



# **Peri-Urban and Urban Farming Framework**

**Funded by FAO through TCP/BHU/3902: Accelerated recovery from COVID-19 pandemic through Digitalization of Peri-urban and Urban Farming (PUUF)**

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## CONTENTS

1.0 Introduction.....	1
1.1 Goal.....	2
1.2 Purpose.....	2
1.3 Background .....	3
1.4 Problem Statement .....	3
1.5 Methodology .....	4
2.0 Literature Review related to PUUF .....	5
2.1 Urban Farming and Food Security.....	5
2.2 Environmental and Social Benefits.....	7
2.2.1 Relevance of PUUF to Urban and Peri-Urban Areas .....	7
2.3 Policy and Governance .....	7
2.3.1 Relevant Policies for PUUF.....	7
2.3.2 Governance for PUUF .....	9
2.4 Types of PUUF Practices.....	10
3.0 Implementation Strategies .....	11
3.1 Areas of implementation of PUUF Program .....	11
3.2 Stakeholders Mapping .....	11
3.2.1 Coordinating Stakeholders.....	12
3.2.2 Government Agencies.....	12
3.2.3 Thromdes, Dzongkhag Headquarters and Satellite towns .....	14
3.2.4 Private Sector and Financial Institutions .....	15
3.2.5 Civil Society Organizations and SOEs .....	15
3.2.6 International Development Partners .....	16
3.2.7 Central Monastic Body ( <i>Zhung Dratshang</i> ) .....	16
3.2.8 Target Groups or Beneficiaries .....	17
3.2.9 Views of the Target Groups on PUUF Program.....	18
4.0 Implementation Guiding Principles .....	19
4.1 Sustainability.....	19
4.2 Complementarity and Supplementarily .....	19
4.3 Inclusivity .....	19
4.4 Resilience.....	19
4.5 Innovation .....	20
4.6 Collaboration.....	20
5.0 Strategic Areas of Focus .....	21
5.1 Sustainable Farming Practices .....	21
5.2 Integration of Ornamental Plants and Floriculture .....	21

5.3 Urban Greening and Environmental Sustainability .....	22
5.4 Youth Engagement and Capacity Building.....	23
5.5 Innovation and Technology .....	23
5.6 Utilization of fallow lands .....	24
5.7 Access to water for PUUF in urban areas .....	25
5.8 Financial Support.....	25
6.0 Expected Outcomes and Action Plan.....	26
6.1 Expected outcomes .....	26
6.2 Action Plans .....	26
6.2.1 Short Term (1-3 Years).....	26
6.2.2 Medium Term (3-5 Years).....	27
6.2.3 Long Term (5+ Years).....	27
7.0 Monitoring and Evaluation (m & e).....	28
7.1 Way Forward for the PUUF program .....	28
8.0 References.....	29

## 1.0 Introduction

Being a mountainous country, Bhutan faces lot of challenges in achieving food and nutrition security both in terms of quantity and quality. Agriculture production is limited by steep slopes, climate change, wildlife depredation of crops and livestock, shortage of farm labour and unreliable market for limited productions. Therefore, the country depends a lot on imports to supplement its domestic requirement. The complete dependence on rural production and imports have negatively impacted urban consumers both in terms of quality and timely supplies, while potentials to supplement production through urban and peri-urban productions remained untapped. The vulnerability of the urbanites was highlighted by the COVID\_19 pandemic when international borders were sealed, and in-country mobility was restrained.

The COVID\_19 pandemic exposed weakness in the supply chain within the agri-food systems - the urban consumers were left with limited options to access quality fresh produces. This has strongly alerted the government for policy adjustment, mainly to make access to resources to supplement food production within urban and peri-urban areas and reducing complete reliance on rural areas and imports. This instigated the policy makers to explore opportunities for production within urban and peri-urban areas, making them functional to supply fresh and perishable produces to the urban consumers, thus strategically moving production of specific crops closer to consumers. Further there will be an increasing demand for food in the urban areas with growing urban population due to rural-urban migration and increase in the number of tourists and expatriates. Thus, peri-urban and urban agricultural productions will strengthen the food and nutrition security of the country.

In addition to supplementing the needs of the urban consumers, this transformation could support production of fruits, vegetables, herbs and ornamentals within urban and peri-urban centres that could create opportunities for income and employment for youths and women groups. Further, the land within urban areas could be efficiently utilized to improve the overall values in addition to key economy development.

Apart from this, business in the floriculture sector could be expanded and transformed into a sustainable income generating option in urban areas. Offering of flowers to monasteries, and use during rituals, ceremonies and functions are becoming popular as a new culture, especially in younger generation.

Further, peri-urban and urban agriculture production, using advanced production technologies could serve as an effective means of demonstration and communication of improved technologies to the farmers and interested private sectors. Adoption of improved and advanced production technologies such as vertical farming, protected production, and

use of climate control and irrigation automation could be well showcased and demonstrated to the visitors including rural farmers to the city and urban areas, while youths and private sectors could explore such opportunities to expand on a commercial scale.

Significant progress and impact had been made by the FAO TCP/BHU/3801 (COVID-19: Supporting intensive vegetable production in selected peri-urban and urban areas in four Dzongkhags in Bhutan). The modest project could engage more than 551 laid-off youths in gardening. 97 acres of fallow land were brought back into cultivation and produced more than 96 MT of fresh vegetables during the COVID-19 pandemic, which has helped to supplement the requirements in the urban areas besides creating job and income opportunities for the laid-off employee in the services sectors.

Given that most of the youth dwell in the urban and peri-urban areas and since youths are not interested to take up agriculture enterprises in the rural areas, engagement of youth and youth groups and women groups into peri-urban and urban farming seems prudent.

## **1.1 Goal**

To promote and strengthen sustainable urban and peri-urban food production including ornamental and floriculture and processing and integrate urban and peri-urban agriculture into city resilience plans.

## **1.2 Purpose**

The main purpose of the consultancy assignment is **to develop a Comprehensive Peri-Urban and Urban Farming<sup>1</sup> Framework.**

The Framework should encompass the following aspects:

- Promoting innovative and sustainable farming practices in urban and peri-urban areas.
- Integrating ornamental plants and floriculture into urban and peri-urban farming planning.
- Encouraging urban greening and environmental sustainability.
- Enhancing food security through innovative urban farming practices.

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<sup>1</sup> Farming includes both agriculture and livestock enterprises

### 1.3 Background

Inspired by the results of the FAO TCP/BHU/3801 (mentioned above), another similar project was started. The two years project (Jan 2023 – Dec 2024, extended till March 2025) titled: **Accelerated recovery from COVID-19 pandemic through Digitalization of Peri-urban and Urban Farming (PUUF) TCP/BHU/3902** was launched by FAO Bhutan to support intensive cultivation of vegetables and high value food in peri-urban and urban centers in response to the COVID-19 pandemic that affected the peri-urban and urban residents the most both in terms of access to foods and employment. The initiative was designed to generate income and employment opportunities for youths and women groups, increase access to nutritious food, diversify income opportunities for urban communities and build resilience, and efficiently utilize urban land resources through promotion of improved technologies.

The PUUF project was implemented in the eight districts of Thimphu, Haa, Paro, Punakha, Chhukha, Samtse, Sarpang and Trashiyangtse with a total target area of 150 acres.

Besides ensuring food and nutrition security, PUUF is an essential component in promoting green spaces and improving environmental sustainability in urban areas. With increasing urbanization, there is a need to strategically plan and integrate farming in towns and peripheral areas, including ornamental plants, which contribute to the aesthetic values, air quality, urban ecosystem, and improving the quality of life. Thus, development of a framework for PUUF program was identified as Output 1 under the PUUF project.

### 1.4 Problem Statement

The complete dependence of urban consumers on rural production and food imports has negatively impacted urban consumers both in terms of quality, price and timely supplies, while potential to supplement production through urban and peri-urban productions has remained untapped.

