revision of the FNS Policy**.

- To align the FNS Policy with the regionally well-known **Resilient Mountain Solutions** (RMS) programming and vision and to build more vital bridges between Bhutan's professionals and ICIMOD during the process. This is VITAL as it aligns Bhutan's work with the entire body of practice, communities of practices and technologies that come under the umbrella term of Climate Resilient Communities / or Solutions.

MoAF already has an RMS program underway, but we did not interview staff from this team.

**RMS offers a VISION of healthy, wealthy, attractive communities where families can continue to prosper.**

• To enhance **commercialization and innovation** via investment, growth, and performance in the RNR sector.

• To provide **clear strategic and long-term guidance** for the future of agricultural development.

• To apply the **best practices and experiences from around the Hindu Kush/Himalayan region** in enhancing FNS.

• The EU-TACS Project (joint MoAF/DLG-activity) has just finalized a report on Gender in Bhutan, and this needs to be accounted for in the next stage of the work. This will, in the end, contribute to **more significant equity** in access to nutritious food – **especially for rural women** - and increased diversity, adequacy, and access for Bhutan's people to safe and high-quality foods.

• To promote **modernized knowledge-based farming,** to offer an alternate attractive employment option.

• To ensure the **needs of rural and urban youth** are fully accounted for by setting out multiple complementary policy proposals that can rapidly generate a substantial increase in the employment opportunities for youth in such areas as entrepreneurial agroforestry and food agro-processing industries.

• To strengthen **intra- and inter-sectoral coordination,** clearly delineating roles and responsibilities.

The revision of the policy is also expected to address **specific and cross-cutting issues** such as:

• Enhancing a **wide array of aspects of the typical livelihoods of Bhutan's people**, including both **rural and urban** populations.

• With **female farmers** comprising about 60 percent of the farming population, the policy must obligatorily and comprehensively cover **gender-sensitive farming practices** and **youth employment.**

• The policy revision should accommodate and acknowledge the various **socio-economic changes** that have taken place in the country since the 2014 FNS Policy was published. It should provide guidelines for **economic development, employment, income generation, and poverty alleviation**.

• Ensuring that **emerging cross-sectoral issues** are tackled, such as *environmental management; feminization and gender; climate-change impacts and resilience; disaster risk-reduction systems; the development of techniques for monitoring the nutrition and health status of mothers, young women, the elderly, the disabled, children and the FNS status of any other vulnerable groups.*

• Adequate consideration will be accorded to *ecosystem services, climate change adaptation and mitigation measures, climate-smart technologies, disaster-resilient agricultural practices, and a healthy food system.*

# 3 OVERALL STUDY STRATEGY OF THE ASSIGNMENT TO END JUNE 2022

The following study strategy was used in what is considered to be Phase 1 of this MoAF FNS policy development action:

## 3.1 LITERATURE REVIEW

Task 1 has involved gathering and reviewing the contents of the FNS Policy assignment's cardinal documents. These have included the following, as well as many further documents:

(i) FNS Policy Concept Note

(ii) The *Self-Sufficiency and DES of Food Crops in Bhutan Status Report* of October 2021

(iii) FNS Dialogue Workshops' Outputs from 2021 FAO

(iv) RNR Strategy 2040

(v) The National Nutrition Strategy and Action Plan (2021-2025)

(vi) The RNR Marketing Policy 2017

(vii) National Food Security Reserve 2018

(viii) The Draft Livestock Development Policy 2019 from the Department of Livestock (DoL)

(ix) Literature from BAFRA on the priorities and concerns of departments and agencies regarding food-safety issues, including the Food-Safety Policy 2017 of the Bhutan Agriculture & Food Regulatory Authority.

(x) Reviewing the literature on experiences and insights from the impact of the Covid-19 pandemic; analyzing how the pandemic disrupted food systems; and identifying the salient points relating to critical gaps warrant a review and revision of the FNS Policy.

(xi) Consider relevant policies, strategies, guidelines, action plans, planning documents, sectoral planning, etc. These documents have been collected from online resources or in the form of attachments submitted by collaborating staff.

(xii) MoAF, with the support of EU-TA Complementary Support (TACS), has generated a series of Consultancy Reports and Policy Briefs that contain an array of recommendations that were systematically accounted for in the review of emerging policy elements. These include the following documents, which have substantial proposals for action plans, strategies, programs, and policies relevant to the revised FNS. These are:

| Identity Number | Title of Consultancy Study | Policy Brief prepared on the basis of the Consultancy Study |
|---|---|---|
| A2.17 | Report – Landscape Management - Soil Fertility, Fallow/Idle Land, Agricultural Extensification | Policy Brief 2 – Conversion of Fallow/Idle Land |
| A2.17 | Report – Landscape Management Soil Fertility, Fallow/Idle Land, Agricultural Extensification | Policy Brief 1 – Soil Fertility Management |
| A2.7A | Main Report - Green and Climate-Smart Technologies Business Opportunities –Plus Annexes: Part A Green Business Opportunities & Part B Climate-Smart Technologies Service Delivery Opportunities | Policy Brief 7 – Green Business Opportunities and Improved Waste Management |
| 1A2.10 | Report - Study on Agroforestry Systems & Practices, Strategy and Programme Formulation | Policy Brief 8 - Agroforestry Systems & Practices, Strategy and Programme Formulation |
| A2.1A | Report - Impact of Farmer Training Study | Policy Brief 5 - Impact of Farmer Training Study |
| A2.13 | Report - Agro-Enterprise & Agri-Business Studies: (1) Preparation of five Feasibility Studies; (2) Preparation of five Business Plans | Policy Brief 4 - Agro-Processing Investments |
| A2.13 | Report - Study on-Farm Mechanization Potentials within the Context of Changing On-Farm Demographics in Bhutan | Policy Brief 10 - Study on-Farm Mechanization Potentials within the Context of Changing On-Farm Demographics in Bhutan |
| A2.12 | Report - Study on Circular Economies and Waste | Policy Brief 9 -Study on circular economies and waste bi-products recycling models and strategies |
| A2.16 | Report of the Study on the Impact of Climate Change on Livestock Farming | Policy Brief 6 - Study on the Impact of Climate Change on Livestock Farming Systems |
| A3.2 | Report - RNR Information, Communication & Technology Strategy Communication Strategies | Policy Brief 3 - RNR Information, Communication & Technology Strategy |
| A2.1B | Report - Impact-oriented M&E Framework and Dashboard Development | Policy Brief (to be prepared by PPD post EU-TACS Project) – Impact-oriented M&E Framework & System and Digital Dashboard for sector projects |

Given the immense volume of the material, it has not yet been possible to account fully for all the policy elements of the consultancies that dealt with FNS issues.

As the FNS Policy 2022 progresses in July and August 2022, the FNS Task Force and expected CT will finalize a Literature Review report that focuses on identifying gaps between the draft FNS Policy, best practices in Bhutan and internationally, as well as outlining how evolving factors in Bhutan (as described in the literature) could lead to future actions which can be included in the FNS Policy, with a focus on the agriculture practiced in the Himalayan Mountain region.

The team of Bhutanese nationals who have been invited to take part in interviews and consultations was provided with two innovative information access modalities:

1. The **Draft FNS 2022 Policy was placed online, with multiple user options to make comments**. These included: (I) directly into the text of the FNS Policy; (2) in a column set on the Right-Hand Side, where comments about a given policy measure can be located; and (3) Comments sent in lists in emails, that the PPD FNS Coordinating Manager, Sonam Pelgen, needs to convert to Word notes and drop into a folder designed for this use.

   One hundred forty-seven users were added to the folder. It will be necessary to closely monitor (by PPD) if users can become engaged using these methods, which will be a valuable learning exercise for PPD.

   Karma Tshering and the Task Force will need to request the recipient list from time to time to read and comment as part of an innovative remote approach to gathering participant comments.

2. The **entire FNS Library** that was developed during the assignment was shared with all 150 individuals who have been invited to take part. This pioneering effort constitutes the first National Online FNS Library that any country has developed in the consultants' awareness.

## 3.2 KIIs

During initial data gathering, the EU-TACS FNS team developed its critical questions in the form of generic Key Questions (see Annex 4 of the Inception Report).

The KIIs were designed to discuss relevant information provided by the Informant specific to the work of that person/organization regarding the FNS Policy's different levels of goals, objectives, and policy statements/strategies. Where a new area within the existing hierarchy is being considered for inclusion or a current location is being either amended, described in greater detail, or updated, that would become the focus of discussion in the KII.

The interviewers worked collaboratively with the Informants, with the freedom to explore different areas in-depth or inquire about new locations, depending on the specialty of the KI. Because it is an evolving tool, the generic questions were updated to include some new ones as the team proceeded.

## 3.3 FOCUS GROUP DISCUSSIONS DURING REGIONAL CONSULTATIONS

FGDs are joint group-based interviews or consultations conducted to obtain views across a specific group and request opinions about a given topic. The FGDs were held in June 2022 based on a draft FNS Policy provided as an outline and in a format designed to generate a detailed discussion. Further consultations remain to be conducted systematically during the August 2022 period.

# 4 STRUCTURE OF THE PROPOSED DRAFT FNS POLICY 2022

The following table provides the structure of the Goals and objectives the EU-TACS FNS team has assembled to date.

The Team is aware that numerous weaknesses persist, including crucial policy proposals from EU-TACs reports, particularly from the recent DLG-funded Gender Report.

The Team was able to include an in-depth section on Nutrition, which is now a full part of the whole policy. The was in the main part absent in the FNS 2014 Policy document.

| POLICY GOAL | POLICY OBJECTIVE |
|---|---|
| **GOAL 1: AVAILABILITY-** Ensure the availability of safe and adequate types of food at all times to meet the food and nutrition requirements of all groups and members of Bhutan's population | **Objective 1.1** Ensuring sustainable domestic food production, maintaining cropping areas under agriculture, and enhancing land and labor productivity. |
| | **Objective 1.2** Strengthen sustainable management of natural resources for food production |
| | **Objective 1.3** Strengthen land management and soil fertility management. |
| | **Objective 1.4** Increase, diversify and sustain production from the limited areas of cultivatable land that Bhutan possesses by promoting the conversion of fallow-land back to farming, in which improved Agroforestry Systems are proposed as the best subsequent cropping system. |
| | **Objective 1.5** Develop the MoAF Agroforestry Policy and Strategy drafts, socialize these and prepare a process for vetting them with interested parties. |
| | **Objective 1.6 For** watersheds that feature drying springs, this reduces water supplies for crop irrigation, household use, and livestock watering. Implement a community-based "Spring-shed approach" - to restore spring water flows - into watershed management efforts. |
| | **Objective 1.7:** Bring together all inputs needed for efficient food production, accounting for cropping systems, seeds, climate-smart technologies, and agrobiodiversity |
| | **Objective 1.8:** Promote a select group of crops upon which dedicated attention will be focused across all stages of research, extension, marketing support, and value addition, |
| | **Objective 1.9:** Support the spread of crucial information about climate-smart production technologies will be expedited by providing soft loans, tax breaks, and easy access to state land leases |
| | **Objective 1.10:** Encourage all stakeholders to promote the Resilient Mountain Solutions vision and disseminate the wide range of technologies available across the Himalayan region. |
| | **Objective 1.11** Promote the participation of young people in agriculture through a range of measures that make agriculture no longer seen as drudgery but as a viable business opportunity replete with options for applying technological solutions. |
| | **Objective 1.12** Promotes the production of a diversified array of organic farming commodities. |
| | **Objective 1.13** Conduct research and foster effective IPM measures that control all critical pests and diseases affecting Bhutanese crops and livestock. |
| | **Objective 1.14:** Enhance marketing opportunities by improving road infrastructure and connectivity to facilitate market access. |
| | **Objective 1.15:** Update and further integrate the Livestock Policy and Strategy into holistically programmed RMS-based development |
| | **Objective 1.16:** Based on a farm mechanization strategy, research and development regarding various farm mechanization options for the main agroecological zones and the main types of users (especially women) suitable for the terrain. |

| POLICY GOAL | POLICY OBJECTIVE |
|---|---|
| | **Objective 1.17**: Maintain safe and adequate food reserves at strategic locations |
| | **Objective 1.18:** Facilitate safe food imports and improve access to international food distribution facilities |
| | **Objective 1.19**:<br>Encourage and support more research on FSN, vital emerging issues, and contentious areas |
| **GOAL 2: ACCESS** - Enhance physical, economic, and social access to safe, affordable, and adequate food | **Objective 2.1** Increase the efficiency of safe food marketing, trade, and distribution systems |
| | **Objective 2.2** Address the specific needs of diverse rural and urban contexts that diversify their sustainable livelihood options in the formulation of FSN policies |
| | **Objective 2.3** Improve delivery of social support to poor and socio-economically vulnerable communities and individuals |
| **GOAL 3: UTILIZATION AND NUTRITION** - Promote appropriate consumption practices and enable optimum food utilization while addressing the multiple manifestations of hunger, malnutrition, and food-related diseases through coordinated multi-sectoral policies and actions. | **Objective 3.1:** Achieve the nutrition and health goals of the 13th and later FYPs through mobilizing resources at all levels of governance and by all stakeholders, who will collaboratively implement Bhutan's "National Nutrition Strategy and Action Plan" by applying a series of PMs and related Institutional Work Plans. |
| | **Objective 3.2:** Support healthy food choices from sustainable food systems, ensure optimal food safety, and promote nutrition education and awareness for healthy food habits and dietary diversification. |
| | **Objective 3.3:** Support the nutrition of specific vulnerable groups within Bhutanese society:<br>(1) Promote appropriate feeding practices for mothers, infants, and young children.<br>(2) Reduce the prevalence of childhood undernutrition by addressing its direct cause of food insecurity while tackling its indirect causes such as poor hygiene, a lack of clean water, and unsafe food supplies.<br>(3) Improve the nutrition status of all Bhutanese served by all the agencies connected with clinical nutrition and dietetics that operate in the National Health System.<br>(4) Improve the nutritional status of adolescents, youth, women of reproductive age, and pregnant and lactating mothers.<br>(5) Maintain and improve the nutritional status of urban and rural elderly.<br>(6) Provide social and safety net support to maintain the nutritional status of vulnerable groups when Bhutan is affected by a pandemic disease or similar extreme event or episode. |
| **GOAL 4: STABILITY** - Sustain a conducive and stable environment for availability, accessibility, and utilization of food | **Objective 4.1** Develop and implement adaptation measures for longer-term climate and environmental changes |
| | **Objective 4.2** Improve disaster preparedness capacity to respond to disasters, mainly focused on pandemic response mechanisms |
| | **Objective 4.3:** Ensure interventions in markets and price stability of food commodities |
| **GOAL 5: AGENCY** - Gender equality and social inclusion | **Objective 5.1** Empower citizens as food system participants, especially women, indigenous people, migrant workers, displaced people and refugees, and other vulnerable people and communities, to exercise agency over their livelihoods and ensure access to nutritious and safe food. |

| POLICY GOAL | POLICY OBJECTIVE |
|---|---|
| | **Objective 5.2:** Design and apply policies that reduce societal inequalities |
| **GOAL 6: SUSTAINABILITY** - Ensure that the long-term ability of food systems to provide food security and nutrition is not compromised and that shocks and trends do not affect or undermine the key the economic, social, and environmental systems that underpin food production, access, and utilization, through the implementation of a "Green Deal" circular economy approach tailored to Bhutan's RNR sectors | **Objective 6.1** Stakeholders at all levels should account for the long-term sustainability of food systems to provide food security and nutrition, avoiding compromising the economic, social, and environmental bases that generate food security and nutrition for future generations. |
| | **Objective 6.2** Building Bhutan's Circular Economy: Promote a detailed policy, technical, and investment response from DLG, MoAF, and MoEA |
| | **Objective 6.3** Implement a 'Green and Climate Smart Technology Industrial Investment Plan' to cover the period up to 2040 (covering at least the following two 5-year plans). |
| | **Objective 6.4:** Enhance the institutional framework for advancing green waste and climate-smart technology investment through various stakeholders. |
| | **Objective 6.5:** Implement proactive multi-agency partnerships to propel the Crucial Economy in all areas of the economy. |
| | **Objective 6.6:** Develop a planning and support process for Dzongkhags and Gewogs to identify potential green and climate-smart businesses and assist entrepreneurs. |
| **GOAL 7: FNS SECTORAL POLICY GOVERNANCE -** Improve FSN governance at the Inter-Ministerial and Dzongkhag levels | **Objective 7.1:** Improve stakeholder consultation and decision-maker involvement in the areas of Governance, Research, and Development. |
| | **Objective 7.2:** Improve Information Management |
| | **Objective 7.3:** Enhanced Communication amongst all stakeholders |
| | **Objective 7.4:** FNS Planning, Monitoring, and Evaluation |

# 5 CONTINUED POLICY ELEMENT IDENTIFICATION AND ASSESSMENT (Post EU-TACS Project)

The study needs to continue to reconfirm, ratify and check all the domains developed to date.

The Second Phase (started after the end of the EU-TACS project and from July 2022 onwards) will be carried out by PPD, the FNS Task Force and any additional consultant team (arranged by PPD) through continued Desk Review, a Literature Review, and secondary data collection to fill in any gaps that appear after comments on the 1st draft of the FNS policy.

The study will continue to examine issues and solutions for all the major FNS concerns.

