

STATUS OF HORTICULTURE IN BHUTAN



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Agriculture and Horticulture in Bhutan

Land

- Small area under cultivation (<2.93% of total land area)
- Largely small scale & subsistence farming (Av. land holding = 0.8 ha)
- Scattered even within a locality

Employment & Labour

- Provides employment & livelihood to >62.2% of population
- Of the total employed in Agriculture, 61% are females (Feminization)
- Youth unemployment >9.6% (females > males; urban > rural)
- 30% of overall employed earned <Nu.4000/month & 85% engaged in agriculture.

Contribution to GDP

- <9% contribution to GDP by Agriculture, <17% contribution to GDP by RNR

Capital/Resources

- Low capital and low input base farming;
- Bare minimum infrastructure (Market infrastructure are basic)
- Human and Financial – Limited; Generalist and not specialized

Food Insecurity, Poverty & Nutrition Related Disorders

- Predominantly a rural phenomenon;
- 35% HH with food shortage during year
- Pace of domestic food production < demand;
- High prevalence of malnourishment among children <5 year

Farming System

- Integrated mixed farming (Crop & Livestock dependent on forest products)
- Not oriented for specialization
- Few Emerging trends – Agro products including organic, mushroom

Emergence of Competing Enterprises

- Non-food cash income sources competing with labor requirement on farm
- Emerging Market requirement - Specialized

Government Support

- Budget allocation decreased over the plan period
- Subsidy – below 1% of GDP
 - Inputs – seed, seedling, fertilizers, plant protection chemicals; subsidized farm machineries and hiring services; capacity development; marketing infrastructure; Minimum support price (for selected winter vegetables)

Agricultural Trade

- Support in Trade - Multi-lateral & bi-lateral negotiations with priority on Agricultural products
- Negative trade balance in volume but positive trade balance in value

Major Crops

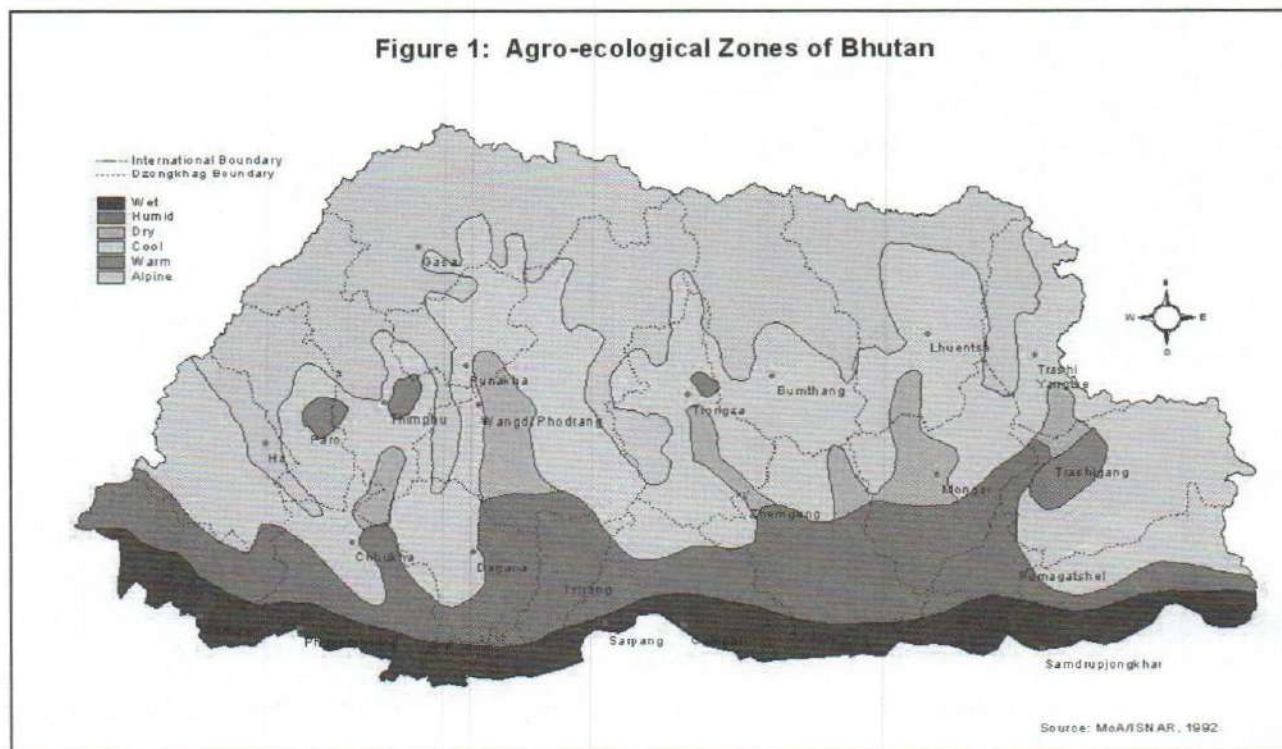
- Potatoes, mandarin oranges, apples, cardamom and cordyceps are main cash/export commodities.
- Fruits and nuts (26), Vegetables (30), Roots and Tubers (3), MAPS (7), Mushrooms (3)