Therefore, the promotion of farming in the urban and peri-urban areas would not only strengthen national food and nutrition security but also have many other positive aspects such as:

- Reducing poverty and increasing employment opportunities
- Mitigating environmental degradation of urban spaces
- Beautify neighborhoods
- Empower small businesses and entrepreneurs
- Reducing waste in urban areas

## **1.5 Methodology**

The methodology has four parts (A) Situation analysis, (B) Development of PUUF Framework, (C) Conduction of stakeholders' workshop, and (D) Finalization of the PUUF Framework.

### **A. Situation Analysis**

The situation analysis was done as follows:

- Reviewing existing literature, policies, strategies, and regulations related to PUUF.
- Analysing current practices, opportunities, and challenges in PUUF.
- Identifying potential stakeholders involved in PUUF. This was done through separate consultations with potential partners such as DoA, FAO and others and confirmed during the stakeholders' consultation workshop.

### **B. Development of PUUF Framework**

Based on literature review and consultation with various stakeholders, a comprehensive PUUF Framework was developed.

### **C. Conduction of the Stakeholders' Workshop**

The draft PUUF framework prepared was presented to the relevant stakeholders during a stakeholders' workshop on 7<sup>th</sup> March 2025. The workshop further improved on the draft framework and roles and responsibilities of each of the stakeholders were deliberated and agreed during the workshop and a common consensus reached. The draft framework was further improved by incorporating feedback and deliberations from the workshop and circulated to all stakeholders for further comments and feedback. After receiving the final feedback from the stakeholders, the draft framework will be revised accordingly and finalised.

### **D. Finalization of the PUUF Framework**

The final PUUF Framework, incorporating ornamental plants, with clear implementation strategies, policy recommendations, and monitoring mechanisms will be submitted to FAO Bhutan in due course of time.

## 2.0 Literature Review related to PUUF

Literature review related to PUUF was carried out with emphasis on the following aspects:

- Urban farming and food security
- Environmental and social benefits of PUUF
- Policy and governance related to PUUF
- Types of PUUF practices

Sommers and Smit (1994) recommend strategy framework for strengthening and accelerating urban agriculture through a strategy workshop on urban agriculture for raising its profile among planners. Such a workshop could review current city government programs; identify opportunities for including an urban agriculture component into existing programs; and identify resources from government and the private sector that could be tapped to carry out activities.

One of the constraints of urban agriculture was rooted in the historical process of urbanization, which led to the definition of certain issues as essentially urban and others as essentially rural, food and agriculture have become typical rural policy topics (Pothukuchi and Kaufman, 2000). Consequently, importance of urban agriculture diminished and were hardly reflected in urban planning. However, in recent years a growing number of cities have become active in the field of food and agriculture. Municipal authorities and city councils have appeared as new actors in the food policy arena together with new urban social movements.

A recent milestone has been the signing by over 100 cities in October 2015 of the **Milan Urban Food Policy Pact** – signed over by 200 cities by late 2019, now signed over by 300 cities – in which they commit themselves to ‘develop sustainable food systems that are inclusive, resilient, safe and diverse, that provide healthy and affordable food to all people in a human rights-based framework, that minimize waste and conserve biodiversity while adapting to and mitigating impacts of climate change’ (MUFPP, 2015).

### 2.1 Urban Farming and Food Security

Urban farming is defined as the cultivation, processing, and distribution of food and other agricultural and livestock products in urban and suburban (peri-urban) areas. It is a sustainable practice that aims to increase access to fresh produce, reduce food miles, and promote community engagement (Brinkley, 2018). In addition to conventional farming in available spaces, urban farming utilizes various techniques such as vertical gardening, hydroponics, rooftop farming and protected agriculture to maximize limited space and resources in urban and peri-urban areas. However, rooftop gardening or farming is out of question in Bhutan as buildings are required to have roofs by law.

For Bhutan, the proposed PUUF program would include both agriculture (vegetables, fruits, ornamental plants/floriculture) and livestock (dairy, poultry, fishery, beekeeping) in the urban and peri-urban areas which will be linked to the nearest markets and existing *Kajathroms*<sup>2</sup>.

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<sup>2</sup> *Kajathroms* are markets established by Royal decree in several towns in Bhutan



PUUF can be used as a vital strategy for building the resilience of urban food supply, reducing poverty and increasing employment, improving nutritional outcomes, and mitigating environmental degradation of urban spaces. While PUUF is no silver bullet to every problem, when combined with effective urban planning, the food system can more efficiently meet the needs of diverse actors in urban areas, thus improving the food security of the urban areas.

Although lumped together as PUUF, there are subtle differences between urban farming and peri-urban farming as shown in Table 2.1.

Table 2.1: Differences between Urban and Peri-urban Farming

<b>Urban Farming</b>	<b>Peri-Urban Farming</b>
Different activities, often small-scale subsistence	More land/space available
Urban farming is part time job	Peri-urban farming is a full-time job
Land completely urbanised	Land under threat of urbanisation
Different land use than in peri-urban areas, smaller areas cultivated, more subsistence production	Different land use than in urban areas larger areas cultivated
Lower availability of natural resources	Higher availability of natural resources
Easy access to markets	Less access to markets
High cost of labour and land	Lower cost of labour and land
Practised by poor urban dwellers for subsistence	Practised by groups and individuals for ready access to capital markets
<b>In case of Bhutan</b>	
Very limited especially in the major towns	Same as mainstream farming as peri-urban areas falls under Gewogs
Need to develop coordination mechanisms and support	Coordination mechanisms and support in place through Dzongkhags <sup>3</sup> and Gewogs <sup>4</sup> machineries

**Source: first part adapted from FAO Urban and Peri-urban Agriculture (2001)**

Current practices of farming especially in the urban areas are happening on very small scale restricted to kitchen gardens where people grow different varieties of vegetables dominated by local chilli. Some ornamental plants and flowers are also grown. The practice is very informal, using any available empty spaces.

In the peri-urban areas, agricultural practices are more prominent and supported through Dzongkhags and Gewogs with both Agriculture and Livestock Sector Heads at the

<sup>3</sup> Dzongkhags = Districts, the country is divided into 20 Dzongkhags (districts)

<sup>4</sup> Gewogs = subunit of Dzongkhags; the country has total of 205 Gewogs

Dzongkhag level and network of both Agriculture and Livestock Extension Officers at the Gewog levels.

## **2.2 Environmental and Social Benefits**

### **2.2.1 Relevance of PUUF to Urban and Peri-Urban Areas**

As per Sommers and Smit (1994), PUUF is an ideal tool for the city planner to work with. PUUF potentially fits into nearly every major on-going program in urban centres today such as environmental improvement, solid waste management, crime prevention, health care, child nutrition programs, redevelopment/inter-city enterprise zones, and education. PUUF offers a multitude of benefits, including economic advantages for residents through job creation and income generation; strengthens food security by increasing access to fresh, local produce at lower costs; PUUF could promote biodiversity, provide honey and other bee products, and even reduce noise and air pollution (Mathew et al., 2024).

PUUF can create green spaces in urban and peri-urban areas, beautify neighbourhoods, and empower small businesses and entrepreneurs. PUUF can be educational tools for children, promoting healthy eating habits and fostering a sense of community. PUUF can contribute to a greener environment by reducing greenhouse gases and offer opportunities for relaxation and connecting with the local community and environment.

## **2.3 Policy and Governance**

### **2.3.1 Relevant Policies for PUUF**

There is strong policy support for PUUF. Bhutan's self-reliance policy, rooted in the concept of Gross National Happiness (GNH), aims to achieve economic self-sufficiency and sustainable development while preserving cultural and environmental values. The policy aims to reduce dependence on external aid and foster a strong, sustainable national economy. The policy emphasizes making agriculture more productive and sustainable to ensure food security and reduce reliance on imports.