## 5.1 CONTINUED TOPIC REVIEW PHASE

| | | |
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| **T 1.** | **Identify priority crops and livestock products critical for FNS** in Bhutan, and analyze the range of constraints that affect each of the essential crops that this study will concentrate on | **Key inputs from the Ministry** |

| | | |
|---|---|---|
| **T 2.** | From available evidence-based statistics, **calculate the kilo-calorie (K-Cal) and nutritional requirements** of the average Bhutanese person and, if available, disaggregate this data by age range and gender. | Obtaining support from the Ministry of Health will be required for this data.<br>Analysis of the current scenario of the agriculture sector, such as<br>▪ Production capacity and productivity,<br>▪ Commercialization potential,<br>▪ Land availability,<br>▪ Investment requirement,<br>▪ Marketing and value addition. |
| **T 3.** | Study the need for and suggest **insurance schemes**<br>▪ Human/wildlife conflicts<br>▪ Natural calamities and disasters<br>▪ Climate-induced adverse impacts on production<br>▪ Other impacting factors for inclusion in the FNS Policy. | Examine instructions received by MoAF for **developing a subsidy policy, HWC policy, and compensation and insurance policies**.<br><br>**Identify central insurance schemes and their SWOT attributes;** |
| **T 4.** | Develop insights into the **agricultural subsidy** components to propose action items for inclusion in the Policy Paper. | **Identify central agricultural subsidy and their SWOT attributes.** Consider how to boost commercialization and promote private and FDI in the sector. |
| **T 5.** | **Obtain a robust understanding of the relevance of the Organic Flagship Programme for achieving greater FNS in Bhutan.** | Consulting with informants via KIIs to understand:<br>▪ Conversion to organic farming impacts on-farm yields and the production of critical crops at the district level.<br>▪ Contributions of the OFP to any trend of declining yields in Bhutan.<br>▪ Review of existing literature.<br>▪ **Menu of potential directions for the organic sector's development** concerning how it can better contribute to FNS in Bhutan.<br>▪ Consider how to boost industrial production of low-cost organic fertilizers and other GAPs, such as green manure. |
| **T 6.** | Determine the **SSR** for the prioritized crops the sector should aim to achieve. | Examine all the practical and policy variables affecting the SSRs:<br>▪ Consider historical trends.<br>▪ What variables have affected the historical trends?<br>▪ Why previous targets for SSRs have failed.<br>▪ How to address localized chronic or seasonal food and nutrition insecurity issues.<br>▪ Provide risk analyses for achieving the SSR for the key crops identified. |

## 5.2 FINAL STAKEHOLDER CONSULTATION PHASE

| | | |
|---|---|---|
| **1.** | **REPORTING PHASE** | |
| **T 7.** | Propose a second-phase robust **2nd draft FNS Policy paper.** | ▪ No more than 40 pages in length.<br>▪ Achieve a transformational paradigm shift in agriculture from subsistence to commercial farming.<br>▪ Propose how to align or correlate the content of the Policy Paper with other emerging and existing policies such as EDP.<br>▪ Relevant ministries and their policies |
| **T 8.** | 1) Conduct a **Final FNS Policy Paper Exposure and Dissemination Workshop,** | ▪ Develop a list of invited persons from MoAF, DLG, Min. of Health, and other relevant bodies.<br>▪ Consultants will present their findings. |

| | | |
|---|---|---|
| | inviting a wide range of representatives of concerned agencies.<br><br>2) **National Stakeholder Consultation Workshop** towards the end of August 2022. | ▪ Necessary changes needed for the Policy Paper will be determined. |
| **T 9.** | The **final FNS 2022 Policy Paper will be subject to approvals** as per RGoB protocols | The final report will be subjected to a QA review, edit, and formatting by an external consultancy team to be provided through PPD before submission to RNR-GNH Committee, to GNHC, and MoH |

# 6 ANNEX 1: TERMS OF REFERENCE FOR ADDITIONAL TA SUPPORT TO FINAL FNS POLICY CONSULTATION PHASE

**TERMS OF REFERENCE PROPOSAL FOR CONSULTATION MISSION FOR THE FINALIZATION OF THE REVISION AND UPDATING OF BHUTAN'S FOOD AND NUTRITION SECURITY POLICY 2022**

| **Brief ToR of the Consultant Food and Nutrition Policy Expert** | |
|---|---|
| **PROJECT.** | Support to Finalization of Bhutan's Food and Nutrition Security Policy 2022 |
| **ROLE** | The Consultant will finalize all work initiated under the prior EU-TACS SNKE contract by honing down the Desk Review, continuing to carry out KIIs, and supporting holding a National Workshop on the updated Food and Nutrition Security Policy 2022<br><br>The Consultant will prepare a "*Final Draft Food and Nutrition Security Policy Paper for Bhutan 2022*" based on the 1st draft FNS Policy Paper already available.<br><br>This will enable MoAF to prepare a fully endorsed **FNS Policy for 2022** in time for it to contribute to the 13th FYP (2023-2028) by the end of 2022 |
| **START/ END DATE** | Start date early August 2022 and end date early September 2022 |
| **INPUTS** | Total of 22 working days in Bhutan over one calendar month (including international travel) |
| **FUNDING** | To be arranged by PPD. Food and Agriculture Organization (provisional suggested by PPD). Others to be approached: EUD, WFP, UNDP |
| **TRAVEL** | Travel to and within Bhutan will be required |
| **SUPERVISION** | Reporting to the Chief of PPD, Mr. Karma Tshering |
| **LOCATION** | All Consultant person-days either in Thimphu (if COVID-19 restriction policies allow), otherwise at homebase in country of origin |

**CONTEXT:**

A Consultant (Mr. Mark Kowal) was engaged by the EU-TACs project during May-June 2022, to provide support to the Ministry of Agriculture and Forests (MoAF), to conduct a detailed and complete upgrading of Bhutan's Food and Nutrition (FNS) Policy of 2014. He has worked alongside his Bhutanese counterpart, Mr. Sangay Dorji.

Working closely with the FNS Task Force, the consultant has worked over the period May to June 2022 on tasks such as literature review, Inception Report preparation, numerous Key Informant Interviews, and conducted other activities that are typical of a Desk and remote-based Field Phase.

A draft of the updated FNS Policy was shared with the Task Force on 15/06/2022 and was met with positive feedback that the document was rich in content and on the right track toward a Policy Document that will fully meet RGoB expectations.

**ASSIGNMENT TIMING AND DURATION:**

The key challenge for MoAF is for the completion of the FNS 2022 Policy, especially since the funding and support available from the EU-TACS project will end by 26/06/2022.

A proposal has emerged from the Chief of the PPD at MoAF that further technical assistance is required, shifting from EU to FAO (or other agency) financing.

Tentatively, a one-month in-Bhutan TA assignment is proposed for assisting with completion of the FNS 2022 Policy.

Due to the continued prevalence of COVID-19 in the South Asian Region, under Bhutan's current routine immigration procedures, a 5-day quarantine period is mandated. This extends to a quarantine for ten days in case of contracting COVID-19. The one-month assignment includes a Risk Management Measure to account for the possibility of the need to quarantine.

**OBJECTIVE:**

The overall objective is to continue progressing the FNS 2022 draft and to produce a final draft through careful review of the Policy Measures included in the draft FNS 2022. This Final Draft would be close to a version that only requires fine-tuning by MoAF in the following weeks before a final version would be submitted to the RNR-GNH Committee, the MoH (for nutrition part), and the GNHC.

**ACTIVITIES:**

The activities primarily consist of interacting with critical informants who shall provide crucial content that would be included in the draft and checking the Policy Measures, and ratifying them for feasibility. In all cases, where possible, a Gender Specialist/Focal Point from the institutions being visited would be invited to take part to give voice to women's concerns. The tasks would include, as a minimum:

**Task 1.** Initial briefing meeting.

**Task 2.** Individual meetings with Task Force Members in Thimphu.

**Task 3.** Interviews with Ministry of Finance and Gross National Happiness Commission in Thimphu.

**Task 4.** Interviews with the Department of Industry, Department of Trade in Thimphu, and the Ministry of Health and Economic Affairs.

**Task 5.** ARDC: Wengkhar: visit the site and have discussions with informants involved in entrepreneurial agroforestry systems to review their potential; species varieties suitable for agroforestry; the work of EU projects at the center.

**Task 6.** ARDC Sarpang: engagement with informants leading to current research and review of future rice and vegetable cultivation prospects in the southern region of Bhutan.

**Task 7.** Meet the staff of the College of Natural Resources to examine their training programming.

**Task 8.** Meeting with Civil Society Organizations such as Tarayana Foundation.

**Task 9.** Meetings with representatives of the private sector involved in providing various services and products used in different commodity value chains.

**Task 10.** Meet with a representative of the Rural Development Training Center at Zhemgang, and the College of Natural Resources at Lobeysa, for discussions about the capacity-building of extension staff and farmers.

**Task 11.** Intensive and numerous consultation interactions with farmer leaders, women leaders, Agriculture Commission Agents and other Gewog-level staff, staff working in cooperatives and Water Users Associations.

**Task 12.** Fine-tune the policy to align with stakeholder needs and inputs.

**Task 13.** Prepare briefing materials and facilitate a National Consultation Workshop to present the updated FNS 2022; and receive their comments to include the most relevant of these in the document.

**Task 14.** Update the draft Final FNS Policy to account for all comments received in the Final National Workshop.

**Task 15.** Final debriefing.

**Task 16.** Home station: any final adjustments to the draft FNS before electronic submission within one week of return travel.

**DATES:** The prosed dates are Outward Travel 2th August and Return Travel 7th September.

**Outward travel:** 2nd August. This *allows the quarantine period to occur during the end of the week and over the weekend of 6-7th August.* The first working day out of quarantine occurs on Monday the 8th of August.

**Quarantine**: 3, 4, 5, 6, 7 August.

**First day out of quarantine:** Monday 8th August.

**Working Days:** Incudes the five days of quarantine, which will be spent on preparatory work, content drafting, and remote meetings. Finalizes September 7th.

**The return date of travel to home base:** Work continues to 7th September.

**Working days:** 22 over a one month calendar period

# 7 ANNEX 2: 1st DRAFT FOOD AND NUTRITION SECURITY POLICY OF THE KINGDOM OF BHUTAN, 2022

## 1. Preamble

**Cognizant** of the fundamental rights of all people living in Bhutan to have access to affordable, adequate, safe, nutritious, and culturally-acceptable food; and that the 2021 UN Food Summit set clear directions for a systemic change approach, looking into transformative drivers of food systems at every level. The 'food system' concept is the constellation of all elements and activities related to producing and consuming food and their effects and interactions, including economic, health, and environmental outcomes. Food systems are, by definition, dynamic structures in a state of continuous flux and adaptation. A transformative approach means identifying which policy mix, innovations, and institutions are needed at each level to enhance positive side-effects or mitigate the unintended consequences of policies, programs, or other activities related to food system changes.

**All stakeholders are encouraged** to work systemically to create an effect for a paradigm shift among policy-makers, farmer leaders, CSOs, legislators, and stakeholders, in which the debate is refocused from the concept of 'food' as a 'normal commodity' to the concept of food as a public good, with public costs and benefits that need to be redistributed all along the food system chain.

**Realizing** that maintaining food and nutrition security corresponds to a critical feature of national security for a small and landlocked country that is vulnerable to varying geological, economic, and environmental conditions;

**Understanding** that food and nutrition security refers to the six dimensions of *availability, accessibility, utilization, stability, agency,* and *sustainability* as they relate to the food supply and requires measures that maintain and increase the resilience of food systems in the face of the complex constraints and interrelationships which characterize the factors that condition food and nutrition security;

**Comprehending** that food systems require the application of a sustainable food system framework, underpinned by the right to food, thereby indicating that food systems encompass the elements that relate to the production, processing, distribution, preparation, and consumption of food and the outputs of these activities, including socio-economic and environmental outcomes;

**Addressing these concerns** and acknowledging that "*Food and nutrition security exists when all people at all times have physical, social and economic access to food, which is consumed in sufficient quantity and quality to meet their dietary needs and food preferences and is supported by an environment of adequate sanitation, health services, and care, allowing for a healthy and active life*" (FAO/HLPE 2000);

**Recognizing** that addressing food and nutrition security requires a multi-sectoral and coordinated approach actively engaging stakeholders from the across the Government, non-governmental organizations, community-based organizations, economic and social groups, the private sector, development partners, and the citizens of the Kingdom

**Understanding** the need to adopt new food security and nutrition (FSN) frameworks that widen our understanding of food security; the necessity of addressing the complexity of the drivers of change in food systems; and embracing the critical policy shifts that support all dimensions of food security;

**Aware** that "agency" is conventionally defined as "*what a person is free to do and achieve in pursuit of whatever goals or values he or she regards as important*," indicating that agency surpasses access to material resources in that it includes empowerment, including the ability of people to take actions that help improve their well-being, as well as their ability to engage in society in ways that influence the broader context, including their exercise of a voice in shaping policies; while "sustainability" is best framed as "*all concerns that are related to the long-term capability of food systems to provide food security and nutrition in such a way that does not compromise the environmental, economic, and social bases that generate food security and nutrition for future generations*."

**Noting** the significant impact of the Covid-19 crisis on Bhutan's FSN situation, which has been a wake-up call for addressing the multiple complex challenges facing food systems, with the high and recurring risks of Covid-19 resurgence (and any future pandemics) requiring measures to improve food systems to make them more resilient to crises, as well as more equitable and inclusive, empowering and respectful, regenerative, healthy, and nutritious, and productive and prosperous for all;

**Knowing** the importance of exclusive breastfeeding and appropriate infant and young child feeding practices for enhancing the survival and growth of infants and young children and preventing chronic diseases later in life;

**Appreciating** the role of research and development in achieving national food and nutrition security, particularly in the innovation of agricultural technologies and the strengthening of value chains;

**Reaffirming** our commitment to regional and international obligations concerning food and nutrition security and poverty alleviation;

**Adapting** to regional and global development scenarios, expanding opportunities, and new competitive pressures;

**Ensuring** that food and nutrition security is adequately prioritized and mainstreamed in all development plans;

**Aware** that to avoid this document becoming burdensomely long and complex, the role of this Food and Nutrition Policy is not to set targets for specific time periods, instead this document provides the framework for further prescriptive documents such as Policy Papers and texts of a legal nature, and as a result, the FNS Policy does not set milestones for the scores of Policy Measures listed, which each require their own substantive target-setting and detailed framing;

**Led by the RGoB, and with the participation of a comprehensive set of Bhutanese organizations and the public, we as a result of this, promulgate** this policy, which is aimed at enabling a conducive environment for a healthy population through its physical, economic, and social access to safe and adequate nutritious food at all times, enhancing Gross National Happiness.

## 2. Food and nutrition security situation in Bhutan

Over recent decades, Bhutan has implemented a broad spectrum of programs for improving food security and poverty alleviation through concerted efforts to increase domestic food production and improve social services and infrastructure in all five-year development plans. Substantial progress has been made in overcoming transient food insecurity, malnutrition, and poverty.

By 2017, the proportion of the national population in poverty had reduced to 8.2%, with a national poverty line of Nu. 2,196 per person per month. Ten years before, in 2007, 23% of the population was in poverty, while in 2004, the baseline figure was 32%, when the national poverty line was set at just Nu. 740 (World Bank, 2019).

Rural poverty has reduced from 31% in 2007 to 12% in 2017, while the multidimensional poverty index has decreased from 12.7% in 2012 to 5.8% in 2017 (NSB & OPHDI, 2017).

Even today, about 1.5% of the population lives below the food poverty line. While poverty is highly correlated with subsistence farming, primarily on unproductive and small landholdings (World Bank, 2019), agricultural productivity and improved access to urban markets have helped reduce poverty in rural communities.

The available information on food consumption, incomes, and nutritional status confirm that food and nutrition security must be addressed. Hunger and malnutrition imply human suffering, which reduces Gross National Happiness and undermines Bhutan's ability to achieve a significant number of its Sustainable Development Goals by 2030.

Signs of a shift in the composition of dietary intake are emerging, but malnutrition and food insecurity continue to be challenging. Analysis of budget shares by food group suggests a slow change in the composition of dietary intake, as indicated by the slightly smaller expenditure on rice and cereals in the budget and higher spending on fruits and vegetables between 2007 and 2017. However, the consumption of meat and fish, an essential source of protein, has remained almost unchanged.

It is well known that a healthy, balanced diet will usually include the following constituents: (1) vitamins, minerals, and antioxidants; (2) carbohydrates, including starches and fiber; (3) protein; (4) healthy fats; (4); and that a balanced diet will include a variety of foods from the following groups: (i) fruits; (ii) vegetables; (iii) grains; (iv) dairy products; other proteinaceous foods such as meat, eggs, fish, beans, nuts, and legumes.

However, in Bhutan, the consumption of vegetables consists primarily of two national staples – potatoes and chilies – which do not provide all essential vitamins and minerals (Leao, 2014). Consequently, malnutrition remains high: 21.2% of children under five are stunted, 9% are underweight, and 7.8% of infants are born with a low birth weight (MoH, 2016). In 2017, 8.6% of the poor reported having experienced food insecurity for at least one month during the previous year.

Several priority actions for reducing food and nutrition insecurity that have been identified are currently under implementation through interventions aimed at improving health, education, food security, job opportunities, and living standards. However, given the social and economic fallout from the COVID-19 pandemic, it is probable that progress towards poverty reduction has been adversely impacted.

Bhutan's agricultural production faces many challenges, including climate change, natural disasters, declining farm productivity, human-wildlife conflict, water scarcity, labor shortages, limited post-harvest management, and market access barriers. Lack of access to technology and the absence of an enabling environment for private sector investments, business development services, fair markets, and affordable credit place significant constraints on rural agro-enterprise development.

There have been significant shifts in policy approaches to food security and nutrition that are informed by the evolving understandings of food security and food systems thinking. Policies that embrace these shifts are characterized by their support for radical transformations of food systems; they address food system complexity and the interactions of the food system with other sectors and systems; they focus on a broader understanding of malnutrition, and they are developing diverse policy solutions for addressing context-specific problems.

This FNS Policy document seeks to promote regenerative food systems to address growing trends such as climate change and degradation of natural resources, as well as increasing social and economic inequality, undermining the capacity of ecological systems to interface with social and economic systems to support diverse and healthy food production and food system livelihoods into the future. It is imperative to ensure that ecological, social, and economic systems work together in regenerative ways that provide FSN over long-term time scales.

### 2.1 Food Availability

Systemic challenges facing farming include scattered land holdings characterized by minimal inputs and mechanization challenges. Bhutan's food system is dominated by small, fragmented, isolated landholdings characterized by low productivity and high production costs. Half of the territory is on slopes with a declivity exceeding 50%, which is therefore prone to severe soil erosion, soil instability, and soil losses of up to 8 tonnes/ha annually. This leads to limited yields and high production costs, resulting in low, zero, or negative profits. Yields for almost all crops and livestock are below regional averages, and for most crops, national production has plateaued or declined over the last two decades.

Farm labor is becoming scarce due to the migration of males and young people from rural to urban areas to find education or jobs in the cities. Many of them associate remaining on the family farm with a negative image. Rapid urbanization (37% to 2022, with an additional 3.7% change each year (World Bank, 2012)) affects Bhutan's agricultural productivity as young people leave the countryside. These trends are leading to a high and growing proportion of farm labor being provided by women, some of which represents additional drudgery that they have to carry out in addition to their traditional domestic tasks. Rural-urban migration is also leading to more land being left fallow. The agri-food sector employed more than 58% of Bhutanese and contributed over 13.4% to GDP as of 2019.

The urbanization of Bhutan has not translated into a significant transformation of labor in the industrial sector, which consists mainly of cottage and other small-scale industries.

For several crops, the production volume and area harvested have dropped over the past 15 years, forcing the country to import large quantities of food, mainly from India, to cover the shortfall in the domestic production of essential foods. The significant contributing constraints are:

(1) approximately just 20% of arable land is irrigated, with the decline in wetland cultivated land dropping from about 28,000 hectares in 1981 to 20,547 hectares in 2017 (Agriculture Research Development Center, Yusipang), and command areas are growing smaller by the year;
(2) crop and livestock losses to wildlife, pests, and diseases are high and persistent;
(3) almost 30% of arable land is now left fallow, and opportunities to convert such land to entrepreneurial agroforestry systems remain unrealized;
(4) with little access to markets, inputs, and services, farmers have limited means and incentives to produce, while the absence of aggregators impedes the achievement of economies of scale and

competitiveness. Post-harvest losses remain high, the agri-processing infrastructure is weak, the transportation systems are defective, and markets and food standards remain inadequate;
(5) the country is challenged by the high costs of providing high-quality health and education services throughout the country, which affects household-level competencies in food consumption;
(6) communities are often highly vulnerable to natural disasters and climate-related risks, with a diverse range of impacts already affecting yields through such trends as more erratic rainfall (varying from droughts to high-intensity rainfall events); reduced stream flows that alternate with floods; and out-of-season weather patterns that render the traditional crop calendar no longer reliable; and finally, farming is affected by fluctuating temperature extremes, with some years featuring extreme cold, and others severe heatwaves, all reflecting a general trend towards greater unpredictability and more "abnormal weather" where weather events in a particular location are consistently extreme for weeks or months
The general availability of food is ensured through domestic production and the distribution of imported food through markets. The National Food Security Reserve (NFSR) is maintained for 50% of the population for six months. Essentials are stored in 62 locations, including warehouses, institutions, and schools (FCBL, 2020). In addition, the FCB maintains two separate NFSRs – the SAARC Food Security Reserve and the SAARC Food Bank.

In some areas, community grain silos are maintained. For households, food storage is mainly based on traditional practices relying primarily on food drying. A wide variety of wild vegetables also enhances the diversity of food items of the Bhutanese, comprising medicinal plants and non-woody forest plants collected from forests and other ecosystems. Besides acting as a source of supplementary income, wild foods also supplement the availability of cultivated food products in times of food shortage.

*Availability of cereals*

The domestic production of total cereals decreased to 102,215 MT in 2020 from 164,445 MT in 2014, a decrease of 38% in five years. While many factors could have contributed to this, growing vegetables and other crops on prime cereal land, urbanization, human/wildlife conflict (HWC), and leaving land fallow are critical causes for the decline in cereal production (Lakey, 2021). HWC-induced crop losses are a crucial problem in rural Bhutan and are mainly related to the abundant forest cover, which usually provides a suitable habitat for diverse wildlife species. Farmers experience significant crop losses each year due to resource constraints like disease, pest infestation, and wildlife threats. Crop damage is one of the factors behind more and more farmers giving up farming, leading to increasing farmland being left fallow. More wildlife species such as wild pigs, deer, black bears, porcupines, and monkeys mean a significant demand for labor to guard crops.