Crop Production & Self Sufficiency Ratio

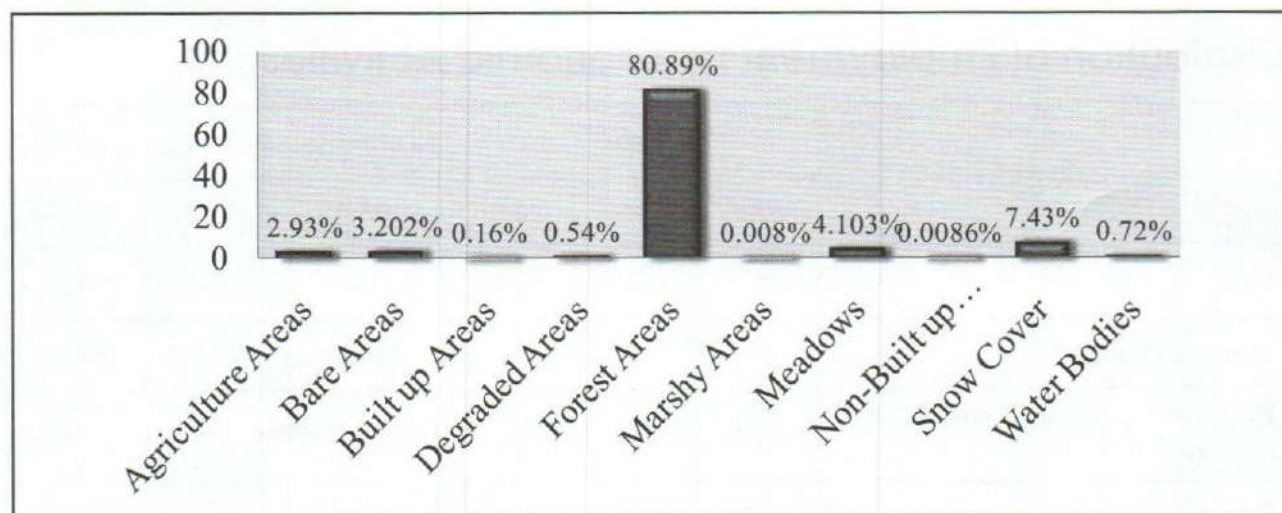
- Domestic vegetables in 2013 has been able to meet 86% of demand; per capita availability of vegetables = 139 gm/person/day
- Domestic fruits meet 100% demand if we do not export. With export, it meets 66% of demand.

The growing importance of horticulture lies in its significant support to food security, as major contributor to nutrition security, as promoter of health security, and as an important source of employment and income generation.