The revised Food and Nutrition Security Policy (FNSP) of Bhutan 2023 is a comprehensive document providing clear guidelines for action. It is the basis for formulation of the RNR Strategy 2040 and the 13<sup>th</sup> Five Year Plan (FYP). The FNSP 2023 has 11 strategic policy interventions which supports PUUF either directly or indirectly. Direct relevance of FNSP 2023 to PUUF are sections 4.4.4 ("Promote and adopt innovative and labour-saving food production approaches such as vertical, horizontal, climate smart, precision farming, crop water management technologies, etc., to produce food in challenging environments"); section 4.6.3 ("Plan and establish Agricultural/Agri-Economic Hubs (Agri-EHs) having inter dependent agri-food facilities and services at strategic locations"); section 4.10.6 ("Develop entrepreneurial skills, capacity and promote agribusiness enterprise targeting women and youth entrepreneurs").

Section 4.4.8 of the FNSP 2023 ("Introduce and utilize big data, machine learning, Internet of Things, drone technology, blockchain and digitalization in agriculture and livestock farming system for enhanced production covering traceability, insurance, certification and e-transactions in the food supply chain") is complex and would need the participation of educated youth which can be accomplished under the PUUF program.

The other most relevant policies and legal instruments for the proposed PUUF program includes the Land Act of Bhutan 2007, Cooperatives Act of Bhutan 2001 (amended in 2009), National Forest Policy 2011, National Irrigation Policy 1992, Biosecurity Policy 2010, Forest and Nature Conservation Act of Bhutan 1995, Environment Assessment Act 2000, The Livestock Act of Bhutan 2001, Water Act of Bhutan 2011, Food Act of Bhutan 2005, The Seeds Act of Bhutan 2000, Pesticide Act 2000, Biodiversity Act 2003, and Plant Quarantine Act 1993.

The “peri-urban” areas are well covered by the acts and policies as it falls under rural area. The concern is more in the “urban” area. However, since the policies and the acts apply to the whole of the Kingdom of Bhutan, the urban areas should also be covered. Moreover, since the urban areas in Bhutan are very small and almost all of Dzongkhag *Thromdes*<sup>5</sup> falls under a particular Gewog, the existing institutes (such as Agriculture & Livestock offices) of a particular Dzongkhag and Gewog can offer the services to the PUUF program.

The 13<sup>th</sup> FYP is about paradigm shift from subsistence to commercial agriculture. It is all about five major projects (i) upscaling large commercialization for economies of scale, (ii) building resilience of smallholder farmers for sustainability, (iii) promoting high value agricultural products, (iv) ensuring sustainable biodiversity management initiatives and (v) creating conducive policy and legal environment. Rural-urban migration has been identified as one of the main constraints for the 13<sup>th</sup> FYP and it has been found that no youth is interested in farming activities in the rural areas. Perhaps youth would be more interested in the PUUF than in the rural areas.

Other constraints for the 13<sup>th</sup> FYP are (i) labour shortages, (ii) low levels of farm mechanization, (iii) limited market access & value addition, (iv) climate change, (v) pest & disease, (vi) cheap imports and (vii) wildlife depredation of crops. Some of the sites under PUUF can be centre of innovation and technology operated by knowledgeable youths which can be later adopted by the rural areas. They can add value to the products through proper processing, packaging and product development. Some of the youths involved in the PUUF can become aggregators for agribusiness which would be helpful for the whole country in enhancing agribusiness.

The 13<sup>th</sup> FYP document specifically mentions **“the unemployed youth interested in farming will be supported with investment in high value priority crops in urban and peri-urban areas”**, thus supporting the PUUF program.

The proposed PUUF program has the potential to achieve the RNR Strategy 2040 targets such as self-sufficiency ratio vegetables (100%) by 2025 and 150% by 2040; import substitution of vegetables 100% by 2025; and generation of 15 technologies by 2025 and 30 technologies by 2030. The creation of employment and income for the youth under the PUUF program will fulfil the obligation of MoAL towards the National Employment Policy 2013.

The MUUF (2015) has the following policy recommendations for the proposed PUUF program:

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<sup>5</sup> *Thromdes* are municipal areas consisting of four major towns and 18 District headquarters

- (i) Promote and strengthen sustainable urban and peri-urban food production and processing and integrate urban and peri-urban agriculture into city resilience plans.
- (ii) Seek coherence between the city and nearby rural food production, processing and distribution, focussing on smallholder producers and family farmers, paying particular attention to empowering women and youth.
- (iii) Apply an ecosystem approach to guide holistic and integrated land use planning and management in collaboration with both urban and rural authorities and other natural resource managers by combining landscape features.
- (iv) Protect and enable secure access and tenure to land for sustainable food production in urban and peri-urban areas, provide access to municipal land for local agricultural production and promote integration with land use and city development plans and programmes.
- (v) Help provide services to food producers in and around cities, including technical training and financial assistance to build a multigenerational and economically viable food system with inputs such as compost from food waste, grey water from post-consumer use and energy from waste while ensuring that these do not compete with human consumption.
- (vi) Support short food chains, producer organisations, producer-to-consumer networks and platforms, and other market systems that integrate the social and economic infrastructure of urban food system that links urban and rural areas.
- (vii) Improve (waste) water management and reuse in agriculture and food production through policies and programmes using participatory approaches.

### **2.3.2 Governance for PUUF**

For the PUUF program, the DoA is the most important coordinating stakeholder as it is involved in all the aspects of PUUF such as land, water (irrigation), inputs, technical and policy support. Given its wide mandate and responsibility, DoA should be the overall coordinator for the PUUF. Besides, DoA has the long experience of running the School Agriculture Programme successfully at the national level. Perhaps PUUF should be managed like the School Agriculture Program with an independent unit under DoA mainstreamed into the regular planning and budget cycle of the DoA. The DoA can implement the PUUF program in coordination with other coordinating stakeholders.

Within the DoA, the PUUF unit should be set up under the Agriculture Production Division. The PUUF Unit shall work in close collaboration with all the other coordinating stakeholders, 20 Dzongkhags especially for the Peri-Urban farming and with the four major towns for the Urban farming and the target groups. The other coordinating stakeholders should nominate a focal person from their agency to represent themselves. A periodical meeting should be arranged for proper coordination and implementation of the PUUF program.

## 2.4 Types of PUUF Practices

The proposed PUFF program should include agriculture (vegetables, fruits, ornamental plants/floriculture) in the urban areas and both agriculture and livestock (dairy, poultry, fishery, beekeeping) components in the peri-urban areas. Urban farming encompasses various types of gardens, including Community Gardens, Backyard Gardens, Tactical Gardens, Aquaponics, Indoor Farming, Market Gardening, Green Walls, Vertical Farms, Urban Beekeeping, Balcony Gardens, and Window Boxes (Mathew et al.,2024).

Community gardens are shared land plots used for cultivating various plants, while backyard gardens are small plots of land suitable for those with limited space. Tactical gardens are small gardens planted in unexpected locations, often by guerrilla gardeners (Mathew et al.,2024).

Aquaponics and hydroponics combine aquatic plant care, allowing plants to filter fish's water and supply nutrients to plants. Indoor farming is a controlled setting for growing crops that would not thrive in urban climates. Market gardening is the cultivation of fruits, vegetables, and flowers for local markets, allowing farmers to sell their produce directly to customers. Green walls, vertical farms, and urban beekeeping are also popular urban agriculture practices. Balcony gardens, which grow on balconies or terraces (mostly in pots and various containers), add green space to urban areas.

Like elsewhere in other cities, some form of urban and peri-urban farming practices are present in the urban and peri-urban areas of Bhutan, although on small scale and informal, it mainly includes vegetables and ornamental plants. According to Sommers and Smit (1994), agriculture is the common denominator amongst urban people of the world as it is practiced by people from all walks of life in urban and peri-urban areas and they grow food for different reasons (survival, income, exercise & recreation, cultural preservation), in all types of locations, and use very different production methods.