Regarding the cereals, barley, buckwheat, and millet had the highest self-sufficiency ratios (SSR), respectively 99%, 97.15%, and 95%, with the lowest SSR being for maize, at 84.3% (MoAF, 2021).

Rice is the essential staple food of the Bhutanese diet. While the SSRs for several food crops have been improving over the years, the SSR for rice has declined markedly from 53% observed in 2011 to the 47% followed in 2021 (MoAF, 2021). Rice imports, mainly from India, have grown over the last ten years, making Bhutan an increasingly import-dependent nation. Further analysis of import and export data from 2006 to 2019 shows a steady decline in the rice SSR over the years, from 58% in 2006 to 35% in 2019, with a corresponding rise in the import dependency ratio (IDR) from 42% to 65%.

The average rice SSR for the last 14 years is 47%. If the critical point or minimum SSR for a country to be self-sufficient is 80%, the SSR value for rice indicates that Bhutan is far below this threshold.

This is despite improvements in yields from 1101 kg/acre to 1648 kg/acre (DoA, 2021), owing to a general decline in rice paddy cultivated and changing dietary habits.

The per-capita rice available for consumption is estimated at 150 kg/year (BTS 2021), which is expected to increase as the population's income increases further.

*Availability of vegetables*
Vegetable production in the country has been increasing, and domestic production of vegetables in 2020 increased to 57,727 MT (NSB, 2020) from 53,612 MT in 2014 (NSB, 2014). The principal vegetables grown in the country are turnip, cabbage, cauliflower, and chili.

In comparison, the imports of primary vegetables are tomatoes, onions, and chili. While a much lesser proportion of the total demand for all other vegetables is imported, the domestic production of potatoes and tomatoes can meet the domestic requirements. During the summer, Bhutan is entirely self-sufficient in vegetables, and large quantities of vegetables such as peas, beans, and cole crops (cabbage, cauliflower, radish) are exported.

*Availability of animal products*

Bhutan has made considerable progress in increasing the production of animal-source products and achieved annual self-reliance in the egg, chevon, and mutton categories in 2020. The total meat consumption in Bhutan in 2020 was 9,358 MT composed of 3513 MT of chicken, 2756 MT of beef, 1455 MT of pork, 186 MT of mutton/chevon, 1285 MT of fish, and 161 MT of yak (NSB, 2021). 47% of chicken, 63% of beef, 52% of pork, 1% of chevon and mutton, and 85% of fish were imported. This shows that Bhutan is still highly dependent on imported animal-source products, with no surplus animal products for export.

*Availability of fruits and nuts*

The availability of fruits and nuts through domestic production has improved from 100% of demand in 2011 to 115% in 2020 (DoA, 2021), with a total output of 57,080 mt. The recommended intake could be met if all 25 fruits are considered. Among the 17 fruit crops considered, mandarin orange offers the highest available per-capita daily supply, 72.38 g.

*Oils and fats*

The domestic production of oils and fats is negligible, and more than 90% of oil and fat requirements are met through imports. The import of oils and fats decreased to 7193 MT in 2020 (NSB, 2021) from 9772 MT in 2011 (Bhutan RNR Statistics, 2012). More than 70% of oils and fats imports comprise refined vegetable oils (sunflower and soybean) and hydrogenated palm oil.

## 2.2 Access to Food

Physical access to food is promoted chiefly through commercial groceries that import and distribute food items across the country. The Food Corporation of Bhutan maintains food stocks in strategic locations. Vegetables, fruits, and meat animal products are marketed chiefly through weekend markets. The Government establishes facilities for weekend markets in most urban areas.

Road networks across the country comprising national highways, Dzongkhag roads, and farm roads comprise the country's food distribution channel.

Farm roads now connect all Gewogs in the country. However, a significant proportion of farm roads become unusable during the monsoon period, owing to frequent landslides and the lack of bridges over streams. These impacts are being further exacerbated by climate change.

Traditional social safety networks play a significant role in caring for the old, young, unemployed, and sick in the Bhutanese society, both in urban and rural areas. These social safety networks enable vulnerable groups to have access to food.

In rural areas, remittances from urban relatives, borrowings in cash and kind, as well as the exchange of labor for food, are other mechanisms that enable social access to food. However, such practices are declining in urban areas. During the peak Covid period, food donations from the Government were initiated to ensure that vulnerable sections of the society had access to essential food items.

In terms of the financial access to food, income-generating activities, mainly focusing on fruit crops, vegetables, and livestock production, are promoted through program support from the Government. Rephrase as; Prioritize and support income-generating agricultural activities to enhance financial access to adequate food at all times.

Non-farm income-generating avenues such as craftwork and tourism are some opportunities being promoted.

The collection of, and value addition from, non-wood forest products also contribute significantly to the incomes of the rural populace, enhancing their access to food through improved purchasing power. Regarding the urban scenario, employment in the government and business sectors provides a source of income primarily used for purchasing food.

Food prices have been consistently increasing, and this is a cause of concern. It is estimated that about 30% of the income of a middle-class person is spent on food items.

Most food commodities are imported from India. Changes in the amount of food imports from India have a significant impact on the Bhutanese people's access to food.

Achieving food self-sufficiency will continue to be a challenge for Bhutan because of the limited area of arable land, rugged topography, the growing threat of climate-related risks and natural disasters, and substantial seasonal variations in the water supply.

Farming must be made much more attractive as a means of livelihood by improving production and market infrastructure; facilitating farm mechanization, especially by promoting gender-sensitive farm machinery; by developing transport networks to encourage market access by strengthening the participation of the private sector in supply-chain services; by establishing robust national research and extension programs; by improving irrigation infrastructures, by promoting protected/IT-based farming, by helping farmers to develop climate-resilient approaches and diversification strategies; by deploying affordable crop and livestock insurance and compensation schemes; and by establishing adapted branding and certification systems.

### 1.3 Utilization of Food

Although the national average energy consumption exceeds 2500 Kcal/person/day in the worst-off areas, this figure does not reach 1900 Kcal/person/day, i.e., only 85-90% of the minimum required, which was fixed in 2014. The average protein, vitamins, and minerals consumption are below what is needed for good health.

While food production data shows an increase in production over the years, except for rice and some crops, the rising production may not have much impact on people's access to food and does not reflect the quality of the food accessed or consumed.

Bhutan faces the triple burden of malnutrition thanks to the coexistence of undernutrition, micronutrient deficiencies, and overnutrition. Over the years, children's health and nutritional status have improved, with the prevalence of wasting and underweight having reduced to 4% and 9%, respectively., However, stunting is persistent at 21%, while overweight/obesity is emerging in Bhutan and is increasing, with 11.4% of Bhutanese being obese and 34% overweight. Micronutrient deficiencies remain a significant public health issue.

More than 1 in 5 preschool-aged children and 17% of pregnant women are deficient in Vitamin A. Among school-age children (5-19 years), several outbreaks of Vitamin B deficiency, including peripheral neuropathy and glossitis, have been reported over the years (WFP, 2021).

Non-communicable diseases (NCDs) continue to be the leading health burden in the country, being responsible for 69% of Bhutan's disease burden and 71% of deaths in 2019; these were caused by hypertension, cardiovascular diseases, cancer, and diabetes. In terms of diet, the risk factor survey of 2019 records daily salt consumption at 8.3 grams, significantly higher than the recommended intake of 5 grams. School children are large consumers of junk food, with 40% of students drinking carbonated soft drinks and 32% eating fast food four days per week (WFP, 2021).

A strictly calorie-based approach is incompatible with the definition of food security. The stress on safe and nutritious food and the goal of ensuring that the Bhutanese lead an active and healthy life calls for a broader analysis of people's diets. Apart from insufficient dietary intake for an extended time, inappropriate infant and young child feeding practices comprise one of the major contributing factors to the stunting status of children.

Anaemia remains a significant public health problem, as it is a proxy indicator for micronutrient deficiencies and stands at 44% for children aged between 6 and 59 months. Over 35% of non-pregnant women and 31% of adolescent girls are anaemic – an important indicator of future health, as 6% of girls are married by the age of 15, and 26% are married by the age of 18. There is a need for targeted interventions to address these challenges

Iodine deficiency disorder (IDD) was a significant public health problem in the 1960s. Multiple nationwide studies were carried out, and interventions that focused on the iodization of salt were adopted through multi-sectoral approaches. Evaluations indicated that Bhutan had made dramatic progress in controlling iodine deficiency disorders, which led to the declaration of the elimination of IDD. The challenge remains maintaining the elimination status, which calls for greater collaboration between stakeholders like MoAF, MoH, BAFRA, Customs, FCB, and Bhutan Salt Enterprise. Ensuring awareness of the importance of consuming iodized salt is a perennial requirement.

Infant and young child feeding practices are not optimal among mothers and caregivers. This leads to malnutrition, contributing to a growing burden of non-communicable diseases in the latter part of life. Numerous cultural and traditional barriers need to be addressed to promote optimal breastfeeding.

## 1.4 Stability

Stability concerns the assurance of continuation of dimensions of availability, access, and utilization of food. Even temporary periods of hunger can be debilitating to long-term human growth and development. We may further distinguish acute from chronic hunger: the first situation occurs when insufficient food intake is temporarily caused by an external shock, whereas the latter indicates a shortage of food constantly.
As an import-dependent country, Bhutan's stability dimension is highly dependent on global political, social, and economic situations, particularly on the situation in the South Asian Region.

The Covid-19 pandemic had substantial impacts and disrupted food systems, indicating critical gaps which need to be assessed and accounted for in the revision of the FNS Policy document. The pandemic highlighted the need for Bhutan to ensure that it possesses sufficient strategic reserves, maintains food imports for key strategic crops, and secures healthy and nutritious food. The pandemic and the measures to curb its spread, such as lockdowns, led to trade restrictions and an economic downturn, putting pressure on the nation's food system. The pandemic also showed how unstable Bhutan's food security situation was when India's borders were sealed. Special arrangements had to be made to ensure that essential commodities, including food and spices, could be imported.

Climate change is likely to affect food production in many ways severely. The slow onset and changes in mean temperatures and precipitation patterns are expected to affect crop yields. Added to this will be crop losses resulting from more frequent and intense extreme weather events. Attacks by new pests and diseases, such as army worm, chili blight, citrus Huanglongbing, rice blast, and crop damage by wildlife also pose a severe risk to the stability dimension of food security.

## 1.5 Sustainability

Sustainability as a dimension of food security refers to environmental sustainability. It includes policies and measures to reduce food systems' environmental impacts and carbon footprints while ensuring adaptation to the rapidly changing climate.

The effects of climate change – altered water availability, increasing temperatures during both day- and night-time, extreme weather events such as cold snaps and giant hailstones, and shifts in the agroecological zones – are already impacting Bhutan’s agricultural productivity. Given the nation’s socio-economic dependence on agriculture, water resources, and forests, the effects of climate change are proving to be a grave threat to the nation’s development efforts.

Specifically, climate change influences the temperature and rainfall pattern, which increases the risk of extreme weather events, posing severe challenges to livelihood development and placing a high burden on the national economy. In Bhutan's case, climate change is a serious challenge to sustainable development and the livelihoods of its people, as the country's growth is highly correlated with climate-sensitive sectors such as agriculture and livestock.

In the agricultural sector, the following vulnerabilities have been identified:

- Crop yield instability, loss of production and quality (due to variable rainfall, temperature, etc.), decreased water availability for crop production, and increased risk of extinction of already-threatened crop species (i.e., traditional crop varieties).
- Loss of soil fertility due to erosion of topsoil and runoff; loss of fields due to flash floods; and loss of soil and nutrients.
- There will be wind erosion in dry and windy periods in open landscapes.
- During rainstorms, water erosion is expected to increase (the occurrence of groove erosion is expected).
- Crop yield loss (flowers & fruit drop) to hailstorms; worse produce quality (fruit & vegetables) due to unanticipated heavy rains and hailstorms.
- Climate change will also significantly influence the direction and speed of the accumulation and transformation of organic compounds in the soil.
- Higher temperatures can influence soil organic matter's decomposition, and the mineralization processes will outweigh the humidification processes. This could cause soils to acidify.
- Delayed sowing (late rainfall) and damage to paddy and potato crops, respectively, due to sudden late spring and early winter frosts.
- Outbreaks of pests and diseases in the fields and storage, where they were previously unknown.

● Higher temperatures and evaporation increase mineralization of the ground water, leading to an increased accumulation of salts in middle and surface soil horizons.

Considering the case of livestock in Bhutan, there is limited research available to quantify the impact of climate change on animal populations. Climate-induced hazards coupled with the relatively low capacity to cope, manage and respond to disasters in Bhutan pose severe threats to the country's livestock population. Reports suggest that a growing amount of agricultural land and livestock is exposed to various climate-induced hazards. This will affect the well-being of animals and can further affect production and reproduction efficiency.

Climate change-induced extreme weather events such as intense heatwaves, floods, and droughts are expected to challenge the well-being of livestock and, in many cases already reported, lead to livestock death. The extreme temperature triggers response mechanisms in animals that aid their survival; however, this may be detrimental to animal yields. This can result in a decrease in milk components and production, as well as reproductive efficiency, and can impact animal health. Various climate change models predict that higher air temperatures could affect animal performance.

Besides this are the indirect impacts of climate change that impact production, primarily through reductions in or the non-availability of feed and water resources.

Climate change influences the quantity and reliability of forage production and water availability for the cultivation of forage crops and generates changes in large-scale rangeland vegetation patterns. It is expected that forage plants will continue to be influenced by warmer temperatures, elevated carbon dioxide levels, and wildly fluctuating water availability. In Bhutan, dryland crops such as wheat, buckwheat, maize, and barley produce yields and marketable livestock products in many drier Gewogs are significant for local livestock. However, these dryland crops are highly dependent on rainfall, further enhancing the sector's vulnerability to climate risks.

Due to the unpredictable change in rainfall distribution, forage production is expected to be significantly impacted. Evidence suggests that the livestock production systems are likely to face extreme challenges due to climate change. Climate change also induces water risk and water stress in the region. Water deprivation can affect an animal's physiological homeostasis, leading to body weight loss, low reproductive rates, and decreased resistance to diseases. An increase in temperature also creates an enabling environment for emerging diseases, including vector-borne conditions that can impact the livestock population. More research is needed to understand the vulnerability to climate change in the livelihood sector and to support the development of adaptive strategies.

### 1.6 Agency / Gender and Social Inclusion

Globally, there is a tendency for women and girls to depend more on natural resources for their livelihoods, which also increases their vulnerability. This reflects the fact that Bhutan's agriculture sector continues to be dominated by women, with the proportion of females (58.8%) working in the agriculture sector being higher than that of males (41.7%), indicating the feminization of the sector (NSB, 2017).

While women have access to land and other resources, they have less control over them than males. Bhutan's population and housing census 2017 indicated 63% male and 32% female land ownership (NSB, 2017).

However, land ownership does not automatically imply wealth, and the opposite can also be the case. In rural households, gender-specific tasks include livelihood tasks such as the collection of drinking water by females and irrigation water by males; household tasks which females mainly carry out; non-farm work/off-farm employment, especially of males; and decision-making and attending meetings, primarily involving men. Like men, women are also actively engaged in agriculture-related cottage and small industries (CSIs), including agri-businesses and marketplace activities.

Overall, women in Bhutan perform 71% of unpaid household and care work (NCWC, 2019). Because of all their roles and responsibilities, rural women are more vulnerable to the effects of climate change, and they are more affected than men when climate-induced disasters hit.

Surveys have indicated that most rural men (84%) and a lesser percentage of women (68%) are aware of climate-resilient agriculture initiatives. There is an urgent need to empower and build female farmers' leadership, enhance their communication skills, and strengthen their decision-making abilities in local governance and farming decisions, including those related to climate-resilient agriculture systems.

Gender equality and climate change are both identified as critical issues in Bhutan's Five-Year Plans and by the Gross National Happiness screening tool for national policies. However, there is minimal integration of gender issues in agricultural policies. The study also showed that although the Ministry of Agriculture and Forests has carried out many gender-related initiatives through project-tied activities, integrating gender into plans, programs, and policies has always been a challenge due to a lack of proper knowledge and skills. The role of gender focal persons, RNR Plan Focal Points, and sensitization programs at the national and Dzongkhag levels are essential. The collection and use of gender-disaggregated data for all activities by departments and agencies are essential steps towards strengthening knowledge and expertise.

While government intervention and support can pave the way to achieving food and nutrition security, ensuring that the achievements are sustainable requires the core of this development to be driven by the private sector. The Government must step up its efforts to stimulate farming communities and primarily ensure that enough financial resources are dedicated to this sector. However, companies and cooperatives that can generate a guaranteed supply of farm products will be able to create a different dynamic, with profit providing a direct incentive for innovation, investment, and sustainability

**OUTLINE LOGICAL STRUCTURE OF THE 1st DRAFT FNS POLICY**

| POLICY GOAL | POLICY OBJECTIVE |
|---|---|
| **GOAL 1: AVAILABILITY-** Ensure availability of safe and adequate types of food at all times to meet the food and nutrition requirements of all groups and members of Bhutan's population | **Objective 1.1** Ensuring sustainable domestic food production, maintaining cropping areas under agriculture, and enhancing land and labor productivity. |
| | **Objective 1.2** Strengthen sustainable management of natural resources for food production |
| | **Objective 1.2A** Strengthen land management and soil fertility management. |
| | **Objective 1.3** Management of fallow land and conversion of land back to agricultural use. |
| | **Objective 1.4** Increase, diversify and sustain production from the limited areas of cultivatable land that Bhutan possesses by promoting the conversion of fallow-land back to farming, in which improved Agroforestry Systems are proposed as the best subsequent cropping system. |
| | **Objective 1.5** Develop the MoAF Agroforestry Policy and Strategy drafts, socialize these and prepare a process for vetting them with interested parties. |
| | **Objective 1.6 For** watersheds that feature drying springs, this reduces water supplies for crop irrigation, household use, and livestock watering. Implement a community-based "Spring-shed approach" - to restore spring water flows - into watershed management efforts. |
| | **Objective 1.7:** Bring together all inputs needed for efficient food production, accounting for cropping systems, seeds, climate-smart technologies, and agrobiodiversity |
| | **Objective 1.8:** Promote a select group of crops upon which dedicated attention will be focused across all stages of research, extension, marketing support, and value addition, |
| | **Objective 1.9:** Support the spread of crucial information about climate-smart production technologies will be expedited by providing soft loans, tax breaks, and easy access to state land leases |
| | **Objective 1.10:** Encourage all stakeholders to promote the Resilient Mountain Solutions vision and disseminate the wide range of technologies available across the Himalayan region. |
| | **Objective 1.11** Promote the participation of young people in agriculture through a range of measures that make agriculture no longer seen as drudgery |