The Agriculture Environment



Land Resources in %

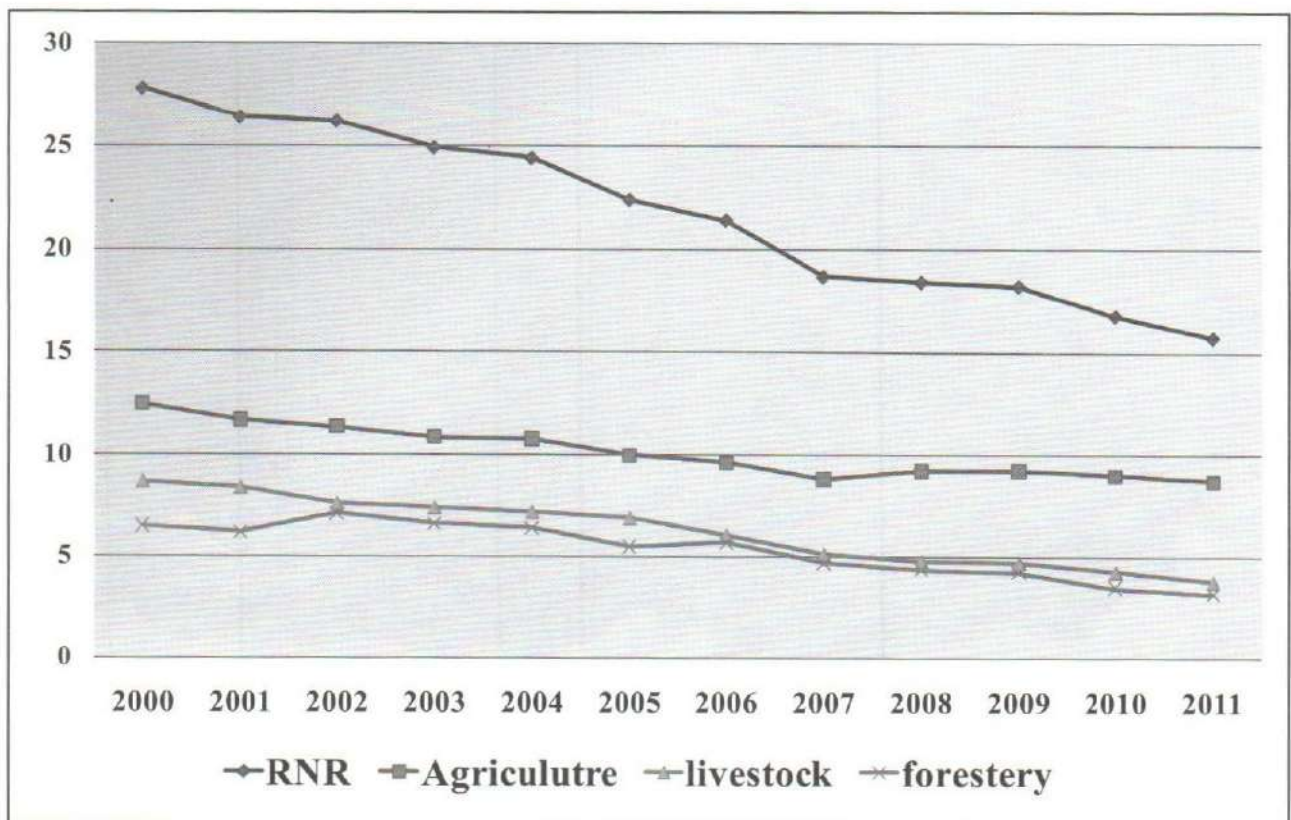


Source: Country STAT, PPD, MoAF (August, 2011)

Sectoral Shares of Employment and GDP (%)

Sector/Year	% share of GDP			% of employment		
	2006	2009	2012	2006	2009	2012
RNR	21.4	18.2	17	62.8	65.4	62.2
Industry	37.7	41.9	39.4	7.5	6.4	8.6
Services	40.9	39.8	37.2	25.5	23.2	27.2

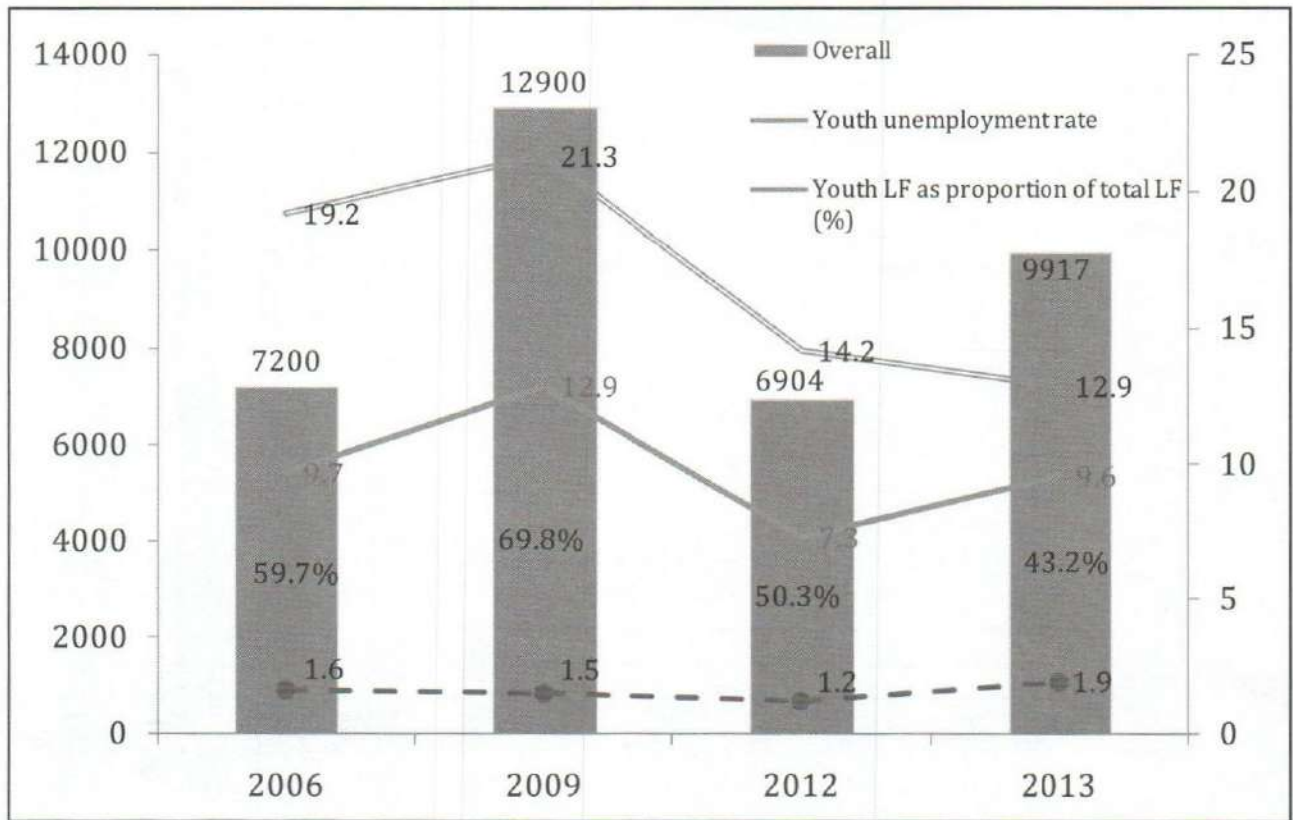
RNR Sectors Share to GDP (in% Share Sector Wise)