### 3.0 Implementation Strategies

#### 3.1 Areas of implementation of PUUF Program

For the PUUF Program, it is proposed that the urban and peri-urban areas are defined as given below:

**Urban areas** would consist of the following:

- Four major *Thromdes* of Thimphu, Phuntsholing, GMC<sup>6</sup> and Samdrup Jongkhar
- District Headquarters
- Satellite towns or *Yenlag*<sup>7</sup> *Thromdes*

**Peri-Urban areas** would include the outskirts/surrounding areas of the three urban areas defined above. It may encompass one or more surrounding Gewogs.

#### 3.2 Stakeholders Mapping

For clarity's sake the stakeholders are divided into two – Coordinating stakeholders and Target Groups or beneficiaries. The potential Coordinating stakeholders involved in the PUUF are:

- (i) Department of Agriculture (DoA) under Ministry of Agriculture & Livestock (MoAL)
- (ii) Department of Livestock (DoL) MoAL
- (iii) Department of Agricultural Marketing and Cooperatives under MoAL
- (iv) *Thromdes*, Dzongkhag Headquarters and Satellite towns
- (v) Department of Employment & Entrepreneurship (DEE) under the Ministry of Industry, Commerce and Employment (MICE)
- (vi) National Land Commission Secretariat NLCS)
- (vii) Green Bhutan Corporation Limited
- (viii) Youth Development Fund (YDF)
- (ix) Civil Society Organizations (YDF, Loden Foundations)
- (x) Central Monastic Body (*Zhung Dratshang*)
- (xi) International Development Partners/Donors

The main target groups (beneficiaries) of the PUUF program are:

- (i) Youth and youth groups – most potential target groups
- (ii) Women groups
- (iii) Private sector
- (iv) Dependents of civil and corporate employees – less potential
- (v) Employees of civil, corporations and private sector (weekend farmers)
- (vi) National Work Force – may produce some for-cash income

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<sup>6</sup> Gelephu Mindfulness City

<sup>7</sup> Satellite towns

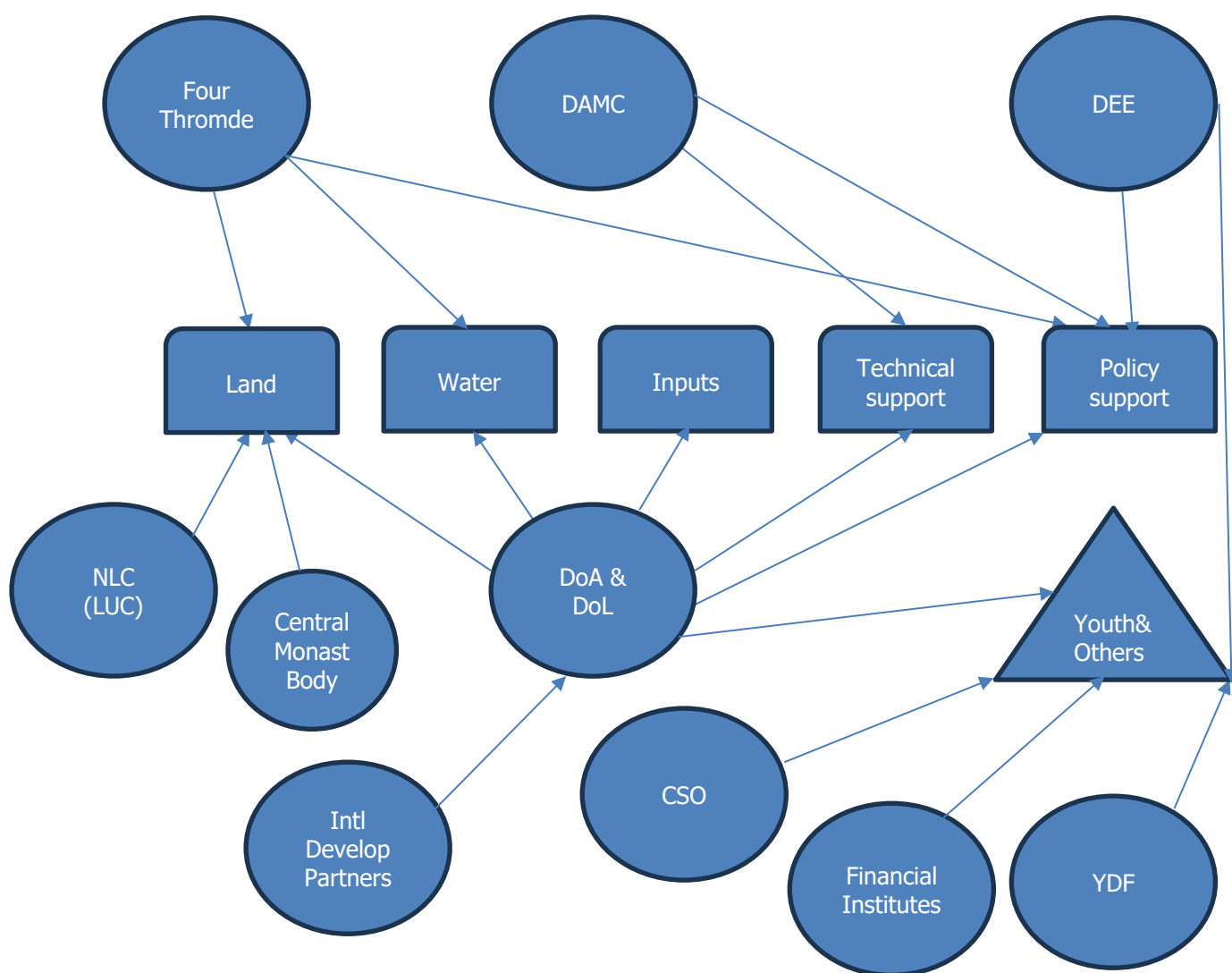


Fig. 3.0 Stakeholder mapping for PUUF program

### 3.2.1 Coordinating Stakeholders

### 3.2.2 Government Agencies

#### (i) Department of Agriculture under Ministry of Agriculture and Livestock

For PUUF the DoA is the most important stakeholder as it is involved in all the aspects such as land, water (irrigation), inputs, technical support and policy support. Given its wide mandate and responsibility, DoA should be the overall coordinator for the PUUF. The PUUF program should be mainstreamed into regular planning and budgeting cycle of the DoA to ensure sustainability of the program.

The DoA with its extensive network of extension staffs in the 20 Dzongkhag Headquarters and in all the Gewogs can cover all the urban and peri-urban areas supported by Agriculture and Research Development Centres (ARDCs). The PUUF unit under the DoA should closely collaborate with other Coordinating agencies for implementation of the PUUF program.

## **(ii) Department of Livestock under Ministry of Agriculture and Livestock**

Like the setup for the DoA, the DoL also has its network of extension covering all the 20 Dzongkhags and Gewogs. Thus, DoL can cover all the peri-urban areas effectively for dairy, poultry and fishery related activities in the PUUF areas.

## **(iii) Department of Agricultural Marketing & Cooperatives, MoAL**

The DAMC is responsible for marketing of RNR products (agriculture, livestock and non-wood forests products) and formation of groups and cooperatives. Therefore, the role of DAMC would be very useful as the PUUF program progresses.

## **(iv) Department of Employment & Entrepreneurship (DEE) under Ministry of Industry, Commerce & Employment (MICE)**

The DEE under the Ministry of Industry, Commerce & Employment is dedicated to promoting meaningful employment and entrepreneurship. The Department plays a crucial role in job creation, especially for the youth, guided by the National Employment Policy (NEP) of 2013. The NEP outlines strategies for accelerating employment growth, improving working conditions, and ensuring equal opportunities, all while addressing the need for a skilled workforce.