| POLICY GOAL | POLICY OBJECTIVE |
|---|---|
| | but as a viable business opportunity replete with options for applying technological solutions. |
| | **Objective 1.12** Promotes the production of a diversified array of organic farming commodities. |
| | **Objective 1.13** Conduct research and foster effective IPM measures that control all critical pests and diseases affecting Bhutanese crops and livestock. |
| | **Objective 1.14:** Enhance marketing opportunities by improving road infrastructure and connectivity to facilitate market access. |
| | **Objective 1.15:** Update and further integrate the Livestock Policy and Strategy into holistically programmed RMS-based development |
| | **Objective 1.16:** Based on a farm mechanization strategy, research and development regarding various farm mechanization options for the main agroecological zones and the main types of users (especially women) suitable for the terrain. |
| | **Objective 1.17**: Maintain safe and adequate food reserves at strategic locations |
| | **Objective 1.18:** Facilitate safe food imports and improve access to international food distribution facilities |
| | **Objective 1.19**:<br>Encourage and support more research on FSN, vital emerging issues, and contentious areas |
| **GOAL 2: ACCESS** - Enhance physical, economic, and social access to safe, affordable, and adequate food | **Objective 2.1** Increase the efficiency of safe food marketing, trade, and distribution systems |
| | **Objective 2.2** Address the specific needs of diverse rural and urban contexts that diversify their sustainable livelihood options in the formulation of FSN policies |
| | **Objective 2.3** Improve delivery of social support to poor and socio-economically vulnerable communities and individuals |
| **GOAL 3: UTILIZATION AND NUTRITION** - Promote appropriate consumption practices and enable optimum utilization of food while addressing the multiple manifestations of hunger, malnutrition, and food-related diseases through coordinated multi-sectoral policies and actions. | **Objective 3.1:** Achieve the nutrition and health goals of the 13th and later FYPs through mobilizing resources at all levels of governance and by all stakeholders, who will collaboratively implement Bhutan's "National Nutrition Strategy and Action Plan" by applying a series of PMs and related Institutional Work Plans. |
| | **Objective 3.2:** Support healthy food choices from sustainable food systems, ensure optimal food safety, and promote nutrition education and awareness for healthy food habits and dietary diversification. |
| | **Objective 3.3:** Support the nutrition of specific vulnerable groups within Bhutanese society:<br>(1) Promote appropriate feeding practices for mothers, infants, and young children.<br>(2) Reduce the prevalence of childhood undernutrition by addressing its direct cause of food insecurity while tackling its indirect causes such as poor hygiene, a lack of clean water, and unsafe food supplies.<br>(3) Improve the nutrition status of all Bhutanese served by all the agencies connected with clinical nutrition and dietetics that operate in the National Health System. |

| POLICY GOAL | POLICY OBJECTIVE |
|---|---|
| | (4) Improve the nutritional status of adolescents, youth, women of reproductive age, and pregnant and lactating mothers.<br>(5) Maintain and improve the nutritional status of urban and rural elderly.<br>(6) Provide social and safety net support to maintain the nutritional status of vulnerable groups when Bhutan is affected by a pandemic disease or similar extreme event or episode. |
| **GOAL 4: STABILITY** - Sustain a conducive and stable environment for availability, accessibility, and utilization of food | **Objective 4.1** Develop and implement adaptation measures for longer-term climate and environmental changes |
| | **Objective 4.2** Improve disaster preparedness capacity to respond to disasters, mainly focused on pandemic response mechanisms |
| | **Objective 4.3:** Ensure interventions in markets and price stability of food commodities |
| **GOAL 5: AGENCY** - Gender equality and social inclusion | **Objective 5.1** Empower citizens as food system participants, especially women, indigenous people, migrant workers, displaced people and refugees, and other vulnerable people and communities, to exercise agency over their livelihoods and ensure access to nutritious and safe food. |
| | **Objective 5.2:** Design and apply policies that reduce societal inequalities |
| **GOAL 6: SUSTAINABILITY** - Ensure that the long-term ability of food systems to provide food security and nutrition is not compromised and that shocks and trends do not affect or undermine the key the economic, social, and environmental systems that underpin food production, access, and utilization, through the implementation of a "Green Deal" circular economy approach tailored to Bhutan's RNR sectors | **Objective 6.1** Stakeholders at all levels should account for the long-term sustainability of food systems to provide food security and nutrition, avoiding compromising the economic, social, and environmental bases that generate food security and nutrition for future generations. |
| | **Objective 6.2** Building Bhutan's Circular Economy: Promote a detailed policy, technical, and investment response from DLG, MoAF, and MoEA |
| | **Objective 6.3** Implement a 'Green and Climate Smart Technology Industrial Investment Plan' to cover the period up to 2040 (covering at least the following two 5-year plans). |
| | **Objective 6.4:** Enhance the institutional framework for advancing green waste and climate-smart technology investment through various stakeholders. |
| | **Objective 6.5:** Implement proactive multi-agency partnerships to propel the Crucial Economy in all areas of the economy. |
| | **Objective 6.6:** Develop a planning and support process for Dzongkhags and Gewogs to identify potential green and climate-smart businesses and assist entrepreneurs. |
| **GOAL 7: FNS SECTORAL POLICY GOVERNANCE -** Improve FSN governance at the Inter-Ministerial and Dzongkhag levels | **Objective 7.1:** Improve stakeholder consultation and decision-maker involvement in the areas of Governance, Research, and Development. |
| | **Objective 7.2:** Improve Information Management |
| | **Objective 7.3:** Enhanced Communication amongst all stakeholders |
| | **Objective 7.4:** FNS Planning, Monitoring, and Evaluation |

**PROPOSED OBJECTIVES AND POLICY MEASURES**

## GOAL 1: AVAILABILITY- Ensure availability of safe and adequate types of food at all times to meet the food and nutrition requirements of all groups and members of Bhutan's population

**Objective 1.1 Ensuring sustainable domestic food production, maintaining cropping areas under agriculture, and enhancing land and labor productivity.**

**PM 1.1.1** Implement a **comprehensive transformation in the food system, including food production, processing, distribution, and consumption, to address outstanding food security and nutrition challenges**, including by increasing investment in agriculture, agroforestry, livestock, and forestry programs, through the dissemination of effective technologies, while improving the quality of Bhutan's diversity of ecosystems, and their products and services.

Modalities and mechanisms to ensure adequate inputs of quality seeds, pesticides, herbicides, livestock inputs, animal breeding stock, feed and fodder, fertilizers, and farm machinery must be implemented.
Establish broad frameworks to promote collaboration and partnerships across agencies and actors. Stakeholders must develop agreed methods for setting priorities.

A multi-year capacity-building initiative should be rolled out that targets all actors in the food systems and aims to improve standards and efficiency. Institutional stakeholders in the RNR, Food and Nutrition sectors are encouraged to collaborate to support the adoption of a wide range of **Resilient Mountain Solutions (**RMS) within Bhutan's rural communities**.** These measures will increase labor returns while enhancing profitability, making farming an attractive sector for entrepreneurial youth and women.

Encouraging investments and human resources and the dissemination of RMS technologies that strengthen livelihoods across all regions of Bhutan will enhance farm profitability, support the commercialization of agricultural and livestock products, provide options for adding value to raw farm products, and increase the efficient production of farm outputs.

Risk management must be addressed in all investments as an integral tool in building the resilience of smallholder farmers and as a driver of commercial farming, primarily via **crop and livestock insurance**

Sources of investment include

*(1) national private-sector involvement;*
*(2) international private investment when appropriate; as well as*
*(3) increased RGoB support for RMS-based products and services. These investments will enhance the capabilities of Bhutan's Agricultural Extension Service so that it can promote innovative RMSs on a wide scale;*
*(4) International development assistance funding from INGOs and bilateral donors.*

**PM 1.1.2** An **ambitious multi-agency effort, partnering with the Local Government, must be established for strengthening significantly the capabilities of MoAF Extension Service staff operating at the Gewog level**.

Extensionists must be intensively trained and be capable of understanding the wide range of innovative technologies that are now available to develop Resilient Mountain Communities. Extension officials should be adequately sensitized to the existing policies.

**PM 1.1.3** Key stakeholders should **engage in increasingly substantive efforts to form farmers' groups and cooperatives that enhance production, increase value addition, and increase the efficiency of food product marketing**.

Easy application and other procedures should be established to register cooperatives, farmers' groups, community forests groups, and non-woody forest products groups (NWFPs). The formation of groups to support product aggregation and the marketing of crops should be encouraged, aiming to achieve some economies of scale and improve competitiveness – particularly where cheaper imports are entering the market.

The MoAF must provide adequate farmers' training to enhance the skills of farmer groups and should focus on recruiting **leaders from communities**, who have learned how to apply a range of RMS innovations on their farms, and can now **work with their neighbours in farmer-to-farmer exchanges**. The **fostering of farmer-to-farmer Extension Methodologies** in which highly-trained **farmer leaders** (especially women) collaboratively with Gewog level MoAF extension officers. This should become a primary element in DoA's Extension Strategy.

**PM 1.1.4** RGoB agencies active in the RNR and FNS sectors are encouraged to collaborate with non-governmental organizations, private-sector bodies, and international Development Assistance partners to establish joint plans **based on the shared objective of building Resilient Mountain Communities.**

What is the **unique role of CSOs, INGOs, and national NGOs**? With support from donor agencies, CSOs, NGOs, and the private sector are expected to most effectively focus on R&D projects that develop innovations, manage pilot projects, and implement large-scale rural development projects that out-scale the best practices and proven technologies. Their work will be strongly backed by the center from DoA, DoL, and DoFPS, etc.); MoAF and its Departments are strongly encouraged to develop their protocols for engaging with CSOs and building long-term partnerships. All the farm investments listed above should provide open avenues for collaboration with Bhutan's CSO community. In particular, precision farming and digital agriculture should become essential opportunities for rural reinvigoration and food system transformation.

**PM 1.1.5** Provide **exemption of sales taxes and import duties on all farm machinery and spare parts, sales taxes and customs duty on agricultural inputs**, and income tax holidays for commercial farming, in line with the economic development policy. As per the "Rules on the Fiscal Incentives Act of Bhutan 2017", the following should continue to be exempted from sales tax and import duties: machinery and equipment relating to vegetable production; seeds and seedlings; farm mechanization; dairy products; the production of poultry (including turkeys), goats, honey, shrimps, feed, and fodder; pig sector development; fishery activities; and electric fencing.

**Objective 1.2 Strengthen sustainable management of natural resources for food production**

**PM 1.2.1 Improve access to food production infrastructure** and natural resources such as adequate land, water, and forest lands, with the associated rights over them while protecting the essential ecosystem services that underpin sustainable food systems.

**Objective 1.2.A Strengthen land management and soil fertility management.**

**PM 1.2 A.1 Ensure more equitable access to land and the organization of fragmented farm plots into more extensive and fewer plots where practicable** and assign productive agricultural resources to those small-scale producers. They are determined to remain the vital food providers of Bhutan.

**PM 1.2 A.2** Design and implement a **Soil Fertility Management Policy, Strategy, and Action Plan** that would be managed through a multi-agency "**2040 Soil Fertility Management Task Force"** to be set up for implementing Bhutan's soil fertility management strategies and measures in the future.

**PM 1.2 A.3** Implement a **National Mass Soil Analysis Project** in all Gewogs plus a **National Soil Correlation Mapping Project** for the four regions. As a high priority, these measures will require a **Detailed Soil Taxonomy Map of Bhutan**.

**PM 1.2 A.4** MoAF and NSSC, in consultation with researchers, extension agents, and farmers, will develop and implement a "**Policy Paper on Soil Fertilizer Policy for Bhutan**." This will lead to the development by relevant stakeholders of a **National Fertilizer Policy and Strategy** that takes account of the different attributes of a particular chemical, biological, and organic fertilizers. This policy will assess the import substitution potential of organic fertilizers for replacing agrochemical fertilizers. Since several stakeholders will be involved, the most effective implementation approach would be spearheading the program through MoAF's "**2040 Soil Fertility Management Task Force".**

**PM 1.2 A.6 Implement a Bio-Fertilizer and Organic Fertilizer Project** throughout Bhutan to develop fertilizer production capacity and to promote bio-fertilizers produced using microbial inoculants and organic fertilizers based on animal manure, pelleted chicken manure, plant waste, green manure, vermicomposting, and bulk compost from segregated municipal waste and the collection of other organic waste. Bio-fertilizers and organic fertilizers will be sold through farm shops to provide an alternative to imported chemical fertilizers, possibly under the Food Corporation of Bhutan management at MoAF.

**PM 1.2 A.7** Design and implement a "**Research and Extension Strategy, and Program for Soil Fertility Management for all Agro-Ecological Zones in Bhutan**." This strategy will promote the sustainable utilization of agricultural land across all areas of Bhutan at risk of oil erosion and soil fertility loss through the wide dissemination of **Sustainable Land Management Practices.**
Implement the Research and Extension Strategy and Program in all agro-ecological zones focusing on on-farm research through researcher-managed trials and farmer-managed tests that the Agriculture Research and Extension Division would manage (ARED) and by the Agricultural Research and Development Centre (ARDC) at MoAF.

**PM 1.2 A.8** Ensure the precise alignment of all PMs with Bhutan's **National Action Plan for Land Degradation and Sustainable Land Management** while ensuring that all policy documents align with UNCCCD requirements.

**Objective 1.3 Management of fallow land and conversion of land back to agricultural use**

**PM 1.3.1** Design and implement a **Fallow Land Conversion Policy** and **Action Plan** that ensures the mainstreaming of fallow land conversion within the five-year planning process, defined through discussions among stakeholders and policy makers. Rehabilitation of fallow land could help to increase productivity and contribute towards achieving food self-sufficiency goals. The **Fallow Land Conversion Policy and Strategy** would employ land-use modelling as a critical input, including mapping the evolution of agro-ecological zones, tree lines, and altitudinal bands under the pressure of climate change shifts.

In the medium to long term, **a "Fallow Land Investment Plan" should be considered a key budget priority in the 13th Five-Year Plan**.

The **Fallow Land Conversion Policy** would ensure that fallow land conversion is supported and made permanent via legislation that includes Government support for fallow land restoration by: promoting **climate-resilient approaches and diversification strategies** for securing access to water; **incentivizing food system investments** through blended finance, soft loans, tax breaks or access to green finance; providing increased support for guaranteed **opportunities for marketing cash crops**; encouraging **peri-urban food production** (hence minimizing food miles); providing support for **simplified and secure long-term land leases**; providing **soil enrichment and fertilizer resource**s; encouraging **land consolidation** that reallocates land plots to give landowners larger, unified parcels in one or more locations in exchange for their previous smaller, fragmented land plots; the possible **taxation of abandoned land**; introducing **regulations against land fragmentation** and rules for the consolidation of land ownership.

**PM 1.3.2** For those Gewogs with the most significant proportion of fallow lands that have agricultural potential, these processes will lead to the design and implementation of a **Land Suitability and Soil Survey for Agricultural Extensification Project** designed by the NSSC at MoAF.

Stakeholders will organize themselves to follow a **sequence of activities to implement the Fallow Land Conversion Policy**. This will include compiling a detailed inventory of fallow land parcels and their characteristics, using **Google Earth-enabled visual inspection** to identify fallow land in combination with local knowledge from key informants, followed by GIS overlay and proximity analysis for the attribution of the selected parcels; developing a **classification system of the fallow land** from "easy to convert to cropland" to "very difficult to convert"; prioritization of the inventoried and classified land to be converted, and the preparation of thematic maps with their economic costs[1].

**PM 1.3.3** The programming of the Fallow Land Conversion Policy should be divided into three time frames: short-term, medium-term, and long-term:

(1) In the short-term timeframe, **for the remainder of the 12th FYP, the Fallow-land Conversion Strategy will focus on preparatory work, such as establishing a Fallow Land Bank task force** and piloting potentially suitable approaches in 1-2 Dzongkhags;

(2) Over the medium term (13th FYP), the Fallow-land Conversion Strategy will focus on **establishing a program through piloting and demonstration in those Dzongkhags having a high percentage of fallow land** and where farmers are willing to address the issue of idle land. In these locations, a detailed inventory of fallow-land parcels in the target Chiwogs would be prepared, followed by classification into five classes, ranging from "very easy to convert" to "very difficult to convert";

(3) Researchers, farmers, farmer groups, and policymakers at Gewog-level will determine **cost-effective new cropping patterns to be established or Agroforestry System options** by assessing CBA variables, conducting feasibility assessments, and supporting farm planning;

(4) Longer-term, attention will be paid to **Collaborative Land Management Plans** that engage community leaders, farming households, and other Gewog-level stakeholders in learning lessons from these pilots, thereby contributing to the subsequent out-scaling into different communities and the involvement of more Gewogs;

[1] The targets that could be set in the land conversion policy, as proposed by EU-TACs, might be:
- To convert 50% of fallow land to more intensive agricultural cropping patterns that contribute directly to the food security targets for rice and maize (13,500 hectares by 2040).
- To convert 25% of fallow land to high-intensity entrepreneurial agroforestry systems that enhance livelihoods and diversify cropping patterns (6,750 hectares by 2040).
- To convert 25% of fallow land to low-intensity (i.e., low-labor and low-cost) agroforestry systems through enrichment planting and other natural forest/shrub management techniques (6,750 hectares by 2040).
- To convert diseased and unproductive over-mature fruit and nut orchards that are progressively falling out of use to alternative farming systems, such as livestock or horticulture (1,000 hectares by 2040).

(5) The **out-scaling and up-scaling of policy learning will take place in the 14th and 15th FYP to eliminate most idle and fallow land and** convert these areas to productive use throughout Bhutan, ensuring that fallow land conversion is supported and becomes permanent.

**Objective 1.4 Increase, diversify and sustain production from the limited areas of cultivatable land that Bhutan possesses by promoting the conversion of fallow-land back to farming, in which improved Agroforestry Systems are proposed as the best subsequent cropping system.**

**PM 1.4.1** An upgraded **Agroforestry Working Group** should be established to include members from DoA, DoL, National Statistics Bureau, PPD, DAMC, Research and Academic Institutes, CSOs, and Green Bhutan Corporation, RDTC, and others. A high-level executive order should be issued to establish this group.

The Task Force will identify a set of research and rural development outreach programs to be implemented using a cross-sectoral multi-and agency planning and **implementation methodology**. The lead agency should be encouraged to liaise with international and regional AF knowledge centers. Stakeholders across MoAF and in the research and CSO communities should be involved in the agroforestry systems' research, design, and outreach, guided by a **National Agroforestry Strategy.**

Adopting identified entrepreneurial agroforestry systems and the other lower-intensity agroforestry arrangements of trees, animals, and crops can contribute to a wide range of environmental and cultural services, such as climate adaptation, mitigation, and food self-sufficiency and socio-economic development. Promoting relevant agroforestry systems is one of the critical solutions that strongly cohere with **strengthening Resilient Mountain Villages.**

**PM 1.4.2** The **National Agroforestry Strategy and Program** targets three outcomes:

• **Outcome 1: Traditional agroforestry systems are promoted through value addition.** The maintenance of conventional AF systems through value addition based on sustainable farming concepts would help farmers generate better outputs and preserve traditional farming practices. Further characterization of traditional AF practices in different agro-ecological zones would help identify the farmers' priority production and needs to support their value addition activities. This includes strengthening markets, post-harvest processing, and aligning community-based AF within the Agroforestry mandate[2].

• **Outcome 2: Entrepreneurial Agroforestry Systems are promoted by a wide range of measures, including enhancing knowledge, practices, and value chain linkages.** Entrepreneurial agroforestry systems comprise high-potential but least-explored agroforestry options that can be realized with combined technical, input-related, value-chain, and financial support. Agroforestry value chain systems need to become more efficient through investment in enhanced technical and product marketing skills to improve farmers' incomes.

• **Outcome 3: Synergies between Government, researchers, finance providers, and business services will create a conducive environment for entrepreneurial agroforestry.** RGoB will develop a climate conducive to encouraging farmers to adopt AF. Poor research and poor-quality information result in poor extension services being provided to farmers. AF demands the efforts of multiple stakeholders and integrated research with the participation of all players. Research needs to focus on raw material production or high-value trees (plus inter-crops) that can form the basis of thriving rural enterprises.

**Objective 1.5 Develop the MoAF Agroforestry Policy and Strategy drafts, socialize these and prepare a process for vetting them with interested parties.**

**PM 1.5.1** The **National Agroforestry Strategy and Program** will comprise a range of components and action areas:

• Undertake **the quantitative characterization of traditional AF practices** across agro-ecological zones to identify farmers' production priorities and determine their support needs for small-business value addition activities.
• Enhance **research-knowledge-practice-value chain linkages that promote entrepreneurial agroforestry systems** through combined technical, input-related, financial, and research support.
• Promote **collaborative partnerships involving the financial sector, researchers, extensionists, farmers, private industry, and market agents** that will develop around specific agroforestry systems, particular products, and robust markets.
• Strengthen **markets and post-harvest processing**, and explore opportunities for community-based AF through their inclusion in CF management practices.