Distribution of Employment by Economic Activities (%)

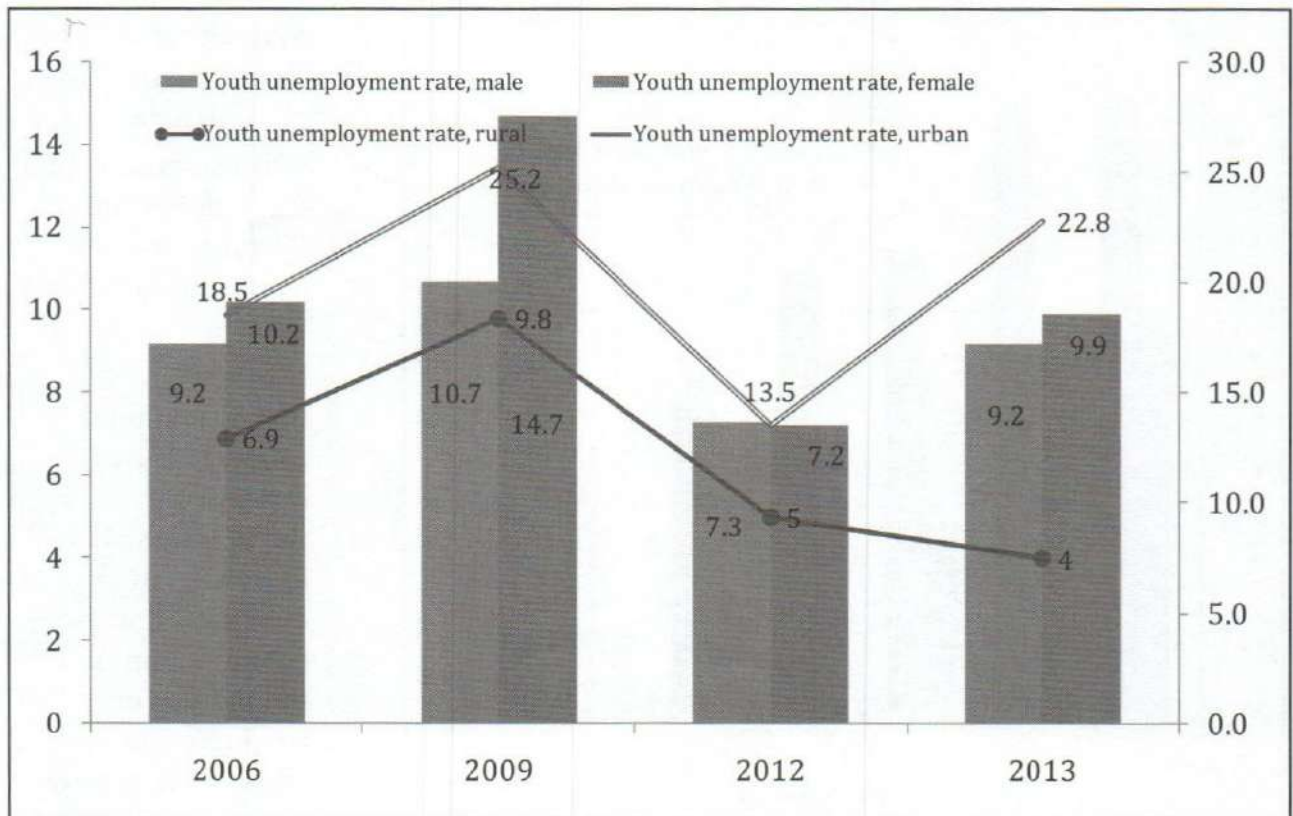
Economic Activities	Year			% change 2006-12	Percentage (2012)	
	2006	2009	2012		Male	Female
RNR	62.8	65.4	62.2	-1.0	38.4	61.6
Manufacturing	3	4.7	5	66.7	40.3	59.7
Electricity, gas and water supply	1.9	1.1	2	5.3	78	22
Construction	2.7	0.5	1.5	-44.3	87.5	12.5
Wholesale and retail trade	4.4	0.1	3.8	-13.6	45.8	54.2
Hotels and restaurants	2.8	0.9	1.8	-35.7	41.4	58.6
Transport, storage and communications	2.2	0.3	2.6	18.2	87.7	12.3
Financial intermediation	0.6	0.3	0.7	16.6	64.4	35.6
Public administration and defense	7.8	8.9	8.3	6.4	83.4	16.6
Education	3.1	2.9	3.5	12.9	61.6	38.4
Health & social work	1.3	0.8	1.4	7.7	67.7	32.3

Overall Unemployed, Adult & Youth Unemployment Rates (%)