The DEE focuses on providing services to match job demand and supply in the labor market. This includes offering quality job and talent-matching services using data from labor market information system. The goal is to help new job seekers enhance their employability through engagement programs. Additionally, the DEE promotes entrepreneurship as an alternative way to create jobs.

The DEE has three divisions under it – Employment Service Division, Labour Market Information & Career Guidance Division and Entrepreneurship Promotion Division. As per the National Employment Policy of 2013, there are clusters of ministries – Ministry of Agriculture & Livestock, Ministry of Infrastructure and Transport, Ministry of Energy and Natural Resources, Ministry of Industry, Commerce and Employment plus Bhutan Chamber of Commerce and Industry and Associations have the obligations to create employment opportunities especially for the youths. Therefore, taking up PUUF program would fulfil obligation of MoAL towards creating employment opportunities for the youth.

The DEE runs various programs in collaboration with other stakeholders such as Department of Education, CSOs, DHI, YDF, to nurture the youths building their capacity for employment and to make them independent. They have databases for all the youths at the national level.

## **(v) National Land Commission Secretariat**

The concept of Land Use Certificates (LUC) was introduced in 2016 and initially called Land User Right System (URS). The LUC, in addition to freehold and leasehold specified in the Land Act 2007 of the Kingdom of Bhutan, is a supplementary land tenure system to ensure sustainable use of state land by different beneficiaries. The key objective of the LUC is to enhance livelihood opportunities through sustainable management and utilization of state



land. Through this initiative, the LUC are given to beneficiaries if the land is used productively for the purpose for which the land is allocated.

The following are the different categories of state land leasing based on purpose and tenure: (i) lease of pastureland (*Tsamdro*); (ii) lease of leaf litter collection (*Sokshing*); (iii) lease for commercial agriculture enterprises; and (iv) other purposes (mining, business, development, social). Different stakeholders and procedures are involved in processing different categories of lease, however clear guidelines are available for obtaining LUCs.

The strategy for URS/LUC (NLC 2018) provides a framework and overall guidance for implementation of the LUCs. LUCs are targeted for the following beneficiaries and purpose: (i) unemployed youth; (ii) senior citizens; (iii) retired armed forces personnel/civil servants; (iv) sharecroppers; and (v) others. The procedures for obtaining LUC or leasing state land are clearly laid out in the Land Lease Rules and Regulations 2018 of the National Land Commission (NLC 2018). The relevant chapters for Commercial Agriculture are Chapters 2, 6 and 11. The main stakeholders are Dzongkhag Land Lease Committee (DLLC), Ministry of Agriculture and Livestock (MoAL) and NLCS.

Through the LUC, potential target groups such as youth and women groups can lease state land for PUUF purposes if required.

### **3.2.3 Thromdes, Dzongkhag Headquarters and Satellite towns**

The Thimphu Thromde is guided by its structural plan of 2023 to 2047 overseen by the Urban Planning Division. Under the structural plan there are vacant land here and there available for agriculture. Some land within the urban areas has remained fallow for over 20 years.

For land within the urban areas identified by the structural plan falls under the Thromde but other land not within the structural plan are still under the jurisdiction of the NLCS.

As per Thimphu Thromde, there is no restriction on growing vegetables in the urban areas and any greening efforts through ornamental plants and floriculture are encouraged.

From Thimphu Thromde side, land may be available for PUUF (at least temporarily) in the Diplomatic Enclave area (approximately 17 ac) and water could be pumped from the Thimchhu river. In the urban areas water is going to be a constraint as there is not enough water even for drinking. Therefore, water for vegetable gardens and ornamental plants must be pumped from the Thimchhu river or treated effluent water must be used. As per the Water Act 2011, drinking water cannot be used for agricultural purpose.

Similarly, land under the three other major towns (Phuntsholing, GMC, Samdrup Jongkhar) are under the jurisdiction of the respective Urban Planning Divisions. Land in the District Headquarters and Satellite towns are under the jurisdiction of the Dzongkhag Headquarters while agricultural land in the peri-urban areas is all under the private ownership of the farmers.

### **3.2.4 Private Sector and Financial Institutions**

At present there is hardly any private sector involved in PUUF but there is potential in the future especially in the peri-urban areas.

The most important and relevant financial institution for PUUF is the Bhutan Development Bank Limited which has branches in all the 20 Dzongkhags. Loans for agricultural and livestock purposes are also available from Bank of Bhutan and Druk Punjab National Bank. While agricultural and livestock loans are mostly seasonal with limitations, there are opportunities of getting higher capital through agribusiness proposals from the financial institutions mentioned above.

### **3.2.5 Civil Society Organizations and SOEs**

#### **(i) Youth Development Fund (YDF)**

The Fourth King of Bhutan, Druk Gyalpo Jigme Singye Wangchuck established the Bhutan Youth Development Fund in 1999. Her Majesty the Queen Mother Ashi Tshering Pem Wangchuck is the current President. The Bhutan YDF is committed to making every youth a leader. An estimated 56 percent of youth are younger than the age of 24. As Bhutan's leading youth organization, the YDF ensures that all youth have equal access to education, meaningful employment and opportunities to develop their potential. Through advocacy and strategic partnerships, youth participation is encouraged, raise awareness of youth issues and promote youth-oriented policy.

The objectives of the YDF are:

- To establish a sustainable funding mechanism within Bhutan so that youth development and empowerment activities can be undertaken, now and in the future.
- To bridge the gap through need-based youth development program with sustainable resource mobilization and strategic partnerships focusing on education, employment, youth participation, child protection and drug rehabilitation services.
- To provide grant management services to national and international donors targeting all segments of the youth population in Bhutan but focusing on disadvantaged children and youth, such as those with disabilities, in poverty, out-of-school, or in conflict with the law.
- To launch and maintain sustainable and innovative programs in areas where there are inadequate interventions either by the government or civil society.
- To become a focal point for youth and children's issues as well as influence policy-making.

YDF has established Bhutan Institute of Wellbeing (BIW) in Chimithanka, Thimphu on 27 ac land where 35-40 people are rehabilitated monthly. Agriculture forms one part of the program. There are about 11,000 youth volunteers registered with YDF some out of school

and some still in schools. YDF has also pledged to plant 1 million trees in ten years in the barren areas in the country.

As per YDF, youths would be interested in innovative agriculture systems such as using smart irrigation systems, hydroponics and venturing into agri-business with support from CSOs and others. They could generate innovative solutions to existing problems and impart that knowledge to the rural areas.

## **(ii) Loden Foundation**

The Loden Foundation is a registered CSO in Bhutan established to foster a happy and enlightened society through the promotion of education, social entrepreneurship and Bhutan's cultures and traditions. It was started in 1999 by Lopon (Dr) Karma Phuntsho and was the first organization to get registered as CSO in Bhutan in 2010.

The objectives of Loden Foundation are (i) to promote education and learning at preschool, school and post-school stages, and thereby foster an enlightened and educated society in Bhutan, (ii) to promote and support social entrepreneurship, (iii) to preserve and promote the cultures and traditions of Bhutan and (iv) to undertake, if need be, other charitable works that contribute towards the welfare of the public.

The Entrepreneurship program is the most relevant to PUUF and it has five different areas of training, start-up funding, mentoring, entrepreneurial events and entrepreneurial awards.

The most relevant SoEs associated with PUUF are Farm Machinery Corporation Limited (FMCL) and Food Corporation of Bhutan Limited (FBCL).

### **3.2.6 International Development Partners**

The most relevant International Development Partners for PUUF are FAO Bhutan, IFAD, WB and ADB. The financial support from the International Development partners are vital especially in the beginning of the PUUF until it gets a foothold.