[2]Improved approaches to traditional agroforestry approaches at a lower -level of investment and a more diverse mixture of crops than those Orchard-type AF systems promoted under Outcome 2. https://www.youtube.com/watch?v=K-9jQQqImpg

• Promote access to and participation in Article 2 and Article 4 carbon markets under the Paris Agreement, which are mandated and voluntary carbon markets.

**PM 1.5.2** Build capabilities in all aspects of agroforestry system design and implementation:
(1) Enhance the **technical and product marketing skills of farmers and their groups** to improve farmers' incomes and lead to higher-yielding and more efficient agroforestry system investments.
(2) A vital role for **Extension Agents is to support the out-scaling of tested and approved AF systems** that are packaged up for effective replication, e.g., in the form of packages of practices, extension manuals, and leaflets for each high-priority AF entrepreneurial system.

**Objective 1.6 For watersheds that feature drying springs, this reduces water supplies for crop irrigation, household use, and livestock watering. Implement a community-based "Spring-shed approach" - to restore spring water flows - into watershed management efforts.**

**PM 1.6.1** Recognize the growth of water scarcity in Bhutan and take measures at all levels of society and across all regions of Bhutan to rationalize and optimize the use of water resources, and improve water management, in Bhutan's agriculture and food systems.
Based on the understanding that the surface watershed divide and the groundwater divide are two different phenomena, **stakeholders should implement both Watershed Management and Spring-shed Management in an integrated manner to enable the improved conservation and revival of springs in Bhutan's mountains and hilly regions**. Stakeholders at all scales should apply a **Six-Step Protocol for Reviving Springs**, including (1) Comprehensive mapping of springs and spring sheds; (2) Setting up a data-monitoring system; (3) Understanding the social and governance systems relating to springs; (4) Carry out the hydrogeological mapping and identification of recharge areas, and the development of conceptual layouts for these areas; (5) Applying a range of physical and vegetation-based water resource restoration methods focusing on spring recharge zones; (6) Measuring the impacts of spring revival activities.

**PM 1.6.2** In drying up surface water sources and flows, incorporate the **participatory groundwater management approach** into the existing **participatory watershed management approach** by forming User Groups or Community Groups that use a series of local springs as their primary water sources. These groups will collaborate to provide most of the labor for the physical work needed. Investments in recharge measures will follow a plan that identifies the critical recharge areas for these springs and defines the optimal conservation methods to maintain, restore and revive them.

**PM 1.6.3** Promote **Agro-ecological Landscape Restoration** by assessing how agro-ecological landscape restoration options can be synergistically implemented and combined with other land-use and watershed management investment options. This includes physical measures, such as gray and green infrastructures, and non-physical measures, such as optimizing reservoir operations to mitigate water storage capacity loss arising from sedimentation and land use planning for the watersheds to maximize the benefits of climate-resilient watershed management.

**PM 1.6.4** Under the **Agro-ecological Landscape Restoration mandate**, organize stakeholder efforts to apply established protocols for reviving springs in the Himalayan region. This will include planning and implementing significant investments that use the Spring-shed Approach to regenerate ecosystems and rebuild their services, and install a wide array of water capture infrastructure: (1) the building of multiple recharge ponds across upper elevations above the spring; (2) the protection and natural regeneration of overgrazed and desertified pasturelands; (3) the introduction of regulations against urban construction that conflict with natural and built water infrastructure; (4) the installation of check-dams along the course of seasonally-dry streams to slow the flow of water, and to create infiltration/silt capture ponds; (5) the piloting and scaling-up of other methods of retaining water to allow it to infiltrate into the groundwater, such as eyebrow pits, staggered trenches, contour trenching, field bunds, household rainwater harvesting ponds, vegetative barrier measures, and soil-moisture conservation measures such as stone walls.

Ensure active learning and the consolidation of lessons by all participants to ensure dissemination of the training in recharge measures, thus enabling additional sets of drying springs to be revived.

**PM 1.6.5** Given the significant capital costs associated with irrigation and road infrastructure, all relevant stakeholders should support considerable improvements in small-scale and large-scale irrigation schemes. Accomplishing this will require:

(1) the design and development of an **Irrigation and Water Resources Management Framework and Infrastructure Fund** that will be set up to arrest the decline in the budgets allocated by RGoB to irrigation systems (Road Infrastructure);
(2) **focused investments** that expand the total area under irrigation by completing surface schemes already started, ensuring the repair of damaged surface systems, installing water lifting systems, undertaking the development of non-conventional irrigation, and introducing more efficient water application systems;

(2) the preparation of a **document portfolio titled Technical Guidelines to Irrigation Technologies** that would relate a range of new technologies in contrast to the conventional open canal or Pipe Irrigation systems that are currently used, which deliver water inefficiently both between farms from the water source and then within farmers' fields. These losses should become classified in farming communities as unethical and inappropriate.

The **Technical Guidelines** would provide a complete set of data in the form of "**User Manuals**" that describes innovative technologies such as:
(1) Solar electricity pumps;
(2) Electricity-pump lift irrigation for demanding contexts where water must be lifted at a considerable elevation, and water is then hand directed to the rows of plants;
(3) **Hydro-Ram systems** have been fully piloted in Bhutan for lifting water smaller vertical distances using the mechanical energy of the river as a source of pump energy;
(4) Piped water systems that then feed a spread of farmers' fields across highly-fractured topography and precisely **deliver water via a set of sprinklers** located on wooden posts across the area;
(4) **Micro-irrigation or drip irrigation** is the most efficient type of irrigation system, which uses a complex network of soaker hoses, pipes, timers, and even sensors, so that water is applied directly to the soil where the roots of the plants would benefit most. Drip irrigation can efficiently supply Hydroponic systems with home gardens.
(5) Several of the above irrigation systems can use **Smart Irrigation** to set on/off times and to vary other parameters, such as watering field sections in a specific pattern.
**(6) improving water allocation** and crop planning, constructing permanent headworks, and improving main canals;
(7) building **capacities in water management for effective irrigation systems among all stakeholders** (especially at the farm level), and ensuring that water users' associations have influential roles in the direction of irrigation; and
(8) **making use of community-level water and soil assessments** and identifying climate-smart soil and water management practices that will comprise priority interventions for addressing the limiting factors observed in the local irrigation system. Appropriate water-harvesting and soil improvement approaches for each irrigation system rehabilitation initiative should be identified, and those technologies best suited to the agro-ecological zone in question must be identified. The implementation partners should provide technical support for modelling and cost-benefit analyses to identify appropriate measures to address water scarcity and low soil fertility.

**Objective 1.7 Bring together all inputs needed for efficient food production, accounting for cropping systems, seeds, climate-smart technologies, and agrobiodiversity**
**PM 1.7.1** Invest and strengthen national seed production and supply chain systems, including non-formal ones.

**PM 1.7.2** Take measures (such as further strengthening gene and seed banks) to protect both existing and (especially) threatened agricultural biodiversity, such as crop varieties/cultivars of known species, animal genetic material, and the seeds of wild crops with as-yet unexplored potential. To do this, stakeholders led by the National Biodiversity Center must develop and implement a ***Strategy for Agrobiodiversity Conservation for Food Security***.

Among its goals will be supporting a transition to agroecology-based food systems and promoting a range of **Resilient Mountain Solution** innovations for sustainable and resilient food production methods to gradually overcome the overuse of natural resources for food production that leads to the fallowing of lands and land degradation.

**PM 1.7.3 Bhutan's Extension Service must support farmers or entrepreneurs** in establishing farming or agroforestry systems to develop simple business plans. These would provide clarity on costs and expected incomes. This could encourage farmer uptake of diversified systems that include new crop species and varieties resistant to drought, pests, and diseases.

**Objective 1.8 Promote a select group of crops upon which dedicated attention will be focused across all stages of research, extension, marketing support, and value addition,**

**PM 1.8.1** Promote staple crops high in micronutrients through plant breeding and the promotion of micronutrient-dense staple crop varieties by implementing programs such as rice fortification and Quinoa plantations and promoting different horticulture products such as kiwi, avocado, and banana.
Further promotes high-altitude horticultural products and non-timber forest products with specific relevance for expanding sales in high-end markets in Asia and Europe. This would need to be accompanied by other actions, such as developing certification systems to promote the sustainable sourcing of wild-collected products.

**Priority crops such as apples, mandarins, cardamom, areca nuts, ginger, and potatoes stand out as crops of strategic significance** to Bhutan, given their export dominance. Detailed business plans for these crops must be drawn up to facilitate investment and enterprise building. Additional investment plans for specific livestock and forest-based produce will also be developed.

**Objective 1.9 Support the spread of crucial information about climate-smart production technologies will be expedited by providing soft loans, tax breaks, and easy access to state land leases**

**PM 1.9.1** Supporting the spread of crucial information about **climate-smart production technologies** will be expedited by providing soft loans, tax breaks, and easy access to state land leases. Such climate-smart food production systems will entice youth to be meaningfully employed, bring in effective technologies, reduce drudgery, generate substantial income, and contribute to rebuilding the image of farming as an attractive and technology-based enterprise. Transforming the agricultural sector through technical, financial, and educational support to young farmers will help Bhutan address private sector development, youth unemployment, and food insecurity. Measures that tackle HCS must be prioritized, so designing insurance mechanisms to address the crop loss may be essential to retain youth for agriculture farming.

**Objective 1.10 Encourage all stakeholders to promote the Resilient Mountain Solutions vision and disseminate the wide range of technologies available across the Himalayan region.**

**PM 1.10.1 Support farmers who intend to invest in a range of RMS technologies by** such initiatives as (1) converting degraded former dryland terraces that have non-assured water sources to sprinkler-based watering and planting with drip-fed horticultural crops; (2) encouraging the widespread use of polytunnels that will enable farmers to control the time of seed planting, avoid the adverse effects of frosts, and protect against extreme climate events such as strong winds and heavy rain; (3) converting degraded pastures in highland areas to horticulture under greenhouses, giving farmers the flexibility to grow crops at higher altitudes and enable them to benefit from the warmer temperatures brought by climate change. **The examples listed above are only a tiny proportion of the vast range of RMS technologies that Bhutanese researchers and farm leaders should trail on-farm and disseminate widely to the recommendation domain for that particular technology**.

**Objective 1.11 Promote the participation of young people in agriculture through a range of measures that make agriculture no longer seen as drudgery but as a viable business opportunity replete with options for applying technological solutions.**

**PM 1.11.1 Support for Youth Engagement in Agriculture.** There are significant differences in age, qualification, and region regarding knowledge and perception of farming. Still, the younger generation of young people and those studying at high school tend to have more knowledge and perceive agriculture as a potential source of employment. Crop losses due to wildlife depredation, lack of resources, such as inadequate land for farming and bad financial ability, combined with pressure from parents wanting their children to be employed in the civil service, are the main factors affecting young people's lack of willingness to gain employment in agriculture.

**PM 1.11.2 Support for business development should be provided,** specifically for aggregation and collection, storage and cold chains, packaging, and branding, value-added processing, transportation and distribution, wholesaling, retailing, and export. Furthermore, youth should be offered the skill-building and training necessary to work in the support services sector, namely renewable energy technologies, organic inputs (soil stimulants, bio-compost, bio-pesticides), infrastructure maintenance, the sale and rental of labor-saving equipment, financial and digital agri-services, and the provision of technical advice to farmers. **These options will help create an enabling ecosystem that supports lucrative agroecological farming systems while attracting youth into entrepreneurial activities, capitalizing on their interest in digital technologies, and offering real possibilities for a decent income.**

**Objective 1.12 Promotes the production of a diversified array of organic farming commodities.**

**PM 1.12.1 MoAF will continue to supply a range in promising areas by providing farmers with a wide range of support services under a robust work program led by MoAF, guided by the 13th FYP.**
Within this program, farmers shall be free to apply for a less stringent Bhutan-managed "naturally produced" organic food designation that would give them the flexibility to use chemical fertilizers when supplies of organic compost are insufficient or too expensive; potentially to apply herbicides in crop systems where the labor cost of manual weeding is exorbitant and unaffordable.

A **staggered approach to the efforts directed towards organic agriculture could help to limit its negative impact on food security. At the same time, Bhutan works on establishing institutions and infrastructure centered on organic inputs, certification, and standards**. The low level of chemical use means the conversion to organic agriculture may be relatively easy if the farmers' efforts are accompanied by robust public investment in supporting related policies, extension, and research.

**Objective 1.13 Conduct research and foster effective IPM measures that control all critical pests and diseases affecting Bhutanese crops and livestock.**

**PM 1.13.1** Across all food systems, researchers and expert extensionists should collaborate to encourage farmers to transition to **integrated pest management.** This involves measures like using pheromone traps against

major pests in citrus, paddy, and vegetables or using the "super grain bag" to reduce post-harvest losses. The emphasis is given to the National Plant Protection Center and the **National Plant Pest Database,** and the **Pest Surveillance System** also needs to be strengthened.

**Objective 1.14 Enhance marketing opportunities by improving road infrastructure and connectivity to facilitate market access.**

**PM 1.14.1 Marketing opportunities are strongly inhibited by the lack of a reliable road network that provides connectivity to facilitate inputs supplies and market access**. This is crucial for enhancing the availability and distribution of locally produced food and making local products more competitive with imports. Complementary efforts include improving the connectivity of rural areas to other complex infrastructure, such as the electricity supply, and soft infrastructure like the Internet.

**Objective 1.15 Update and further integrate the Livestock Policy and Strategy into holistically programmed RMS-based development**

**PM 1.2.1** Develop and promote **comprehensive livestock product value chains** to counter the growing amounts of imported livestock commodities (meat, milk, eggs, fish, honey, and fibers). Demand for food of animal origin in Bhutan is surging, which results in the over-importation of these commodities and corresponding balance of payment deficits. Maximizing synergies between crops and livestock within the evolving farming systems will be necessary. PMs include the following:

(1) Establish **mechanisms for product tracing and handling/processing** across the entire chain from the production to the consumption stages, involving a **high-quality technical process** that meets the requirements for comprehensive value chain management.
(2) The DoL will establish a **complete list of priority livestock commodities** to support enhanced value chain management. Each type of product will **identify the technical, institutional, and policy interventions** that would most effectively help the sustainable management of selected commodity value chains (production, processing, and marketing) to ensure their **quality, nutritional value, and safety**.
(3) As the results of the livestock policy emerge, the DoL and its collaborating partners should **design and implement medium- to long-term plans (5-10 years) for selected livestock commodities** and establish a monitoring and evaluation process to ensure a positive outcome of the interventions.

**PM 1.2.2** MoAF and other stakeholders should develop and implement a comprehensive **technology portfolio of guidelines and practices to support livestock development** for the smooth implementation of commodity value-chain management in each livestock sub-sector. These portfolios will provide clear guidance to users concerning crucial technical information, such as breeding, health, feed and fodder requirements, dairy development, genetic diversity, and the economics of developing a particular livestock sector.

**Strong emphasis will be placed on the role of women in livestock management and dairy production and on the mainstreaming of measures that provide opportunities for gender equality in livestock development**. Once the portfolio of guidelines has been tested and updated, it will comprise a significant input for designing long-term (5-10 years) implementation programs. These will be managed through continuous monitoring and evaluation to ensure positive outcomes and a suitable basis for regulations.

**PM 1.2.3** Given that livestock value chains require effective services, stakeholders will apply a policy instrument to deliver **services to promote livestock development.** The livestock suppliers will follow a roadmap whereby services will first be primarily funded through public entities, increasing cost recovery, then transitioning to the private sector and service delivery agents located within farming communities.

The services will cover the following areas: (1) animal health across species and production systems for all major pests and diseases that affect the critical livestock types, including the health management requirements of animal/human/ecosystem systems; (2) breeding services such as artificial insemination, natural reproduction, embryo transfer, and the supply of organisms such as piglets and fingerlings; (3) nutrition services and feed supply; (4) research support services; and (5) regulatory services, such as meat inspection.

**PM 1.2.4** Given the emerging impacts of climate change, a new multi-agency framework will be required to implement a proposed **National Program and Action Plan for Climate Change Adaptation and Resilience in Bhutan's Livestock Sector**. This will be based on continuous research that describes where vulnerabilities have been found and what adaptation measures are needed to reduce the adverse effects of the changing climate on all aspects of the value chains for important livestock species.

The main adaptation areas that have been identified are: (1) breed conservation and improvement; (2) improved animal health services and biosecurity; (3) improved livestock housing; (4) climate-smart fodder and pasture management; (5) livestock value chain improvement; (6) effective disaster responses; (7) appropriate climate-smart technologies; (8) resilient land and pasture management; and (9) climate-resilient integrated water and watershed management, including water reclamation.

**PM 1.2.5** Development policy will promote **organic livestock production** in a phased transition process that involves awareness-building and advocacy efforts. To apply organic farming principles, it will be essential to use identifiable external inputs for managing soil fertility, crop protection, and animal health and nutrition. On-farm research will be required to find alternatives for external inputs that are not accepted in organic production.

**PM 1.2.6** Bhutan's traditional animal genetic resources are of paramount importance, both as a national heritage and as a critical genetic base for breed improvement programs, especially considering their inherent resilience, which will be vital for adaptation to the oncoming impacts of climate change. Despite their great importance, the reservoir of these animal genetic resources is declining. A critical policy element is, therefore, the **conservation and sustainable utilization of native animal genetic resources** to ensure sustained household food and nutrition security and to be able to meet the rising demand for animal products, which is often centered on niche markets.

Measures under this objective will include: (1) implementing a national management strategy for native animal genetic resources; (2) research that documents national animal genetic diversity, especially to identify potential pockets of higher livestock biodiversity as national heritage sites; (3) the assessment and prioritization of the population status of native species and their breeds, alongside risk assessments that will enable intervention measures to be formulated; (4) innovative measures for particular native breeds that encourages both in-situ and ex-situ conservation of native animal resources.

**PM 1.2.7** Bhutan's livestock sector requires a substantial human resource base comprising a body of innovative and high-quality professionals. Organizational development within the industry is needed to construct an appropriate staffing pattern. These imperatives justify the policy objective of **Strengthening National Institutional and Human Resource Capacity in Support of Livestock Sector Development** to fulfil the mandates of livestock policy and ensure the application of all required measures. The goal is to broaden the human resource base via a large body of qualified livestock staff supported by a coherent HRD master plan for their professional development via training and exposure visits, plus the capacity-building of relevant institutions.

**Objective 1.16 Promote private-sector engagement across all the leading commodity value chains, particularly for processing and retailing during the post-farm-gate stage and production**

**PM 1.3 Promotion of the Private Sector in Agriculture** With a relatively small and underdeveloped private sector, especially in rural areas, the state has taken most of the responsibility for service delivery, for example, in education, health, and infrastructure construction and maintenance**.** However, this Policy now incentivizes stakeholders to implement measures that **promote private-sector engagement** across all the leading commodity value chains, particularly for processing and retailing during the post-farm-gate stage and production. Guidelines for this will envisage the increased attention of the domestic private sector and foreign direct investment. Examples include: Sector-specific capacities: (1) **Promotion of food-processing technologies and associated methods** for ensuring ever higher degrees of food safety should put firms on a path to operating in new market segments. (2) **Basic business capacities:** Training in marketing, accounting, logistics, and so on would allow firms to better contract and engage with the broader economy and specific anchor investors. (3) **Market linkages:** Support in basic marketing skills, identifying and targeting new markets, and networking for market development would help firms to innovate and grow. (4) **Forming partnerships**: Another avenue of support for firm-level innovation and growth would foster linkages between smaller agribusinesses and lead firms and potential joint venture partners, both FDI and domestic, thus providing access to new technologies, better logistics, and new markets.
Note that research has indicated a considerable potential for Agro-Processing opportunities that have been profiled in detail in the Consultancy Report "*Assessment of investments in agro-processing industries in Bhutan – enhancing employment, substituting imports, and encouraging private-sector participation*" (EU-TACs 2021)
Small farmers will remain active participants in these expanding opportunities by developing local organizations, such as producer groups; contract farming; shareholding; and establishing farmer cooperatives, especially for processing and commercialization. The public sector will primarily focus on process regulation, especially as public-private partnerships are implemented for out-scaling livestock operations, agro-tourism initiatives, and the branding of high-quality regional products.