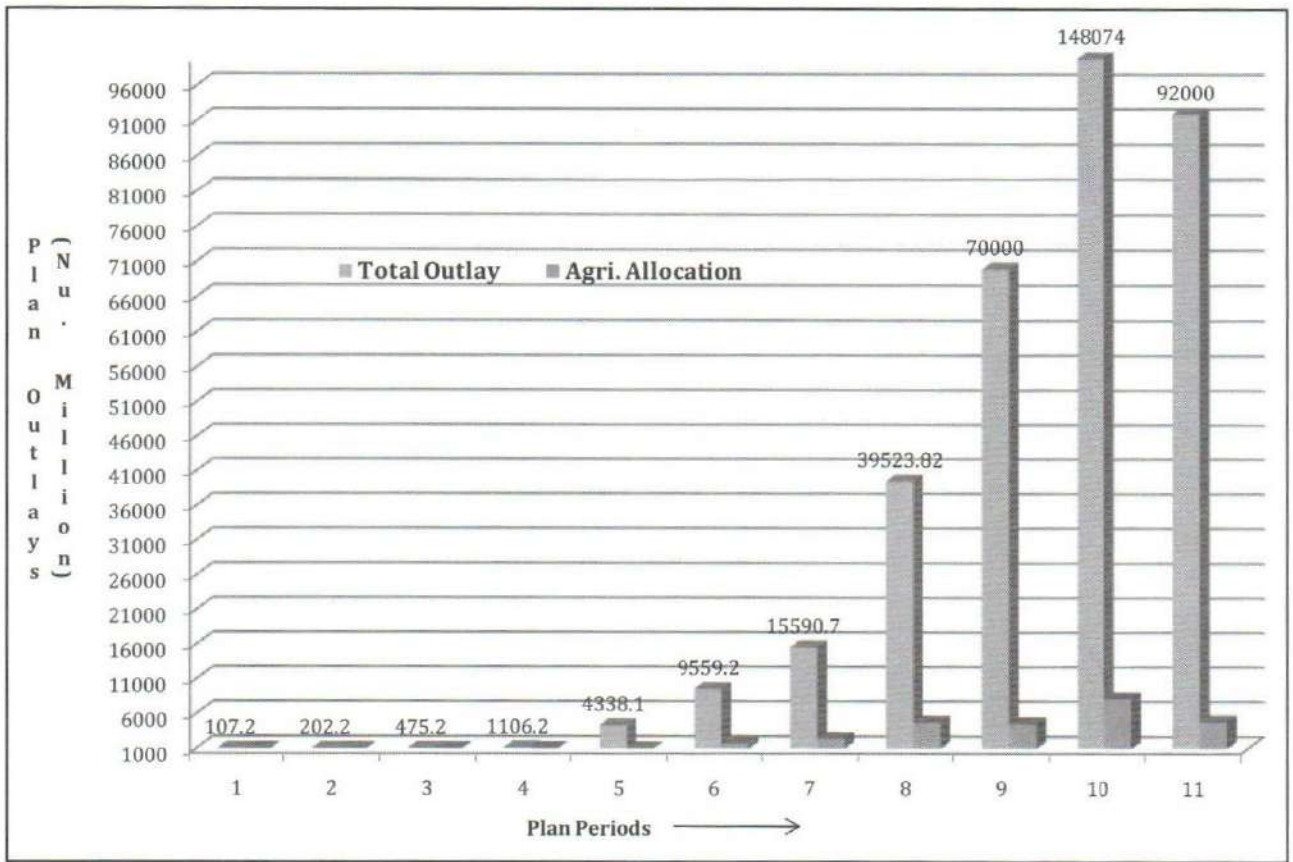


Ratio of youth to adult unemployment rates: 2.8 (world) & 4 (South Asia), 2012

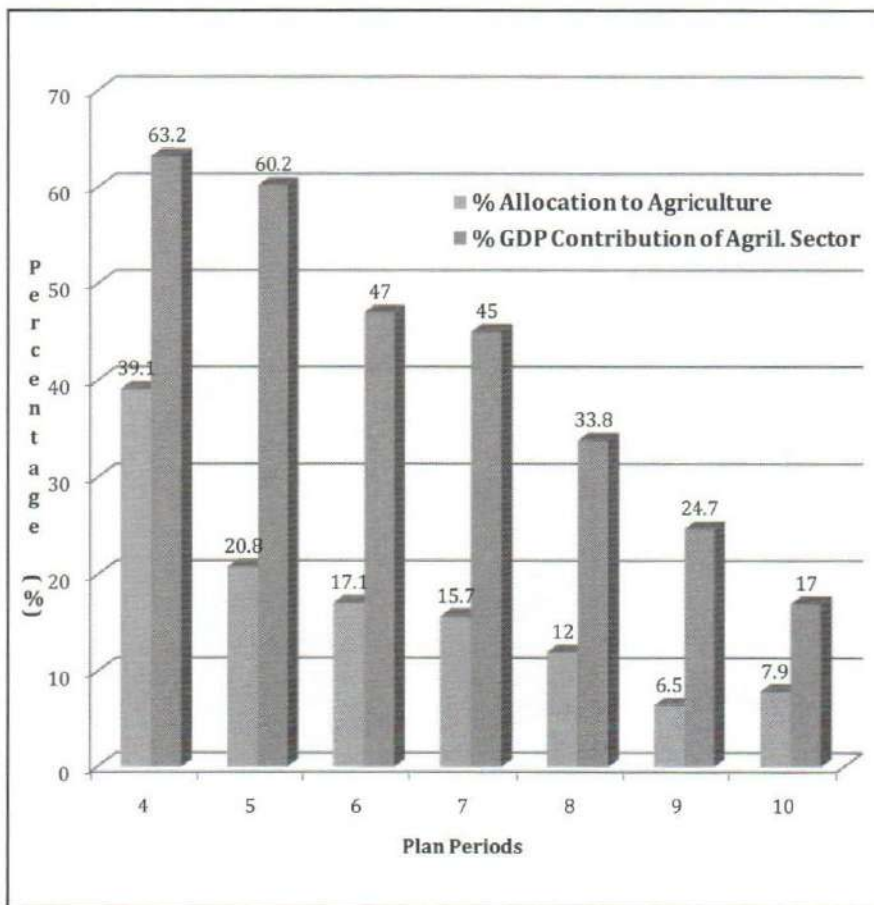
Youth Unemployment by Gender and Area (%)