### **3.2.7 Central Monastic Body (*Zhung Dratshang*<sup>8</sup>)**

On the auspicious occasion on *Zhabdrung Kuchoe* on 30 April 2023, His Majesty the King granted a Royal Charter for the establishment of the ***Gerab Nyed-Yon***<sup>9</sup>, an autonomous entity to hold and manage the assets and investments of the Central Monastic Body which consists of land, buildings, shares and sacred relics.

Urban land of the Central Monastic Body is mainly in Thimphu, Paro, Punakha, Chukha and Wangdue Dzongkhags. The *Gerab Nyed-Yon* office has leased out some land from these five Dzongkhags in 2024. They have planned to lease out second phase in January 2025 in Thimphu from Babisa to Jongshina (details will be out in Kuensel) ranging from 11 decimals

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<sup>8</sup> Monk society

<sup>9</sup> Autonomous entity to hold and manage the assets and investments of the Central Monastic Body

to 62 decimals. In total there will be 8.65 acres. The land will be leased out to the highest bidders. The term for the lease will be for 30 years.

Given the closed bidding and since it is in urban area, it may be too expensive for youths or any other parties to lease land from Central Monastic Body for urban agriculture purposes. But the Central Monastic Body has significant land in the peri-urban areas where it may be feasible to lease by the youths for PUUF purposes.

**Table 3.7 Summary of roles and responsibilities of coordinating stakeholders for PUUF**

<b>Agency</b>	<b>Roles &amp; responsibilities</b>
Dept of Agriculture	Overall coordinator of PUUF and implementation with Target groups
Dept of Livestock	Coordinating and implementation mainly in peri-urban areas
Thromdes, Dzongkhag HQ	Identifying land for PUUF and other support as required by DoA
Dept of Employment & Entrepreneurship	Mobilisation of youth for PUUF, capacity building of youth, providing youth information as required by DoA
National Land Commission Sec	Facilitating land lease for PUUF through Land use certificate
Green Bhutan Corporation Ltd	Support Target groups with ornamental plants
Youth Development Fund	Mobilisation of youth for PUUF, capacity building of youth, providing youth information as required by DoA
Loden Foundation	Capacity building of youth through entrepreneurship training
Central Monastic Body	Leasing land for PUUF purposes especially in peri-urban areas
Financial Institutions	Making capital available through loans for PUUF activities
International Devp Partners	Fund support for PUUF program

### 3.2.8 Target Groups or Beneficiaries

For the target groups to succeed, they would need all necessary support especially in the beginning of the program such as capacity building, acquiring of land, water, fencing materials, and other inputs such as seeds, seedlings, fertilizers and plant protection chemicals. The main target groups (beneficiaries) of the PUUF program are:

- (i) **Youth and youth groups** are the most potential target groups for the PUUF program as most of the youths reside in urban and some in peri-urban areas. Most of the youths are educated and therefore can be effective during training and most of them can learn techniques from the internet and you tube. It has been found that it is difficult to entice youths into farming enterprises in the rural areas but there are higher chances of youths taking up farming enterprises in the urban and peri-urban areas.
- (ii) **Women groups** are second most potential target groups for PUUF program. Experience during COVID\_19 shows that the DoA was able to form Women Group in Thimphu mainly for vegetable cultivation on land of the Central Monastic Body. With assistance from DoA, they were able to grow different vegetables during the pandemic period.
- (iii) **Private sector** – there is a woman growing lettuce using hydroponics in Thimphu. She has hired 10 other women to work for her. An innovative

technology has been packaging the lettuce in bowls which has become quite popular and fetches good price.

- (iv) **Dependents of civil and corporate employees** – this would be a mixed group of elderly people (parents), spouses, and students.
- (v) **Employees of civil, corporations and private sector** – this group would have time to do farming only during weekends and government holidays. Therefore, they would be involved in small kitchen gardens and the produces would also be mainly for home consumption.
- (vi) **National Work Force (NWF)** – like the employees of civil, corporations and private sector, the NWF also has only limited time for farming i.e., only during weekends and government holidays. Therefore, their productions also may be limited for self-consumption only, with small quantity for sale.

### **3.2.9 Views of the Target Groups on PUUF Program**

The views of the Target Groups expressed during the consultation workshop were as follows:

- Only the poor and low-income people are involved in PUUF program, therefore they need lot of support from the government and other agencies.
- Land leased for PUUF program should be charged lower rate than for other business purposes as farming takes time to generate profit. There should be grace period.
- They need more loans for PUUF program as their loan proposals are cutdown by upto 50% which creates financial gaps to complete their project.
- Agriculture and livestock activities are least priority under Economic Stimulus Plan loans as there is a loan ceiling of Nu. 1 million. Any proposal above Nu.1 million is rejected and the proponents cannot complete the project cycle.
- Even simple structures such as greenhouse and mushroom sheds requires professional drawings in urban areas which is a burden on the target groups.
- Land lease in urban areas (Thimphu) was not possible and therefore there is no security as land could be taken back anytime.

## **4.0 Implementation Guiding Principles**

### **4.1 Sustainability**

Sustainable development is one of the pillars of Gross National Happiness, therefore the principle of sustainability is adopted for the PUUF program. The holistic planning approach should be adopted for the PUUF program to make it successful. Capacity building of the Target groups should be accompanied with matching supports such as acquiring land, support with irrigation and other essential inputs like seeds, seedlings especially to the youth and youth groups.

PUUF should be mainstreamed into the normal planning and budget cycles of the DoA and other implementing agencies so that it can be implemented as a regular program and not be constrained by lack of funds.

There should be strong collaboration among the coordinating agencies so that the PUUF program runs smoothly.

### **4.2 Complementarity and Supplementarily**

PUUF shall be complimentary and not be competitive with farmers i.e., focussing more on activities that farmers may not be able to do (e.g. hydroponics, floriculture, ornamental plants). This is to ensure that PUUF does not compete with the mainstream farmers for the limited markets, rather become agriculture hubs for the farmers for technology generation or enhancing markets for the farmers through proper communication with mainstream farmers. PUUF will focus on value addition to the RNR products.

### **4.3 Inclusivity**

Although youth & youth groups are most potential Target groups, the PUUF program should be accessible to all who are interested in the program. The support for the program should also be inclusive so that those interested target groups can successfully implement the program.

### **4.4 Resilience**

The PUUF program should be made resilient through identification of coordinating agency, creating enabling environment such as provision of land, water, inputs and technical support for the target groups. Resilience can be built through capacity building and following value chain approach for the produces. By adopting the value chain approach, PUUF will go a long way in helping not only those in the urban areas but also the mainstream farmers especially in marketing their produces. This is in line with the RNR Strategy 2040.

## **4.5 Innovation**

High technology-oriented farming shall be promoted especially for youth in the PUUF areas. Over time the PUUF could become technology generating centres for the mainstream farmers given knowledge exchange opportunities. PUUF program should focus on value addition to products (e.g, lettuce salad bowls, peeling peas, convenient packaging suitable for all groups of consumers. All possible value additions to their produces shall be explored.

## **4.6 Collaboration**

Collaboration among the coordinating stakeholders is the key to the success of the PUUF program. Each stakeholder should play their part and cooperate with other stakeholders to make the program successful. This can be achieved through the coordinating agency and open discussions during periodical meetings of the stakeholders.

## 5.0 Strategic Areas of Focus

### 5.1 Sustainable Farming Practices

Although constrained by limited land and water availability, there are still good opportunities for PUUF. The most obvious is good market opportunity in the urban areas with less transport cost. Those involved in the urban agriculture should venture more into agriculture marketing and tie up with peri-urban and rural areas so that they can scale up their business.

In the peri-urban areas of the country the opportunities for farming are more due to easier availability of land, water and other supports from the government through the regular Dzongkhags and Gewogs support.

Target groups such as youth should be trained in sustainable agriculture practices for them to take up. There should be strong advocacy program among the coordinating stakeholders and then to the target groups to strengthen the PUUF program. Sustainable farming practices shall be followed for all the PUUF activities.