**Objective 1.17 Based on a farm mechanization strategy, research and development regarding various farm mechanization options for the main agroecological zones and the main types of users (especially women) suitable for the terrain.**

**PM 1.4.1 to 1.4.10** Stakeholders are encouraged to develop a **policy white paper that defines the farm mechanization strategy up to 2040 and proposes a range of methods to support sustainable increases in crop productivity and farm income levels through improved farm mechanization.**

**P1.** Establish a **10-Year Farm Mechanization Investment Plan** to cover the 13th and 14th RNR Master Plans for 2023-2033. It is recommended that the following PMs should be included in the following two five-year plans (2023-2033) to address the critical Action Points: The current support by the government on farm machinery hiring services based on a cost-sharing mechanism should be continued to address labor shortage issues, reduce the cost of production and to encourage agricultural farming.

**A policy statement on what percent of arable land to be brought under farm mechanization would be imperative to guide future planning and resource allocation**

**P2**. **Land development actions** will need to be supported by prioritizing the construction of terraces that will align with the availability of women-friendly farming machinery. Land development for Land Capability Classes II, III, and IV is demonstrated and up-scaled in all 20 Dzongkhags (e.g., focused on new and repaired narrow terracing on undulating, rolling, and hilly landscapes, narrow bench terraces in orchards, and single platforms on hilly and mountainous landscapes). This will enable mechanized farming to be practiced in areas currently not suited to mechanization by introducing terrace-making equipment suited to sloping land. This should include mini-excavators, spider excavators for land management, and lightweight machinery suitable for narrow terraces and polytunnels.

**P3. Define crop-specific mechanization priority plans for crucial commodity value chains** like rice, maize, potatoes, and vegetables. This measure proposes that farm mechanization along essential value chains should be piloted and demonstrated in all 20 Dzongkhags (e.g., rice, maize, potatoes, and important vegetables). Land preparation, seeding/planting, plant protection, irrigation, harvesting, and post-harvest/agro-processing will be carried out in an integrated approach to farm mechanization.

**P4. Organize improved deliveries of specialized equipment for small and marginal farmers**, including value addition in local manufacturing by local SMEs and targeting relevant imported machinery. Access to farm machinery should prioritize farmer organizations and groups over individuals.

**P5. Make available innovative farm machinery that is suitable for flat terraced/paddy landscapes with a rice-based cropping pattern** (Land Capability Class I) to be demonstrated and upscaled in all suitable Dzongkhags (e.g., along the southern border with India and in flat valley bottoms), covering tractors and equipment for tillage, seed-planting, transplanting, fertilizing, harvesting, haying, and forage. This will support the aim of self-sufficiency in rice production and food security.

**P6. Improved R&D focused on different farm scales, gender-sensitive machinery, and machinery powered by clean energy**—upscale adoption of farm mechanization and labor-saving technologies to address labor shortages. Innovative small and lightweight farm machinery suitable for undulating, rolling, and hilly landscapes in all 20 Dzongkhags should be demonstrated and upscaled with farmer producer groups, contract farmers, cooperatives, and commercial farmers.

**P7**. Promotion of **climate-smart mechanization, equipment powered by clean energy, and equipment for managing farm waste**. Piloting farm machinery powered by clean energy should take place in all 20 Dzongkhags, including tractors and power tillers, to reduce reliance on fossil fuels and take advantage of the available hydropower in Bhutan. The requirements connected with food processing machinery serving farming communities and households must not be neglected. A strong emphasis on meeting the machinery required for flour milling, dehulling and edible oil production is imperative.

**P8. Innovative finance, plus other incentives to promote farm mechanization, should be developed following a study to identify potential mechanisms for grants, subsidies, cost-sharing, loans, and hire purchases** that target women's groups, youth groups, cooperatives, and farmers' producer groups. This will include assisting Dzongkhags, Gewogs, and Chiwogs with promoting suitable farm machinery through the environment and financial grants program and other financial mechanisms that MoAF and DLG will advance during the 13th Five-Year Planning period (2023-2028).

**P9. Skills upgrading for service providers, machine operators, and farming households directed at the development of a modernized program for farm machinery promotion** developed and implemented under a national-level **Master Plan for Farm Machinery Learning** through innovative education, TVET, practical training, and awareness-raising learning methods. This would target private-sector farm machinery manufacturers, suppliers, equipment hire companies, equipment operators, O&M contractors, and end-users

**P10.** A framework for developing innovative **business models for hiring farm machinery via a range of stakeholders, including the private sector, will** be advanced by MoAF during the 13th Five-Year Planning period (2023-2028). A **farm machinery supply and hire network** should be established at the national level covering all Dzongkhags. Promotion of a **shared farm mechanization networking platform** for all concerned stakeholders (from AMC/FMCL/Dzongkhag administrations, manufacturers, suppliers, hiring companies, O&M service companies, and end-users).

### Objective 1.18 Maintain safe and adequate food reserves at strategic locations

**PM 1.5.1** Maintain at least three months of reserves of essential food items as a National Food Security Reserve at strategic locations, with adequate food safety measures.

**PM 1.5.2** Develop and put post-harvest storage, processing facilities, and distribution systems with appropriate national, regional, and local technologies.

### Objective 1.19 Facilitate safe food imports and improve access to international food distribution facilities

**PM 1.6.1** Create an enabling business environment for importing food commodities while ensuring that imported food conforms to national food and biosafety standards.

**PM 1.6.2** Participate actively in regional and international food security reserve initiatives.

### Objective 1.20 Encourage and support more research on FSN, vital emerging issues, and contentious areas

**PM 1.7.1** Strengthen demand-driven research and development efforts to generate appropriate technologies for handling agricultural, livestock, fishery, and NWFP-related commodities, via:

- Private enterprises, Academic Institutes, Research Organizations, CSOs, NGOs and farmer cooperatives will be promoted and strengthened to protect and enhance value. Such enterprises will function as primary aggregators and ensure the collection of farm produce at the farm gate.
- A research fund or a research endowment fund should be identified to encourage research start-up research for agriculture development, as well as to stimulate private investment in agriculture research.
- Strengthen national crop breeding program on priority commodities to generate climate-resilient crop varieties.
- Establish a research fund to encourage researchers to compete for prestigious fund based on issues of national significance for contributing to food security.

**PM 1.7.2** Invest in good public research to ensure equitable access to new technologies, inputs, and services in food systems and agriculture.

**PM 1.7.3** Assess knowledge gaps and research needs to address various challenges and inform policies to achieve food system transformation, such as the interconnectedness of food systems with all relevant sectors and systems

**PM 1.7.4** Based on enhanced research, develop a better understanding of critical and emerging issues affecting all six food security dimensions.

**PM 1.7.5** Strike an appropriate balance in food systems research between the public and private sectors, including participatory research programs incorporating traditional knowledge.

## GOAL 2: ACCESS - Enhance physical, economic, and social access to safe, affordable, and adequate food

### Objective 2.1 Increase the efficiency of safe food marketing, trade, and distribution systems

**PM 2.1.1** Support diverse food production and distribution networks, including territorial market arrangements and the implementation of agricultural marketing policies and strategies to provide a framework to coordinate and regulate the collection, storage, and distribution of food. This also includes retail and wholesale systems. Improve the value chain by encouraging better production and storage practices, quality standards, and marketing. This would need to be accompanied by investments to promote decentralized market infrastructure at the Dzongkhag level, such as cold storage, warehouses, and processing and packaging facilities. This would, *among other things,* reduce spoilage and losses.

**PM 2.1.2** State-owned enterprises that are dedicated to procurement, private sector bodies, firms that are experienced in international trade, and specialized consulting firms that provide tailored support services to farmers so that their production is precisely timed to be harvested at the right time to reach a national, regional or international market.

This represents a **shift in paradigm where the farmer groups and coops grow for a determined market window, directing all their resources not just at raising crops but at working with supportive partnerships to produce high-quality crops that can be bulked up and transported via land, air or railway to the specific market.** This system aims to supply the target market when prices are at their highest due to a lack of product competition from other producers who do not have access to Bhutan's varied agro-ecological zones.

These enterprises will possess the technology, know-how, financial resources, and human capital to liaise with farmers, collect and process agricultural products, devise and adhere to standards, and serve as conduits between smallholders and markets, thereby minimizing waste and maximizing returns.

The enterprises will contribute to developing technology competence along supply chains, from pre-harvest to post-harvest, storage, and processing. Such aggregators will ensure a steady supply of produce to the markets, provide agreed volumes, maintain product quality, and process, store, and add value to it where possible. They will thereby protect and guarantee incomes to smallholders by assuring the purchase of their produce. Such

enterprises may also be licensed to operate cold-chain, warehousing, and packing infrastructure and will increasingly (and effectively) link suppliers to processors and markets.

**PM 2.1.3 Encourage investment in rural infrastructure development, agricultural services, and market access to mitigate rural-to-urban migration.** Strengthening private-sector participation by creating conditions for the emergence of local agri-food small and medium enterprises that will connect small-scale farmers to markets through access to appropriate technology, finance, markets, and the use of digital tools and innovative technologies. Promoting and encouraging public/private partnership models to enhance the effectiveness and sustainability of services provided by State-owned enterprises.

**PM 2.1.4** Improve public investment in infrastructure for markets, storage, and other necessary food system components to support the decentralization of production and distribution networks and increase diversity and thus resilience by institutionalizing the management of market infrastructure (collection centers, storage facilities, cold chains, weekend markets, city markets, road, and transport links).

**PM 2.1.5** Enable organic and natural food products marketing and trading based on a certification system.

**PM 2.1.6** An ensemble of digital tools will be developed and rolled out to provide crop and livestock advisory services and early weather warnings. Such digital platforms will also be designed to support agriculture and livestock extension agents to assist in service delivery.
To address information asymmetry within the agri-food market ecosystem, support will be provided to develop dynamic real-time digital platforms to provide information on agri-food produce and facilitate digital marketing. Such platforms, which private parties may develop, will link smallholders, cooperatives, farmer groups, aggregators, and consumers in real-time, ensuring a faster and much more efficient flow of information and financial flows, including payments systems between supply and demand networks.

**PM 2.1.7** Ensure market access, both upstream and downstream, at remunerative prices for smallholder producers through government procurement programs (e.g., for school feeding) and enable agricultural trade distribution of food through support to business enterprises such as FCB WFP and similar agencies.

**PM 2.1.8** Establish systems and protocols for taking responsible trade measures to maintain food price stability, especially during public health or food emergencies, such as new pandemics.

**PM 2.1.9** Establish measures to reduce food losses and waste by at least half, especially post-harvest losses in rural areas and consumer food waste in urban areas.

**Objective 2.2 Address the specific needs of diverse rural and urban contexts that diversify their sustainable livelihood options in the formulation of FSN policies**

**PM 2.2.1** Promote sustainable consumption, healthy food, and dietary diversity. The Government of Bhutan has demonstrated that environmental policies can also form the backbone of development policy.
This approach must be extended to nutrition through adopting robust, creative, and uncompromising policies targeting consumers that encourage behavioural changes towards healthy and diversified food diets, products, and lifestyles, raising awareness of food waste.
Examples include food and nutrition awareness campaigns; more robust support for locally sourced alternatives to unhealthy imports; supporting small agribusinesses willing to process local products (which consumers currently hold in low esteem); or aiming for full coverage of public-sector canteen needs by local farmers in public administration, schools, universities, and hospitals. This strategy should extend beyond the Thimphu-Paro-Punakha area to promote more even development. It would need to be accompanied by greater processing capacity and the improved marketing of local foods

**PM 2.2.2** Apply policies that are targeted toward helping people living in poverty in rural and urban areas to access nutritious food and healthier food environments

**PM 2.2.3** Provide public training and support for small-scale and family farmers, especially in agroecological and sustainable production and marketing, particularly in rainfed and harsh environments.

**PM 2.2.4** Ensure that FSN policies and programs connect growing rural and urban food needs (including in small and medium-sized towns) to sustainable livelihoods in the countryside that appeal to young people.

**PM 2.2.5** Formalize the National School Agriculture Program and all related initiatives as a part of the school, and university curricula, create awareness regarding employment opportunities in the RNR sector for youth, and use nutrient supplementation to ensure the dietary requirements relating to the food supplied in schools are met.

**PM 2.2.6** Support private and public sectors in involvement investment, in large scale and the state-facilitated development of peri-urban and urban agriculture to bring fresh foods closer to their markets, especially perishable horticultural products that are rich in micronutrients.

**PM 2.2.7** Develop and promote the adoption of appropriate micro-enterprise technologies, and integrate these with the implementation of microcredit programs to enhance the incomes of women and youth

**Objective 2.3 Improve delivery of social support to poor and socio-economically vulnerable communities and individuals**

**PM 2.3.1** Identify appropriate livelihood options to enhance the incomes of vulnerable communities.

**PM 2.3.2** Develop special employment schemes to match vulnerable groups' particular interests and needs. All vulnerable groups should be supported by tailoring specific sustainable access to micro-credit, particularly to women and youth and other disadvantaged groups, such as the disabled

**PM 2.3.3** Identify and develop targeted programs to improve access to food for people living in abject poverty, vulnerable children (orphans), the elderly, disabled, and impoverished individuals.

## GOAL 3: UTILIZATION AND NUTRITION - Promote appropriate consumption practices and enable optimum utilization of food while addressing the multiple manifestations of hunger, malnutrition, and food-related diseases through coordinated multi-sectoral policies and actions.

**Objective 3.1 Achieve the nutrition and health goals of the 13th and later FYPs through mobilizing resources at all levels of governance and by all stakeholders, who will collaboratively implement Bhutan's "National Nutrition Strategy and Action Plan" by applying a series of PMs and related Institutional Work Plans.**

**PM 3.1.1** Establish a **National Nutrition Task Force Committee** (NNTF) comprising representatives from multiple agencies. This will function as the custodian of the NNSAP and organize the work of the member agencies, each of which will take part in multi-agency collaborative efforts involving various sectors, both within and outside the government. Nutrition interventions in the field undertaken by multiple agencies should be developed collaboratively and incorporate inputs from all key agencies that fall within the NNTF mandate.

**PM 3.1.2 Strengthening the governance and effective operation of multi-sectoral partnerships via multi-agency partnerships that include MoAF, MoE, MoEA, MoH, and NGOs, in support of nutrition interventions.** These interventions must be organized in parallel to deliver concerted actions that will contribute to an increasingly optimal nutritional status of Bhutan's population. CSOs with a proven track record should be robustly engaged in bilateral and multilateral partnerships that tackle utilization and nutrition concerns in practices on the ground. These partnerships should be organized by central agencies and at the Ministerial level. Furthermore, regionally-focused alliances should be established from Dzongkhag down to the Gewog level. All partnerships and networks should promote effective best practices targeting health and nutrition as part of the holistic **Resilient Mountain Solutions** vision and its methods.

**PM 3.1.3** Assurance, in all framings of relevant RGoB legislation, of **the Right to Food in terms of freedom from hunger and all forms of malnutrition,** including underweight, overweight, obesity, micronutrient deficiencies, and non-communicable diseases, thereby reaffirming the importance of "safe and nutritious food" plus freedom from hunger.

**PM 3.1.4 Improved collaboration among key stakeholders to improve the Monitoring and Evaluation of Nutrition Security programs and interventions, to strengthen Bhutan's nutrition information systems** (especially the DHIS platform), both for routine reporting on crucial nutrition indicators and the periodic assessment of the performance of interventions. The evidence generated will be used for decision-making, providing feedback to stakeholders regarding nutrition information, and guiding the ongoing implementation of nutrition programs. Periodic nutrition surveys and needs-based assessments will also support these processes to inform policy, program design, and performance.

**Objective 3.2 Support healthy food choices from sustainable food systems, ensure optimal food safety, and promote nutrition education and awareness for healthy food habits and dietary diversification.**

**PM 3.2.1** All stakeholders, including community leaders, are called on to collaborate to **improve the nutritional status of all classes, ethnicities, and age groups** by implementing a ***Comprehensive Strategy and Guideline for the Prevention, Management, and Control of Diet-Related Non-Communicable Diseases*** (NCDs). Given that Bhutan is facing an epidemic of non-communicable diseases, they are responsible for 53% of all deaths. These are due to four main modifiable risk factors, including tobacco use, harmful use of alcohol, physical inactivity, and unhealthy diet, which are the causes of most non-communicable diseases. There are strong associations between the sociodemographic factors and the NCDs modifiable risk factors for overweight or obesity, hypertension, and diabetes.

The RGoB should prioritize NCDs prevention and control programs to reduce modifiable risk factors. This strategy will promote healthy diets and physical activity by building the awareness of the general public and policymakers.

This document will also define the approach required to improve the capacities of service providers in terms of the prevention, management, and control of diet-related NCDs. The purpose is to establish and enhance nutrition and food system education at all levels and promote nutrition awareness campaigns to instigate behavioural change.

**PM 3.2.2** Enable consumers to exercise their ***Right to Access Good-Quality and Appropriate Foods*** in line with the provisions of the Consumer Protection Act. The pillars for ensuring compliance with the Right to Access include: (1) the accurate labelling of food ingredients; (2) ensuring that trade and marketing policies are geared toward promoting nutritious foods; (3) expanding awareness and nutrition education programs concerning healthy food habits and the identification of different types of malnutrition and obesity; (4) publicizing the micronutrient value of different foods; (5) the adverse effects of junk food consumption; (6) Measures to promote post-harvesting technologies through programs that support initiatives like the production of pickles, solar drying, cold storage, and similar techniques.

**PM 3.2.3** Update the ***2010 National Food-Based Dietary Guidelines*** and implement dietary recommendations for all age groups. This requires improved coordination among relevant stakeholders for Bhutanese families and communities to understand what, when, how, and why certain types of food should be grown, processed, stored, and consumed. This should establish values for different population groups of their minimum daily calories target, plus similar vital variables.

Once the Dietary Guidelines are updated, these should be advocated, disseminated, and used across all sectors to guide the dietary planning and programming for all groups and sectors of Bhutanese society.

**PM 3.2.4** Organize and deploy the efforts of a range of institutions to **strengthen education and training regarding food and nutrition security, water sanitation, and hygiene** as nutrition-sensitive interventions. All relevant stakeholders should promote food diversification programs, accounting for nutrient fortification, and apply the most recent national BAFRA Food Safety Standards at all levels of society. These should target the most impoverished regions of Bhutan.

All stakeholders should support other RGoB programs to construct and improve sanitation and drinking-water systems and improve hygiene education.

**PM 3.2.5** All stakeholders should **promote Safe Food System Solutions** and adopt measures to ensure that all critical stakeholders in the agriculture sector fully engage with the health and environmental management sectors in establishing policies and programs that are nutrition-driven and environmentally sustainable, especially by addressing overweight/obesity and malnutrition in all its forms plus the risks associated with food-system-related chemical and microbial exposures.

Stakeholders in the agricultural sector should facilitate the supply of nutritionally diverse, culturally acceptable, minimally-processed staple foods such as fresh, seasonal, and local fruits and vegetables that jointly comprise a **mixed basket of foods of both plant and animal origin** to ensure diets that are both healthy and environmentally sustainable. This will be delivered by enhancing local production, increasing physical and economic access, and enabling the consumption of diversified food commodities (especially local fruits, vegetables, cereals, legumes, and diversified animal source proteins).
Stakeholders should facilitate the development of value chains, ensuring the regular seasonal production of food commodities. In addition, dedicated resources are needed for value addition, storage, marketing, and processing, significantly enhancing the shelf life of the food types consumed in rural communities. This will require the inclusive engagement of all farmers, not only the members of farmers' groups and cooperatives.