Investment Pattern Over the Plan Periods

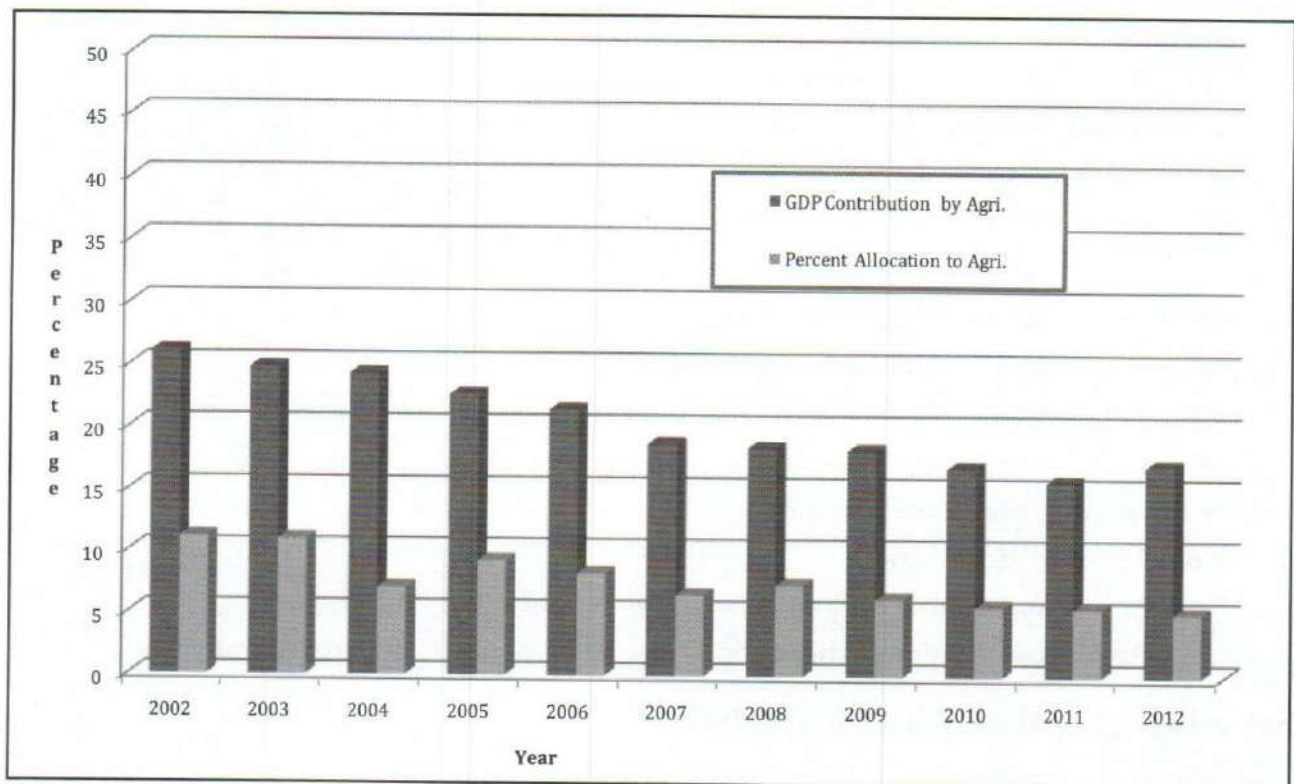


Investment & Dividends Over the Plan Periods



- Allocation to Agriculture decreased over the plan periods
- Contribution to GDP from Agriculture Sector decreased in relation to other sectors
- However, in real terms, total production had increased over the years as also evidenced by increased domestic consumption & the pattern of consumption – availability of wide range of food items

Agri. Budget Allocation vs GDP Contribution During the Last Decade



Agriculture Trade - Current Status (2012)

Physical Trade Balance (MT)		
Commodity	Export (MT)	Import (MT)
FIELD CROPS		
Rice	60	47,114
Wheat	49	4,966
Buckwheat	2	352
Oil seeds	59	285
HORTICULTURE CROPS		
Potato	25,658	5,285
Citrus	24,432	163
Fruits and nuts	7,915	2,397
Vegetables	2088	13,529
MAPS	2067	5
Total value	62,330	74,097

Revenue Trade Balance (Nu. M)			
Commodity	Export	Import	Trade Balance
FIELD CROPS			
Rice	6	853	-847
Wheat	0.62	76	-75
Buckwheat	0.11	4	-4
Oil seeds	3	22	-19
HORTICULTURE CROPS			
Potato	326	61	265
Citrus	453	8	445
Fruits and nuts	88	72	16
Vegetables	36	227	-191
MAPS	444	1	443
Total value	1356.7	1324	+ 32.73

What is Expected of Horticultural Development?