### 5.2 Integration of Ornamental Plants and Floriculture

It is human nature to love ornamental plants and flowers and many houses in the urban areas have both. Therefore, integrating ornamental plants and floriculture into urban farming will be easy and will be part of the green city initiative. The following strategies are proposed:

- (i) **Establishing source of ornamental plants.** At present some people directly collect ornamental plants from the forest which has risks in the long term and some buy from the few existing nurseries. Here again exists opportunities for youths to be trained in collecting ornamental plants sustainably from the forests and then establishing mother blocks and propagating through cuttings (where possible) and adopting various means of propagation. Such nurseries should be established in strategic locations and their numbers should be limited based on available market as too many nurseries would put each other out of business.
- (ii) **Promote climbers for public infrastructures, buildings & houses.** As part of the Green city initiative, climbers and betel leaves should be promoted to cover public infrastructures such as roadside walls, concrete bridges, public buildings, private buildings and houses on the concrete side of the walls. Covering infrastructures are common and popular in Singapore, China and the Philippines.
- (iii) **Promote standardized containers for ornamental plants for aesthetic values and safety.** The *Thromdes* and Municipal Corporation of Dzongkhag headquarters should promote standardized safe containers for the ornamental plants especially for those plants kept in the balconies of the buildings. The containers should have flat base so that they are not easily dislodged by strong



winds. Such standardized containers should be used both by the sellers and consumers of the ornamental plants for safety and aesthetic values.

- (iv) **Promoting certain potted vegetables.** Many households in the towns are growing vegetables in plastic pots and any containers due to lack of land. Certain vegetables such as Droley Chilli, Cherry tomato, *Namna* – Dzungkha (*Pogostemon amaranthoides*), *Ouishila* – Dzungkha (*Mentha spicata*) and Olachoto - Dzungkha (*Cymbiduum spp*) which is an orchid are ornamental plants and can also be used as vegetables. Therefore, these plants are relevant in urban areas and should be promoted. Both *Namna* and *Ouishila* can be propagated from the stems after using the leaves.
- (v) **Avoid invasive species.** Although Bhutan is one of the 10 hotspots and blessed with rich biodiversity, people tend to bring in ornamental plants from outside the country which increases the risk of bringing in invasive species. Therefore, native species of ornamental plants should be promoted.

### 5.3 Urban Greening and Environmental Sustainability

The PUUF program is very relevant to the *Thromdes* as developing liveable, equitable, and adaptable cities is the goal of each metropolitan area and achieving urban sustainability is the mission of every city. **Urban sustainability** is defined as planning, creating, and administering cities in a way that supports long-term ecological, social, and economic well-being (Mathew et al., 2024). Sustainable cities minimise pollution, make efficient use of resources, and advance social justice and PUUF has a prominent role in achieving urban sustainability.

Sustainable cities offer improved quality of life, reduced environmental impact, economic benefits, social equity, and resilience to change. They provide green spaces, cleaner air, water, and healthier food, while reducing pollution and promoting social justice. They also attract businesses and generate employment, strengthening regional economies. All these issues contribute to the current concerns of urban sustainability. Moreover, the food system of a city contributes to its ecological footprint, including through food miles, energy use, organic waste recycling and production methods used, with urban farming reducing environmental impacts.

With sustainability becoming an increasingly important concept in urban planning, localised food systems should be encouraged and facilitated. Therefore, PUUF should not be excluded or viewed negatively, but rather endorsed to improve city sustainability (Sarker *et al.*, 2019).

Urban greening should be promoted in the designated green zones. PUUF should form part of urban greening so that there are different crops for different seasons which would add value to the place. The activities should be carried out through collaboration between the urban planners and the land users. For example, growing winter crops in Paro valley around the International Airport (especially mustard) would create scenic beauty for the tourists in springtime. This would contribute towards boosting tourists' numbers coming to the country.

Rampant collection of ornamental plants from the forests in accessible areas is a huge threat. For example, orchids are rapidly disappearing from easily accessible areas due to unsustainable harvesting methods. As orchids mostly grow on trees, often trees are felled just to harvest the orchids. Therefore, collection of ornamental plants from the forests should follow sustainable harvesting methods and should be allowed to only those who have been trained in such matters.

Another hazard of especially urban farming is the pollution of the environment through use of plastic materials. It should be ensured that plastic containers and plastic poly pots and other inorganic wastes should be disposed properly without polluting the environment.

The use of chemicals and contamination from wastewater is another hazard especially in urban farming. As pesticides are more easily available in the major towns such as Phuntsholing, Gelephu and Samdrup Jongkhar, and as users may lack knowledge of its proper use, there are chances of overuse and risks of contamination of water sources. Therefore, knowledge of safe practices of chemicals should be imparted to the users.

## **5.4 Youth Engagement and Capacity Building**

Majority of rural-to-urban migration are dominated by youths therefore youths are not interested to take up agriculture activities in the rural areas despite the efforts of the government. Chances of youths taking up agriculture enterprises are higher in the urban and peri-urban areas with the right support and advocacy. Therefore, youths in major towns (Thimphu, Phuntsholing, GMC, Samdrup Jongkhar), other urban areas and peri-urban areas should be targeted as PUUF is an opportunity for youths who have migrated from the rural areas to the urban and peri-urban areas.

The agricultural technical support and capacity building part can be done by the DoA in collaboration with their networks at the Dzongkhag and Gewog levels especially for the peri-urban areas. Mobilisation of youths and general capacity building will be done by various agencies such as YDF, DEE and CSOs as depicted in fig.3.0 of the stakeholder mapping. Close coordination and collaboration among the coordinating stakeholders is required for mobilizing the youth groups and building their capacity.

Agriculture marketing is a huge challenge in the country. Once PUUF is established well, youths could link up with mainstream farmers to facilitate marketing for the farmers as they would know more about the markets in the towns. Youth can play the role of facilitators or aggregators. PUUF could become start up business points for youth. Over time, youths could start agribusiness and explore exporting outside the country.

## **5.5 Innovation and Technology**

Unlike mainstream agriculture PUUF should be innovative and technology oriented and income oriented as youths are not interested in traditional agriculture. This way it will be attractive to the youths. Value addition to the produces from the PUUF should also be encouraged so that the producers can earn more. Over time, the new innovations and technologies from the PUUF will reach the rural mainstream agriculture thus benefitting the farmers.

Section 4.4.8 of the FNSP 2023 (“Introduce and utilize big data, machine learning, Internet of Things, drone technology, blockchain and digitalization in agriculture and livestock farming system for enhanced production covering traceability, insurance, certification and e-transactions in the food supply chain”) is complex and would need the participation of educated youth which can be accomplished under the PUUF program. With proper guidance and technical capacity building, educated youths has the potential to realize the scope of this section of the FNSP 2023.

## 5.6 Utilization of fallow lands

Bhutan has only 4.94% arable land - the least in the region – with only 336,307 acres (71.71%) *Kamzhing*<sup>10</sup> - dry land and 74,750.03 acres (15.94%) *Chhuzhing*<sup>11</sup> - irrigated paddy field - wetland, which poses challenges for achieving food self-sufficiency, especially rice, as landholding per household on average is only 2.6 acres at the national level. The situation of agricultural land use in Bhutan is quite complex, on one hand, there is limited landholding at the household level while on the other hand, there is an increasing trend of leaving land fallow due to various constraints. At the national level, 32% of *Chhuzhing* and 34% of *Kamzhing* is left fallow. The PUUF program has the potential to reduce fallow lands especially in the peri-urban areas if implemented well and contribute towards food-security and self-reliance policy of the country.