**To further enable these measures, stakeholders in all FNS sub-sectors should put in place strategies that build the capacities of women as health educators, influencers, and agents of change in their community leadership roles. The target group of young people should also be emphasized in advocacy for safe and nutritious foods.**

**PM 3.2.6 Implement a *Food Safety Policy* through collaborative arrangements involving BAFRA, the Ministry of Agriculture and Forests, the Ministry of Health; other Ministries,** including Education, Economic Affairs, Home and Cultural Affairs and Environment; CSOs like the Tarayana Foundation; such groups as the Bhutan Chamber of Commerce and Industry; and Farmers Associations. The ***Food Safety Policy*** **will apply science-based principles and objectives to deliver programs and services that will ensure the safety of Bhutan's food supply**. The policy would apply risk-based principles of health protection, maintain the competitiveness of food businesses, provide consumer information, develop outcome-based regulations, and implement risk-based inspections. A systematic and science-based **Import Inspection and Certification System** should be established. Fiscal incentives, trade controls, and other measures should also be implemented to control unsafe food.

The ***Policy Goals*** of the ***Food Safety Policy*** would encompass topics such as (1) Ensuring food safety while also being respectful of cultural preferences and the economic realities of food businesses; (2) Applying an inspection system that evaluates and reports risks and violations consistently and cost-effectively; (3) Promoting education and awareness regarding food safety in all food systems; (4) Providing laboratory services and surveillance

systems to support the inspection system; (5) Planning for and managing food-related emergencies; and (6) Ensuring the continued professional competencies of inspectors and laboratory personnel.

**PM 3.2.7 RGoB agencies, communities, and CSOs should promote community-based nutrition and health programs** through diversified backyard gardening; the promotion of traditional cultural practices that improve food and nutrition security, such as home preservation methods; the improvement of sanitation infrastructure to increase access to safe drinking water and safe and improved sanitation services; and the improvement of hygiene-related practices. Some of these measures will enhance the nutritional value of food products during post-harvest storage and when various agro-processing technologies are used to supply consumers with processed food products.

**PM 3.2.8** RGoB agencies should provide **incentives for improving the nutritional quality of processed foods**. Among these should be an encouragement for dietary data to be included in food retailing sales promotion and advertising, plus disincentives for not containing this information. Relevant stakeholders should ensure that Bhutan's food labelling systems comply with proper national requirements and are aligned with good practices in the region

A national evaluation system led by BAFRA/MoH should monitor the impacts of breast milk substitutes, and junk foods (e.g., sweets, carbonated drinks) often consumed to excess by adolescents, children, and other vulnerable groups.

The RGoB should use the monitoring results as a basis for measures such as regulating highly processed food products' marketing, discouraging poor advertising practices, and ensuring that the entire population is provided with adequate and ethically-based dietary information. This could (for instance) evolve into a law on infant milk substitutes that aligns with the World Health Organization Code.

**PM 3.2.9 Conduct research into the general nutritional status and micronutrient deficiencies of different social groups across all areas of Bhutan**, primarily focusing on methods for adding supplements to the diets of pregnant and lactating women. This will require a Monitoring and Evaluation system of research outputs which will ensure that the results deriving from research are applied to crucial bottlenecks and are used to solve complex dietary problems affecting specific groups, individual regions of Bhutan, or Bhutan's population as a whole. Research activities into these issues should be financed, and the results shared among all stakeholders.

**PM 3.2.10** Key stakeholders should deploy the most recent research information to support the **addition of micronutrient supplements to processed foods** to address micronutrient deficiencies. This becomes important when the needs of population groups cannot be met through their current diets and when any **fortification of foods during agro-processing has been proven inadequate.**

Interventions should identify locations and populations vulnerable to deficiencies well before the prevalence of related illnesses has reached the level of public health significance. The RGoB policy of iodizing salt should be maintained, and any outbreaks of iodine deficiency should be monitored and managed over several years until iodine levels normalize.

**Objective 3.3 Support the nutrition of specific vulnerable groups within Bhutanese society:**
**(1) Promote appropriate feeding practices for mothers, infants, and young children.**
**(2) Reduce the prevalence of childhood undernutrition by addressing its direct cause of food insecurity while tackling its indirect causes such as poor hygiene, a lack of clean water, and unsafe food supplies.**
**(3) Improve the nutrition status of all Bhutanese served by all the agencies connected with clinical nutrition and dietetics that operate in the National Health System.**
**(4) Improve the nutritional status of adolescents, youth, women of reproductive age, and pregnant and lactating mothers.**
**(5) Maintain and improve the nutritional status of urban and rural elderly.**
**(6) Provide social and safety net support to maintain the nutritional status of vulnerable groups when Bhutan is affected by a pandemic disease or similar extreme event or episode.**

**PM 3.3.1 Improve the nutritional status of infants and young children falling into the preschool age range, focusing on the "1000 Golden Days".** This should be done by advocacy and community engagement, supporting the adoption of early breastfeeding, and (where possible) ensuring that infants are exclusively breastfed for their first six months. The strategy should tackle the fact that Bhutanese women who plan to breastfeed often rapidly revert to using milk substitutes and cease exclusively breastfeeding in the first six months. Factors indicated are a lack of timely breastfeeding support and information provided by health professionals. Some family elders promote adopting cultural and traditional practices that were detrimental to exclusive breastfeeding.

As a result, strategic support must be given to the complementary feeding of children until they are two years old, enhancing dietary diversity for children, strengthening growth monitoring programs, and promoting full child development by effectively managing illnesses.

Achieving this Objective will also require strengthening support services to improve nutrition for pregnant and lactating women, plus the continued promotion of mother-friendly workplaces in both the public and private sectors to ensure that all mothers can breast-feed their children adequately and efficiently.

**PM 3.3.2 Engage all relevant stakeholders in efforts to improve the nutritional status of school-age children by applying enhanced knowledge, skills, and practices,** including through the use of the **Plus School Menu** that the MoE and the MoH have developed, to optimize school meals (including by the addition of micronutrient supplements in school meals); by improving school cooking/storage facilities; and by strengthening the linkages between schools and local farmers as suppliers of food that meets the nutritional requirements of the local children.

All agencies are encouraged to improve dietary and health practices via a comprehensive **Social Behaviour Communication Change Strategy.**

This strategy would be designed to control the marketing of unhealthy foods and beverages; by building the capabilities of relevant staff to integrate their efforts for improved school feeding and nutrition programs (including food preparation, food storage, food safety, and WASH) and to build children's health by having sports in the school curriculum. To enable better decision-making, stakeholders will be invited to contribute to digital and face-to-face monitoring and reporting systems for school health and nutrition programs.

**PM 3.3.3 Improve and scale up the services and practices of all agencies operating in the National Health System that are connected with clinical nutrition and dietetics** by engaging well-trained nutrition professionals (in close collaboration with health staff) to implement improved food service systems in Bhutan's clinics and hospitals; by effectively implementing ***Medical Nutrition Therapy*** (both enteral and parenteral); and finally, by linking nutrition/health professionals to community nutrition initiatives.

**PM 3.3.4** Build substantial, well-resourced partnerships involving key institutions that (with community participation) build up the capabilities of specialized agencies to improve the nutritional status and access to sanitation/hygiene facilities of adolescents, youth, women of reproductive age, and pregnant and lactating mothers. Given the relationship between the adequacy of water and sanitation facilities in schools and the necessity to retain girls in upper secondary classes, this measure is essential.

This will be delivered by applying the ***WHO Recommendations on Antenatal Care for a Positive Pregnancy Experience,*** which will involve: (1) improved coverage by achieving eight antenatal care and four postnatal care visits for each mother that include a focus on diets, child weight management, and techniques to improve family nutrition; (2) supporting the consumption by pregnant and lactating women of critical micronutrients; (3) supporting the improved management of anaemia, especially in communities where this is affecting adolescent girls and women of reproductive age; (4) the effective implementation of a robust package of antenatal nutritional care; (5) expanding ***Adolescent-Friendly Health Services*** to deliver nutrition and hygiene education; and (6) encouraging all stakeholders to advocate for healthy dietary practices among adolescents (including education aimed at limiting the consumption of junk foods), and reducing micronutrient deficiencies among adolescents.

**PM 3.3.5 Improve services to meet the health and nutrition needs of the vulnerable groups (mentally ill, disabled, elderly, the chronically sick, and PLWHA)**

**PM 3.3.6 Significantly strengthening disaster and pandemic preparedness through resilient systems that can deliver nutrition in emergencies.** *All actors must build and enhance social protection programs for vulnerable groups (such as emergency financial support and feeding programs) that address the quality and quantity of foods and diets to prevent malnutrition during any socio-economic crisis*. This requires an integrated approach via a platform for multi-sectoral coordination and collaborative partnerships for strategizing emergency nutrition interventions across all sectors and levels in alignment with Bhutan's Disaster Risk Reduction systems and mechanisms. A collaboration of relevant actors should conduct regular planning and review meetings to analyze risks, then mobilize human and financial resources that align the ***Annual Nutrition Planning Process*** with the ***Nutrition Action Plan***.

## GOAL 4: STABILITY - Sustain a conducive and stable environment for availability, accessibility, and utilization of food

### Objective 4.1 Develop and implement adaptation measures for longer-term climate and environmental changes

**PM 4.1.1 Smallholder farms remain vulnerable to climate-related risks and will continue to lose produce to weather-related events.** Promote and support adaptation to climate change to build resilience by mainstreaming climate change adaptation knowledge, skills, information, technologies, and finance.

**PM 4.1.2 Climate and land-use modelling will be deployed to demonstrate what** changes in agro-ecological zones across Bhutan's complex terrain are likely in each coming 5-year and over longer decadal scales.

This will generate the groundwork to be used as a basis for sets of Vulnerability and Risk Assessments for each RNR sector.

**PM 4.1.3 Current agri-food-related financial institutions will be strengthened to function at the level of a full-fledged agricultural banking institution**. Such bolstered institutions will guarantee finance for upscaling smallholder farming activities, ramping up climate-innovative production systems, and establishing logistic centers, storage infrastructures, and agri-food-based processing industries.
Develop and support more robust climate finance mechanisms that work and target small-scale food producers (e.g., farmers, livestock keepers, fishers, and food processors). These might include minimum price schemes to be considered if these can be put in place to meet the needs of both producers and consumers.
Crop and livestock insurance schemes require substantial innovation, testing, and out-scaling, if proved successful. Schemes will be established to ensure crops and livestock buffer farmers' financial loss. Such methods will boost farmer confidence and assure livelihoods during disasters.

**Objective 4.2 Improve disaster preparedness capacity to respond to disasters, mainly focused on pandemic response mechanisms**

**PM 4.2.1** Schemes such as the **HRH-sponsored Allowance System** used to deliver food to the most marginalized sectors during the Covid lockdown need to be formally institutionalized as intrinsic Government facilities for use during future emergencies. Stakeholders should be convened to collect and share data, information, and experiences on the status and impact of the COVID-19 pandemic on food systems and draw lessons learned. These lessons from the recent experience need to be accounted for, and programs designed that have substantial funds allocated to allow for the potential for greater demand from vulnerable groups in the case of a more severe pandemic, earthquake, or climatic events.

**PM 4.2.2** Establish a **National Food Security Fund** to provide relief during a disaster to help maintain the national food security reserves and support targeted food security initiatives. Develop and implement mechanisms for the use of the National Food Security Reserve for the supply and distribution of relief food to affected areas based on nutritional requirements during emergency

**PM 4.2.3 Social protection mechanisms**, including national and international food assistance, for the poorest and most vulnerable people during and in the aftermath of the COVID-19 pandemic, must incorporate provisions on the right to food in terms of quantity and nutritional quality. These measures will include the institution of a **Food Price Regulatory Mechanism** to intervene in the market, using imported or government food stocks during any period of soaring food prices.

**PM 4.2.4 Comprehensive risk management analyses** must be undertaken to examine all feasible scenarios, and as part of their recommendations, should indicate how support will be given to food supply chains and what measures could avoid disruptions in food movement and trade, including providing apparent health and safety guidelines for food workers. This must lead to the full integration of disaster management strategy for food security in the national disaster management framework

**PM 4.2.5** Institute integrated approaches to link **Surveillance and Response Systems for Animal, Crop, and Human Health** and combat any risks from food contamination. A comprehensive set of preparedness plans for combating food-borne and zoonotic diseases should be prepared with inputs from international specialist agencies.

Furthermore, measures must be taken to establish a **Pests and Diseases Warning System to** improve agricultural resilience against pests and diseases that may threaten the food supply and public health by establishing a food security early warning and surveillance system to generate information on weather, crop production forecast, food supplies and demand, and food prices

**Objective 4.3 Ensure interventions in markets and price stability of food commodities**

**PM 4.3.1** Promote financial services that enable saving and provide access to loans and insurance products that protect livelihoods. This would include crop insurance against agrometeorological hazards and insurance against damage from HWC, where farmers have taken measures such as electric fencing.

**PM 4.3.2** Establish a business environment to promote private, domestic, and foreign investment in agriculture to stabilize food prices in the longer term through sustained food production

**PM 4.3.3** Diversify the food trade to nullify the impacts of monopolistic control over the food supply.

**PM 4.3.4** Develop targeted safety net schemes and programs that prevent households from sliding into poverty and incentivize productive investments in income-generating schemes. Such programs must be designed to be a catalyst for economic growth and not merely as welfare payments.

## GOAL 5: AGENCY - Gender equality and social inclusion

**Objective 5.1 Empower citizens as food system participants, especially women, indigenous people, migrant workers, displaced people and refugees, and other vulnerable people and communities, to exercise agency over their livelihoods and ensure access to nutritious and safe food.**

**PM 5.1.1** Conduct **a comprehensive stock-taking exercise of food and nutrition policy measures** to ensure that in all cases, **the agency of individuals or groups is fully accounted for** to make their own decisions about what foods they eat, what foods they produce, how that food is produced, processed, and distributed within food systems, and their ability to engage in processes that shape food system policies and governance.

The **stock-taking would check for constraints of women, pastoralists, marginalized ethnic groups, and other members of Bhutanese society who traditionally are affected by inequality and power imbalances** at the household, community, and national and global levels that reduce the ability of the food systems they are part of to deliver poverty reduction and sustainable, equitable livelihoods consistently. The review will examine which groups are affected by unequal opportunities to participate in political life and the nature of inequity in the distribution of power, voice, and agency in Bhutanese society.

**All cross-cutting issues related to the dimensions of Availability, Access, and Utilization, should be profiled and addressed. These** mainly center on gender issues, social issues, class, income inequality, capacity, freedom for choices to produce, and uneven access to technology or resources – e.g., access to land, irrigation, and finance.

The stock-taking exercise would address the power imbalances identified and identify how to build agency, how to change power relations, and how to transform the structures that underpin any imbalances of power that result in the inequalities **identified**

**Objective 5.2 Design and apply policies that reduce societal inequalities**

**PM 5.2.1** The **RGoB shall identify measures that strengthen the individual and collective capacity of disempowered people to have a more significant role in shaping their food systems**, including creating political spaces for debate where power differentials are minimized, enhancing their food security outcomes by improving their nutritional capabilities.

This requires reframing the **right to food as freedom from hunger and all forms of malnutrition**—underweight, overweight, obesity, micronutrient deficiencies, and non-communicable diseases—reaffirming the importance of "**safe and nutritious food**" along with freedom from hunger.

Leading stakeholders in Bhutan shall strive to ensure that food strategies and policies are developed, implemented, and monitored through inclusive processes that ensure the participation of women and other vulnerable groups and facilitate consumer choices. Agency also underpins all different dimensions of food security by **stressing the capacity of individuals and groups to engage in policy processes and decision-making** that shape the other dimensions of food security. The protecting agency requires socio-political systems that uphold governance structures that enable the achievement of FSN for all.

## GOAL 6: SUSTAINABILITY - Ensure that the long-term ability of food systems to provide food security and nutrition is not compromised and that shocks and trends do not affect or undermine the key the economic, social, and environmental systems that underpin food production, access, and utilization, through the implementation of a "Green Deal" circular economy approach tailored to Bhutan's RNR sectors

**Objective 6.1 Stakeholders at all levels should account for the long-term sustainability of food systems to provide food security and nutrition, avoiding compromising the economic, social, and environmental bases that generate food security and nutrition for future generations.**

**PM 6.1.1 Stakeholders in Bhutan's food systems will systematically address the critical long-term threats likely to damage yields, ecosystem services, and other vital attributes of farming systems. These include (1)** Biodiversity losses damaging genetic diversity; (2) degradation of natural resources affecting ecosystems services; (3) Resource inefficiencies and pollution from overuse of agrochemicals; (4) Ecological and economic costs of unsustainable agriculture; (5) Unsustainable diets; (6) Precarious food system livelihoods; (7) Declining youth interest in agriculture; (8) Demographic changes and urbanization.
In contrast, RGoB and all relevant stakeholders will seek to build sustainable food systems that are:
(1) productive and prosperous and that to ensure the availability of sufficient food);
(2) equitable and inclusive of providing access for all people to food and livelihoods within that system;
(3) empowering and respectful that ensures full agency for all people and groups, including those who are the most vulnerable and marginalized;
(4) resilient and that are stable in the face of shocks and crises;
(5) regenerative and that recover soils and agroecosystems to ensure sustainability in all its dimensions; and
(6) healthy and nutritious to ensure optimal nutrient uptake and utilization.

All the above must be rigorously applied through concrete measures and food system practices that contribute to the regeneration of natural, social, and economic systems, ensuring the food needs of the present generations are met without compromising the food needs of future generations.

**Objective 6.2 Building Bhutan's Circular Economy: Promote a detailed policy, technical, and investment response from DLG, MoAF, and MoEA**

**PM 6.2.1** MoAF, DLG, and the MoEA should lead the design and adoption of the "**Circular Economy, Green Waste and Climate Smart Technology Industrial Investment Plan**." This is a **vital tool for organizing green investment and climate-smart technology investment to provide clarity to all types of targeted stakeholders on strategies, targets, methods, and procedures** that together will enable the active involvement of private businesses, state-owned enterprises, women's groups, youth groups, farmer groups, and cooperatives, etc. to become engaged in all types of enterprises under the umbrella term of the "Circular Economy." This will promote a wide array of G&CSTs that tackle field-level climate change impacts and that focus on building entrepreneurial capabilities to support the adoption of waste management technology.

**Objective 6.3 Implement a 'Green and Climate Smart Technology Industrial Investment Plan' to cover the period up to 2040 (covering at least the following two 5-year plans).**

**PM 6.3.1** Form **a Working Group with stakeholder representatives to examine and establish how to implement all Green Waste, Climate-Smart, and other similar technologies** (G&CSTs) identified in recent studies and literature.
These consultations will provide recommendations for G&CST investment plans through a "Green Waste and Climate-Smart Technology Industrial Investment Plan" led by DLG that actively involves MoAF and the Dzongkhag administrations. Significant development investments are needed to promote the widespread outreach and dissemination of G&CST innovations. This investment plan would cover the period up to 2040 and extend across at least the following two 5-year plans. It would support research, outreach, and financing for high-priority G&CSTs, plus green/circular waste-management options covering all the RNR sectors, namely agriculture, livestock, forestry, marketing, and farm infrastructure (including buildings, roads, irrigation, energy, and mechanization).

**Objective 6.4 Enhance the institutional framework for advancing green waste and climate-smart technology investment through various stakeholders.**

**PM 6.4.1** The set of G&CSTs listed in research studies and similar documents should be made available in various **user-friendly Manuals and formats to Bhutan's national, Ministers, and head staff of MoAF's Departments, and political leaders in the Dzongkhags, NGOs, green waste leaders, and farming communities**. This will facilitate the push and pull factors essential for ensuring that Bhutan's food systems rapidly incorporate various G&CSTs. This will collectively enhance the levels of climate resilience of private businesses, farming households, and all vulnerable groups within farming communities.
The support provided to Green Waste Recycling entrepreneurs requires substantial investments to support the establishment of recycling facilities.
• Developing a multi-agency policy framework
• Conduct stakeholder consultations to examine the opportunities presented in Bhutan's technical reports on G&CSTs
• Develop strategies to provide initial directions for Actions by each stakeholder and collaborations between stakeholders.
• Revise policies or regulations on waste management with Circular Economy principles or develop separate rules from MoAF.
• Develop draft documents that describe the processes and procedures (from identification, design, feasibility, business plans, and service delivery) that finally lead to supporting the actual start-up and financing of Circular Economy businesses.