1. Food & Nutrition security for all (up-to household level)
2. Farming to become a profitable enterprise with income generated that could take care of a host of issues at HH level like:
 - Health & Education
 - Environment
 - Rural – Urban migration
 - Climate resilient farming
3. Meet domestic food requirement (food security goal) at a *reasonable prices*
4. Contribute significantly to the national economy (Self-reliance)
 - Employment
 - Enhancing Export Earnings
 - Meeting non-food demands
5. Ensure Green Economy
 - Access to Organic and naturally grown products at all times
 - Significant Export earnings on Organically & naturally grown products

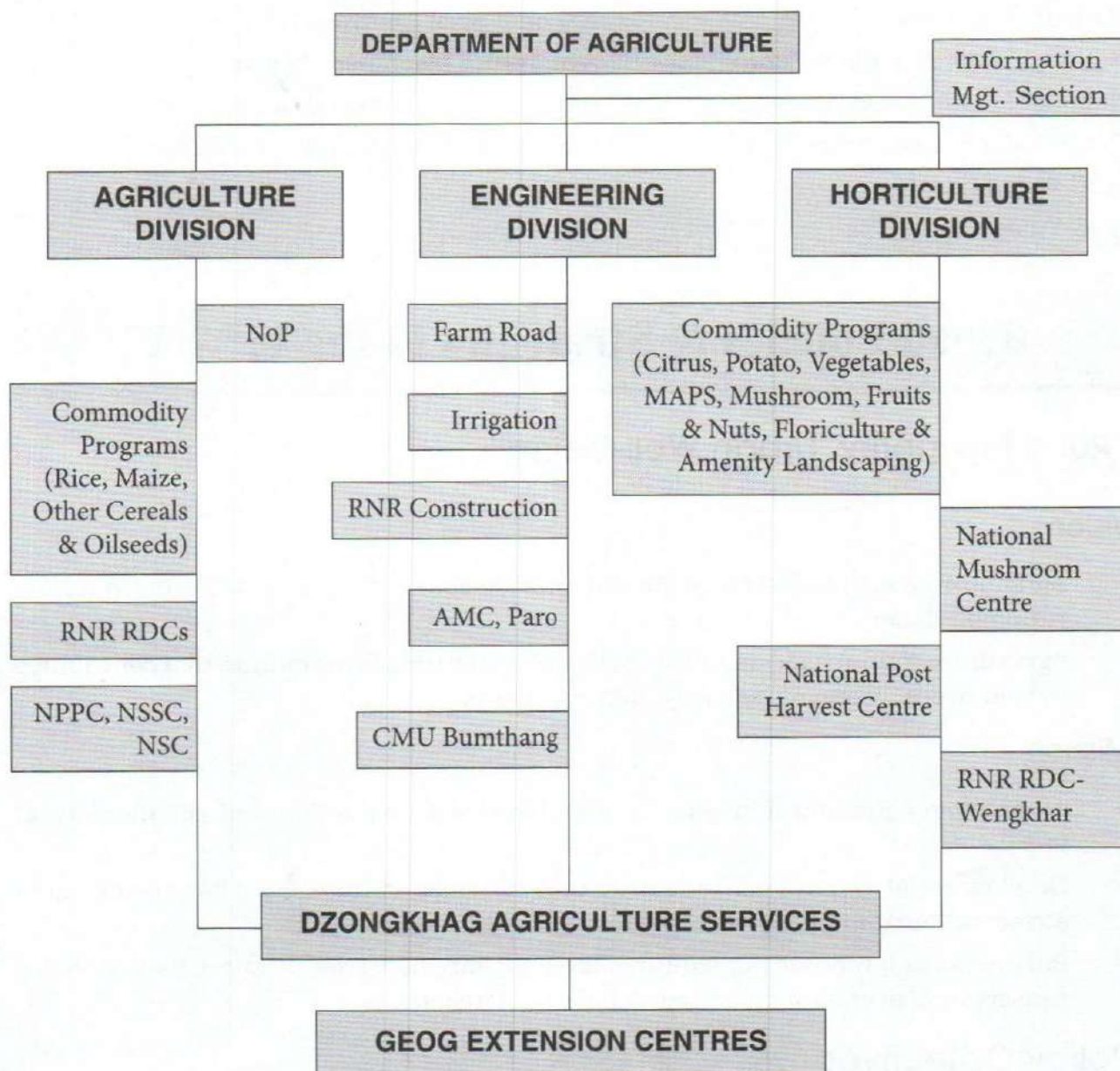
Lower unit cost of food production and produce more food per unit of land, labour, capital, & water

So what are the interventions?