In the four major towns, land-use for farming shall be guided by the Urban Planners of the four *Thromdes*. They shall identify the land for the users (youth, women groups, others) and allocate to them with clear terms and conditions. After availing the land, the users should then do land-use planning with support from the relevant technical agencies such as the DoA. Even in the urban areas there is scope of getting Central Monastic Body’s land if the lease is for about five years.

In the peri-urban areas, the users must negotiate with the private landowners. This can be assisted by the relevant agencies such as the Dzongkhags and Gewogs (Gups and Agriculture Extension Officers). In many peri-urban areas, there are lot of fallow land. The fallow land should be identified, and users should negotiate with the landowners for its use with clear terms and conditions.

For access to land in the urban areas, the interested land users must approach the Urban Planners of the *Thromdes* and Dzongkhag Headquarters to start urban farming activities. For access to land in the peri-urban areas, the land users must negotiate with the private landowners in those areas.

Drawing on the RNR Census of 2019, a database on fallow land for the six eastern Dzongkhags (Lhuentse, Mongar, Tashigang, Tashi Yangtse, Pema Gatshel, Samdrup Jongkhar) and four south-central Dzongkhags (Sarpang, Zhemgang, Tsirang, Trongsa) are created for each Gewog with identification of the landowner, area of fallow land, type of land, and other details such as village and Gewog. All the peri-urban areas of the 10 Dzongkhags are covered and the information is available with PPD of MoAL. Data for the remaining Dzongkhags can be easily established in a similar manner from the RNR Survey of 2019.

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<sup>10</sup> Dryland without irrigation facilities

<sup>11</sup> Paddy field with irrigation facilities

Separate fallow land data in peri-urban areas may also be available with other institutes such as NSSC Simtokha under DoA.

In the peri-urban areas, there are significant fallow lands belonging to the Central Monastic Body which are available for lease by interested Target groups.

Another key recommendation is to explore leasing of suitable government land be it near major towns or in peri-urban areas through Land Use Certificate from the National Land Commission Secretariat. Procedures to lease land through Land Use Certificates are well established by the NLCS.

## **5.7 Access to water for PUUF in urban areas**

Access to water for farming will be a major constraint especially in the urban areas as there is shortage of drinking water in most of the urban areas. As per the Water Act of Bhutan, drinking water cannot be used for farming – not even for kitchen gardening. The problem will be less in the peri-urban areas as there are irrigation facilities in the peri-urban areas.

Therefore, for urban farming, available land near water sources such as rivers and streams must be used so that water can be pumped from the rivers or streams. Another strategy is to harvest rainwater for use in agriculture. Another option is to treat wastewater (from sewerage) but will be quite expensive.

## **5.8 Financial Support**

In the short term the financial support for the PUUF will be provided by the International Development Partners such as FAO and others. However, for sustainability of the PUUF program, it must be mainstreamed into the normal budgets of the DoA. Separate projects especially in the beginning of the program would be useful to drive the PUUF program forward.

The Target groups can access funds through loans from the financial institutions listed under section 3.3 above. However, not getting enough funds for a proposed project from the financial institutions is the biggest constraint faced by the Target groups. This issue needs to be sorted out between the coordinating agencies and the target groups.

## 6.0 Expected Outcomes and Action Plan

### 6.1 Expected outcomes

The PUUF program will be implemented in the areas defined under section 3.1 i.e., in both peri-urban and urban areas of the country. The expected outcomes of the PUUF program are as follows:

- Improved food and nutrition security in the urban areas through cultivation of high-value vegetables, culinary herbs, production of milk, eggs and honey.
- Effective engagement of youths and women group finding meaningful employment and income.
- Increased private sector engagement into farming.
- Conducive environment for farming created for youths and women groups.
- Adoption of latest and advanced production technologies.
- Green spaces expanded and aesthetic value of towns improved through the introduction of vegetables and herbs of dual-purpose crops (cooking and ornamental values) and by growing perennial and annual ornamentals.
- Technology and market hubs created in the PUUF areas benefits mainstream farmers in the rural areas.

### 6.2 Action Plans

Broad action plan for the PUUF program is proposed in three stages – short, medium and long- term ranging from one to five years and beyond.

#### 6.2.1 Short Term (1-3 Years)

Why?	What?	Who?	How?
Increase awareness of PUUF program among coordinating stakeholders	Conduct advocacy Stakeholders workshop	DoA to coordinate	Invite & conduct workshop
Improve coordination of the PUUF program and thrash out issues	Periodical coordination meetings of stakeholders	Coordinating stakeholders	Discuss issues and come up with solutions
Institutionalize PUUF program under DoA	High level meeting in MoAL	DoA & MoAL	Proposal & decision making
Identify target groups – individuals, groups of youth or women, others	Consultation meeting with interested groups	DoA, DoL, DEE, YDF	Conduct consultation meeting
Identify land for the target groups	Consultation with <i>Thromdes</i> , <i>Gewogs</i>	DoA, <i>Thromdes</i> , <i>Dzongkhags</i> , <i>Gewogs</i>	Consultation and drawing terms & conditions
Capacity building of the target groups	Conduct various trainings, study visits	Relevant coordinating agencies led by DoA	Arrange trainings for the target groups
Provision of required inputs	Provide inputs such as seeds, seedlings, etc	DoA/DoL	Procurement & distribution

Initiate production	Establishment of ornamental plants, vegetables	Target groups	Based on knowledge gained from trainings
Marketing of produces	Explore local markets	DAMC to lead	Market awareness workshops, visits

### 6.2.2 Medium Term (3-5 Years)

Why?	What?	Who?	How?
Capacity building continued	Business orientation Marketing Processing & value addition	DAMC, YDF, DEE, Loden Foundation	Conduct workshops & trainings
Formation of groups	Youth groups, Women groups	DAMC	Follow existing procedures
Capacity building of groups	Youth groups, Women groups	DAMC	Conduct awareness workshops & trainings, study visits
Expansion and chances for newcomers	Bring up newcomers & expansion for existing target groups	DoA, DoL, YDF, DEE	Taking onboard newcomers & explore expansion for existing target groups

### 6.2.3 Long Term (5+ Years)

Why?	What?	Who?	How?
Explore external markets	Exporting to other countries	DAMC, Loden Foundation	Explore external markets for potential export commodities
Promote potential innovation & technologies to rural areas	New innovations & technologies	Youth groups	Through collaboration with DoA, DoL & other stakeholders

## **7.0 Monitoring and Evaluation (m & e)**

Monitoring and evaluation are an essential part of any program, therefore, the PUUF program should also be subjected to m & e right from the beginning based on the plans drawn for it. Monitoring can be done by the coordinating stakeholders but it would be better if the evaluation is left to an independent agency. Evaluation can be at the end of each term while monitoring should be continuous.

### **7.1 Way Forward for the PUUF program**

- (i) From the coordinating agencies, it is essential to appoint a lead coordinating agency for the PUUF program. Based on the functions for the PUUF program, PUUF program should be institutionalized under the Production Division of the Department of Agriculture.
- (ii) The areas for the Urban and Peri-urban farming are well defined in this PUUF Framework. This should be recognized by all the stakeholders.
- (iii) Initially, there is a need for creation of awareness and promotion of the PUUF program among the Coordinating stakeholders lead by the DoA and DoL.
- (iv) The guiding principles of the PUUF are the success pillars for the PUUF program. Therefore, the guiding principles should be followed by both the coordinating agencies and the target groups.
- (v) The focus of the PUUF should be on youth and youth groups as youth are the main group flocking to the urban areas from the rural areas. The PUUF program has potential to generate employment and income for the youths.
- (vi) In the urban areas especially in the four major towns of Thimphu, Phuntsholing, GMC and Samdrup Jongkhar, there is a need to draw memorandum of understanding between the DoA and the four major towns as both land and water are both under the jurisdiction of the four towns.
- (vii) There is a need to form a Taskforce with representatives from each of the coordinating stakeholders to coordinate the PUUF program.

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