**Objective 6.5 Implement proactive multi-agency partnerships to propel the Crucial Economy in all areas of the economy.**

**PM 6.5.1** Define how **collaboration between MoAF, DLG, other institutions, and Dzongkhag administrations shall target the most significant Circular Economy opportunities that rapidly and efficiently generate substantial jobs and create employment**
In each case, there is a need to establish reliable value-chain systems for each G&CST. These must be organized so that the operations and maintenance services needed to enable these technologies to continue to function effectively are made available from the private sector to ensure their long-term productivity, reliability, and sustainability.

**Objective 6.6 Develop a planning and support process for Dzongkhags and Gewogs to identify potential green and climate-smart businesses and assist entrepreneurs.**

**PM 6.6.1** The **RGoB will require investment in a Green Deal, aligned with the EU's own Green Deal, that covers all areas of finance and innovation as part of the Vision 2040 Strategy** through the efforts

of MoAF, DLG, MoEA, and Dzongkhags with the support of GNHC and MoF. The focus should be on the following areas:

(i) **Developing a Green Taxonomy** to define which economic activities should be promoted to tackle environmental degradation and climate change and to assist investors in ensuring that no economically viable activities are missed. Please see Volumes 2 and 3 of this Report for an inventory of the green and climate-smart technologies considered in this study.

(ii) These all need to be expanded by MoAF going forwards as **new ideas and technologies are developed and out-scaled across Bhutan's communities**.

(iii) A **Green Jobs Task Force** to be established through a partnership with businesses, state-owned enterprises, and skills providers to help promote green jobs;

(iv) a **Green and Climate Change Technology Innovation Investment Portfolio** to be created to provide investments in green and climate-smart technologies;

(v) **Reviews are required of tax incentives, regulations, and other leveraging mechanisms** that the government can adopt to promote investment in the green and climate-smart technology business.

(vi) A **long-term National Investment Plan for G&CST outreach and adoption should be designed.**

## GOAL 7: GOVERNANCE - Improve FSN governance at Inter-Ministerial & Dzongkhag levels

### Objective 7.1 Improve stakeholder consultation and decision-maker involvement in the areas of Governance, Research, and Development.

**PM 7.1.1 Enhance cooperation, collaboration, and coordination among the agencies involved in FNS work.** Since the significant mandates for food and nutrition security lie with the Ministry of Agriculture and Forests (MoAF) and the Ministry of Health (MoH), the Ministry of Agriculture and Forests will lead and coordinate the overall implementation of the food security policy and strategic action plans. In contrast, the Ministry of Health will lead and coordinate the performance of the nutrition security programs.

**This requires greatly improved policy coordination in all relevant sectors, including agriculture, environment, economy, energy, trade, and health, to improve policy responses to issues involving food availability, malnutrition, food safety, and disease.**

Many sectors have a significant role in one or two of these dimensions, so multiple ministries and institutions must work together to ensure that their programs are compatible and contribute to the immediate and longer-term food and nutrition security policy objectives. ***The silo mentality typical of many Bhutanese Departments and Ministries must end.***

**The FNS Policy requires establishing a formal institutional coordination mechanism whose remit is set through a legal instrument that obliges all key organizations to form an inter-agency task force.**

### Objective 7.2 Improve Information Management

**PM 7.2.1 Food and nutrition security information** are integral to the national goal of reducing food insecurity and malnutrition, given its necessity for decision-making, policy, and program interventions.
As a result, a key Policy Measure is strengthening **the institutional setup and capacities for producing, analyzing, and disseminating food and nutrition security information**.

**PM 7.2.2 MoAF to prepare long-term plans and implementation arrangements to ensure all relevant agencies are informed about the updated FNS Policy. Periodic evaluations are used to identify which partnerships or individual agencies need to be strengthened.**

Systems must be established to effectively utilize **accurately and adequately analyzed general information for decision-making by key stakeholders.**

The national government should support existing efforts to ensure representative participation in FSN governance, e.g., by creating or strengthening participatory and inclusive FSN national committees

The **RGoB should collect and report data on implementing food system policies and initiatives at different scales (local, national, international) and develop systems for auditing and accountability,** especially during UN-mandated reporting periods on the SDGs or on other instruments.

This will require coherent and appropriate linkages between the sources of information available at Chiwog, Gewog, Dzongkhag national levels,

**PM 7.2.3** MoAF stakeholders must identify their own weaknesses in information management and **improve their technical infrastructure and skills for data collection and management, stimulating the demand for information.**

This requires building capabilities across all sectors to provide data on the production, import and reserve storage of major food categories such as cereals, vegetables, animal products, fruits and nuts, oils and fats, etc. It should also provide data on safety standards, nutritional values, and the prices of these commodities.

**PM 7.2.4 All stakeholders in the information ecosystems must use the latest technologies and apply these to the constant strengthening, tracking and monitoring of food distribution and nutrition surveillance.** This will also enable the transparent evaluation of the impact of ongoing food and nutrition security programs.

### Objective 7.3 Enhanced Communication amongst all stakeholders

**PM 7.3.1** MoAF and other leading stakeholders should **collaborate freely with media, civil society organizations, the private sector, and academic and research institutions, in sharing data gathered by each institution**.

Robust, frequent, and high-quality exchange of information is obligatory. **Protocols will be organized for FNS communication** to enable FNS planning and program development and to educate stakeholders such as policy makers, planners and development partners.

**Regular assessment reports shall be released to the public. Regular and dedicated mass media programs** to educate the public regarding better food and nutrition practices and policymakers regarding essential issues.

### Objective 7.4 FNS Planning, Monitoring, and Evaluation

**PM 7.4.1** Carry out periodic reviews of the implementation of the 2022 FNS policy within their sector, with the full participation of a wide range of actors, led by the FNS Task Force.
These reviews should operate in different sectors and at different levels. Each sector must monitor its activities as indicated in the strategic action plans.

**PM 7.4.2** Monitor and evaluate the implementation of their actions in support of food and nutrition security programs and projects.

**PM 7.4.3** Develop information products for the communication and dissemination of FNS.

**PM 7.4.4** Conduct quarterly meetings to plan FNS programs, set targets, review implementation progress, and identify gaps.

# 8 ANNEX 3: A SHORT SAMPLE OF THE LITERATURE REVIEWED TO DATE

Also see the folder online of around 370 documents

https://drive.google.com/drive/folders/1rAmNIwr1kdWpSQq2m_gZTi0Z_CJr25we?usp=sharing

| **Download or webpage reference** |
|---|
| https://www.gnhc.gov.bt/en/wp-content/uploads/2017/05/FNS_Policy_Bhutan_Changed.pdf |
| https://www.gnhc.gov.bt/en/wp-content/uploads/2017/05/policy0001.pdf |
| www.gnhc.gov.bt/en/wp-content/uploads/2017/05/GNH-Policy-Screening-Tool-20151.xlsx |
| https://www.gnhc.gov.bt/en/wp-content/uploads/2017/05/RGoB_Policy_Writing_Format-Template-2014.pdf |
| https://extranet.who.int/nutrition/gina/en/node/39413 |
| https://www.ifpri.org/publication/food-security-and-food-self-sufficiency-bhutan<br>https://ebrary.ifpri.org/utils/getfile/collection/p15738coll2/id/129187/filename/129398.pdf |
| https://blogs.worldbank.org/endpovertyinsouthasia/what-are-we-doing-improve-food-security-bhutan<br>https://www.worldbank.org/en/news/press-release/2017/09/21/partner-with-bhutan-improve-agriculture-productivity-food-security |
| https://www.researchgate.net/publication/322844206_Food_Policy_in_Bhutan |
| https://agricultureandfoodsecurity.biomedcentral.com/track/pdf/10.1186/s40066-018-0229-6.pdf |
| https://www.cambridge.org/core/services/aop-cambridge-core/content/view/EA4ADCA58B37EBF36EEA5A104B3DB987/S0021859620000350a.pdf/prediction-of-bhutans-ecological-distribution-of-rice-oryza-sativa-l-under-the-impact-of-climate-change-through-maximum-entropy-modelling.pdf |
| https://mdpi-res.com/d_attachment/sustainability/sustainability-12-04319/article_deploy/sustainability-12-04319.pdf |
| https://www.adb.org/sites/default/files/publication/722636/climate-risk-country-profile-bhutan.pdf |
| https://cgspace.cgiar.org/handle/10568/80918 |
| https://www.orfonline.org/research/safeguarding-food-self-sufficiency-covid19-lessons-bhutan/<br>https://www.orfonline.org/wp-content/uploads/2020/12/ORF_IssueBrief_429_Bhutan-Food_FinalForUpload.pdf |
| https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0199025<br>https://pdfs.semanticscholar.org/17b2/136e89025de5ba5234ec6f003146ec6c763c.pdf |
| https://www.orfonline.org/expert-speak/the-bhutanese-economic-revival/ |
| https://openknowledge.worldbank.org/bitstream/handle/10986/31530/Bhutan-Policy-Note-Harnessing-Spatial-Opportunities-in-Agriculture-for-Economic-Transformation.pdf?sequence=4&isAllowed=y |
| https://www.orfonline.org/wp-content/uploads/2020/04/ORF_IssueBrief_354_India-Bhutan.pdf |
| https://www.doa.gov.bt/wp-content/uploads/2019/06/FSAPP-OM-August-2018-final.pdf |
| http://www.bbs.bt/news/?p=157437 |
| https://www.gafspfund.org/sites/default/files/inline-files/Bhutan_WB_AF%2019_Funding%20Request_0.pdf |
| https://docs.wfp.org/api/documents/WFP-0000137487/download/ |
| https://www.academia.edu/7400375/An_Assessment_of_Food_Security_Issues_in_Bhutan |
| https://documents1.worldbank.org/curated/en/397081468227331146/pdf/940290BRI00PUB0tion0in0Bhutan0FINAL.pdf |
| https://executiveboard.wfp.org/document_download/WFP-0000100980 |
| https://docs.wfp.org/api/documents/WFP-0000129776/download/ |
| https://docs.wfp.org/api/documents/WFP-0000122621/download/ |
| https://www.researchgate.net/profile/Norbu-Wangdi/publication/326489204_Proceedings_of_the_National_Water_Symposium_2017_Towards_Ensuring_Water_Security_for_Bhutan%27s_Future/links/5bbc999f92851c7fde3730bf/Proceedings-of-the-National-Water-Symposium-2017-Towards-Ensuring-Water-Security-for-Bhutans-Future.pdf?origin=publication_detail |
| https://docs.wfp.org/api/documents/WFP-0000109954/download/ |
| https://www.wfp.org/publications/overview-nutrition-activities-bhutan-2019-2023 |
| https://docs.wfp.org/api/documents/WFP-0000122581/download/ |
| https://docs.wfp.org/api/documents/WFP-0000137487/download/ |
| https://bhutantrustfund.bt/wp-content/uploads/2020/01/CIF-Report1.pdf |
| **1.** Draft Livestock Development Policy 2019 from the Department of Livestock and updated thinking/documents to reflect current priorities.<br>**2.** BAFRA Draft Food-Safety Policy/Biosecurity of Bhutan Agriculture and Food Regulatory Authority and updated thinking of what they would like to see included in the FNS Policy.<br>**3.** Agricultural Seeds Policy developments and drafts for consideration in the revised FNS.<br>**4.** MoAF documents and instructions/ studies for developing the following: HWC policy and current assessment of key policy options and needs that merit inclusion in the revised FNS;<br>**5.** Documents about compensation for farmers and insurance policies, especially in relation to climate damages and disaster risk management for crops and livestock.<br>**6.** Current assessment of key policy options. MoAF documents that provide insights into MOAF's the agricultural subsidy components, and current assessments of key policy options for MoAF to build and refine such systems. |

**7.** Documents that describe the impacts of Covid 2000 – 2022 on Bhutan's food production, imports, and food security; MoAF/MoH proposals for policy options that respond to observed pandemic impacts.
**8.** MoAF Lists of priority crops and livestock products and justification why they are allocated priority status as critical for FNS.
**9.** Key analyses on the various constraints to production, including access/price of inputs, crop yields, marketing issues etc. Analyses of the Value Chains of the selected Priority Crops and Livestock. MOAF's emerging proposals for reducing the impacts of key constraints.
**10.** MoAF documents assessing the role of the relevance of the Organic Flagship Programme, especially constructive analysis of the impacts of the shift to organic production on yields and SSRs.
**11.** Any further analyses of Self-Sufficiency Rates for the prioritized crops that the sector should aim to achieve, in the light of key variables, constraints and trends. [We already have the document MoAF 2021 Status Report on Self-Sufficiency and DES of Food Crops in Bhutan]
**12.** MoH documents and statistics that support calculations of the kilo-calorie and nutritional requirements and current status across Bhutan's population groups and, and of differences in requirements/status across the regions of Bhutan.
**13.** Other MoH documents that present the main policy elements that MoH would like to see included in the revised FNS, especially in regard to increased nutrition security, access to food and food utilization.
**14.** Further MoH documents on the programmatic dimensions of FNS such as Social Safety Nets/Food Basket approaches, in the face of the disasters, production trends, demographic trends, that are driving changing K-Cal and nutritional needs.
**15.** Proposals from MoH on tackling malnutrition and nutrient deficiencies, that would be appropriate for inclusion in an FNS Policy.
**16.** MoAF, FAO, European Union and CIRAD. 2022. Food Systems Profile of Bhutan. Catalyzing the sustainable and inclusive transformation of food systems.
**17.** MoAF 2021 Concept Paper/Project Proposal for Revision of Food and Nutrition Security Policy 2014
**18.** MoAF 2021 Status Report on Self-Sufficiency and DES of Food Crops in Bhutan
**19.** MoAF 2021, RNR Strategy 2040, Policy and Planning Division, Ministry of Agriculture and Forests, Thimphu, Bhutan
**20.** GNHC 2020 Climate Change Policy
**21.** MoAF (2021) Low Emissions Development Strategy (LEDS) for Food Security in Bhutan: Agriculture & Livestock Sector. RGoB. Thimphu, Bhutan
**22.** MoAF Draft Strategy 2012 updated Low Emission Development Strategy for Food Security
**23.** RNR Marketing Policy of the Kingdom of Bhutan, 2017
**24.** Bhandari O. 2020 "Safeguarding Food Self-Sufficiency in the Time of Covid-19: Lessons from Bhutan ORF Issue Brief No. 429, December 2020, Observer Research Foundation.
**25.** MoAF 2014 Food and Nutrition Security Policy of the Kingdom of Bhutan
**26.** EU-TACs consultancy reports and Policy Briefings (over 10)
**27.** Wide diversity of research literature (over 20 docs)
**28.** Diversity of Development Assistance project documents from WFP, WB, ADB, UNDP and many others (over 15)

# 9 ANNEX 4: TABLE OF INFORMANTS FOR FNS POLICY FORMULATION

| NO | AGENCY | KEY INFORMATION | MODE |
|---|---|---|---|
| **1.** | PPD, MoAF | Background data on FNS 2014, policy and planning perspectives related to FNS. Information on ongoing climate-related projects. | In-person by LC or Virtual by CT |
| **2.** | GNHC | Required elements of the FNS 2022, national-level data particularly on 12th Five-Year Plan and perspectives of the 13th Five-Year Plan | Online video/audio call by consultants; or by LC face-to-face |
| **3.** | DoA, MoAF | Required policy interventions to promote Agriculture Activities for FNS, sectoral goals, targets and constraints. Secondary information on HWC, crop damage loss to natural disasters/ climate-induced disasters | Online video/audio call by consultants; or by LC face-to-face |
| **4.** | MoH DoPH + Nutrition Program | Vision, goals for nutrition. Detailed options for far better inclusion of Nutrition issues and strategies in the updated FNS Policy | Online video/audio call by consultants; or by LC face-to-face |
| **5.** | BAFRA (Bhutan Agriculture and Food Regulatory Authority) | Food-Safety Policy evolution; development of Food-Safety within the FNS Policy; linkages between | Online video/audio call by consultants; or by LC face-to-face |
| **6.** | DoL, MoAF | Required policy interventions to promote livestock Activities for FNS, sectoral goals, targets and constraints, including for dairy, poultry and meat self -sufficiency. Data on HWC (Livestock loss from predation by wildlife). Vulnerability of the sector to the changing climate. | Online video/audio call by consultants; or by LC face-to-face |
| **7.** | DoFPS, MoAF | Required policy interventions to promote forest-based food products for FNS, sectoral goals, targets and constraints. Secondary information on HWC, Land conversion issues. | Online video/audio call by consultants; or by LC face-to-face |
| **8.** | DAMC, MoAF | Secondary data on crop surpluses and markets. Potential for future markets development/ import substitution and exports. | Online video/audio call by consultants; or by LC face-to-face |
| **9.** | NPPC, MoAF | Data on use of fertilizers, pesticides and herbicides. Information on goal setting particularly in relation to FNS and Organic Flagship Goals | Online video/audio call by consultants; or by LC face-to-face |
| **10.** | NGOs/CSOs/ Cooperatives/ Private Sector | Issues, challenges and opportunities | Online video/audio call by consultants; or by LC face-to-face and In-person meetings by LC |
| **11.** | RLDC, RDTC, ARDC regional research and development centers | Information on high yield and climate-resilient varieties and farming methods. | Online video/audio call by consultants; or by LC face-to-face |
| **12.** | UWICER / CNR / Academia | R& D plans/ Strategies | Online video/audio call by consultants; or by LC face-to-face |
| **13.** | NSB [inc. ASD – agriculture statistics | National Data on agriculture, livestock and forestry, reliability, QA/QC procedures | Online video/audio call by consultants; or by LC face-to-face |

| NO | AGENCY | KEY INFORMATION | MODE |
|---|---|---|---|
| | division formerly at MoAF] | | |
| **14.** | NLCS [National Land Commission Secretariat] | Land related policies, legislation and Landscape Resources availability | Online video/audio call by consultants; or by LC face-to-face |
| **15.** | NSSC [National Soil Services Center at MoAF] | | Online video/audio call by consultants; or by LC face-to-face |
| **16.** | DoI [Dep of Industry]/DCSI [Dept. of Cottage and Small Industry], both at MoEA [Ministry of Economic Affairs] | Policies, plans and sectoral targets on agro and wood based industrial development | Online video/audio call by consultants; or by LC face-to-face |
| **17.** | DoT, MoEA & DRC (Dep of Revenue and Customs), MoF | Trade Balance, import and export related policies and legislations. | Online video/audio call by consultants; or by LC face-to-face |

# 10 ANNEX 5: CONSULTATIONS FNS TASK FORCE

| Num. | Title | Gender M/F | NAME OF STAKEHOLDER | PROFESSIONAL JOB TITLE | BELONGS TO WHICH MINISTRY/ DEPARTMENT/ DIVISION | ROLE UNDER THE FNS POLICY STUDY |
|---|---|---|---|---|---|---|
| 1 | Mr. | M | Sonam Pelgen | Planning Officer | PPD at MoAF | EU-TACS activity coordinator/focal |
| 2 | Mr. | M | Lakey | Principal Agriculture Officer | DoA, MoAF | FNS Task Force Member |
| 3 | Dr. | M | Dr. DB Rai | Specialist | DoL, MoAF | FNS Task Force Member |
| 4 | Ms. | F | Sonam Pelden | Principle Forest Officer | DOFPS, MoAF | FNS Task Force Member |
| 5 | Mr. | M | Jamyang Lophyel | Dy. Chief Marketing Officer | DAMC, MoAF | FNS Task Force Member |
| 6 | Dr. | M | Chador Wangdi | Chief | BAFRA, MoAF | FNS Task Force Member |
| 7 | Mr. | M | Hari Prasad Pokhrel | Sr. Nutritionist | DOPH, MoH | FNS Task Force Member |
| 8 | Mr. | M | Karma Tshering | Chief Planning Officer | PPD, MoAF | Overall Guidance |