Guiding Policy:

- Food and Nutrition Security Policy of Bhutan, 2014
- Vision 2020
- National Framework for Organic Farming in Bhutan (NFOFB)
- Commodity Development strategies
- Draft Agriculture policy
- 11th Five Year Plan

Institutional Arrangement



Main Programs under Horticulture Division, DoA

Commodity led programs rather than support service led programs:

1. National Vegetable Development Program
2. National Potato Development Program
3. National Citrus Development Program
4. National Fruits and Nuts Development Program
5. National Mushroom Development Program
6. National Medicinal, Aromatic and Spices Development Program
7. National Floriculture and Amenity Landscaping Development Program

Central Programs / Support Service Centres

National Soil Service Centre	National Seed Centre
National Plant Protection Centre	Agriculture Machinery Centre
National Mushroom Centre	National Post Harvest Centre
Central Machinery Centre	Dzongkhag & Geog Agriculture Centre
RDC Wengkhari	RDC Bajo
RDC Yusipang	RDC Bhuri

Broad Policies & Strategies in the 11th FYP

“Rural Prosperity, Urban Well-being”

Vision

- Agriculture potential is fully realized to provide equitable income & livelihood for the rural population
- Agriculture continues to manifest itself as a sustainable living culture that contributes to food needs, economic security, and happiness

Mission

- To promote agricultural growth through increased production and enhanced rural income
- Develop social & physical infrastructures to make rural areas vibrant and more attractive; sustain productivity of land and water resources
- Pursue an appropriate agriculture development model for Bhutan that includes conservation of environment and well being of people.

Policy Objectives

- Enhance food and nutrition security through sustainable and enhanced production and availability
- Enhance sustainable rural livelihood through income generating opportunities
- Promotion of sustainable and optimum utilization of arable agriculture land.
- Conserve and promote sustainable utilization of forest and water resources

Link to National Key Result Areas

1. Sustained Economic Growth
2. Poverty reduced & MGD plus achieved
3. Full employment
4. Needs of vulnerable addressed
5. Climate neutral/green & climate resilient development
6. Integrated water utilization and management

Program's Contribution to Sectorial KRA

1. Enhance food and nutrition security
2. Generate additional employment opportunities and increase mean annual rural HH cash income
3. Accelerate RNR sector growth through commercial farming and agriculture enterprises
4. Enhance conservation of plant & animal genetic resources & natural heritage sites
5. Enhanced sustainable forest, land, water and biodiversity resource management
6. Enhance efficiency and effectiveness of RNR Sector service delivery

Program's 11th FYP Target

Outcome	Outcome Indicators	Unit	Baseline	Target
Increased horticulture crop production for enhancing nutrition & income	Increased vegetable production	Mt/Annum	43,025	65,200
	Increase citrus production	Mt/Annum	49,501	55,781
	Increased potato production	Mt/Annum	43,000	68,000
	Increased fruits and nuts production	Mt/Annum	20,324	22,234
	Increased SMAP production	Mt/Annum	5,657	6,505
	Increased mushroom production	Mt/Annum	89	119
	Reduced import of vegetables by 50%	Mt/Annum	13,529	6,764

Challenges Ahead

- Domestic production increasingly falling behind in meeting the demand
- Higher production & marketing costs, small scale production systems
- Lack of assured water for irrigation & hilly terrain constraining irrigation infrastructure development
- Increasing shortage of farm labour, feminization of farm labour
- Competition from growing imports of cheaper items
- Increased land fragmentations – Inheritance
- Loss of prime land to urbanization/industrial sites
- Rising food prices – food insecurity
- Declining trend in allocation of budget to agriculture

- Low Market surplus & small no. of export commodities
- Difficult farming terrain (steep slopes & shallow soil depth)
- Substantial predation of crops by wildlife resulting in crop/livestock losses
- Issues of climate change (erratic weather conditions)

Opportunities

- Catering to huge domestic demand
 - Increasing population, urbanization & disposable incomes.
- Enhancing production (crop intensity, yield) & reducing post-production losses
 - Commercialization in areas with high potential.
 - Increasing investments in irrigation & farm mechanization
- Enhancing national food self-sufficiency
 - Establishing a portfolio of priority commodity value chains
- Promoting Organic Farming & Brand Bhutan – for premium price
- Engaging private sector involvement – Contract farming, PPP & FDI
- Exploiting huge export potential – assured market in India, Bangladesh & other countries

Some of the interventions....!

- Investing innovatively in agriculture to improve productivity
- Prioritizing major investment areas & increasing investment in agriculture
 - increased investment in irrigation development
- Promoting and supporting commercial agriculture
- Promoting 100% nutrition / home gardens at household level
- Promoting urban agriculture (initial stage)
- Up-scaling farm mechanization (hiring services, subsidized machineries)
- Formation of farmers groups & cooperatives
- Encouraging IPM and human wildlife conflict management
- Promoting organic production (selected crop – Asparagus and selected location) & adopting GAP
- Strengthening Research & Development in horticulture
- Promoting crops that are high in micro-nutrients (kiwi, avocado, blueberries, etc)
- Involvement of NGOs/CSOs (BAOWE, Taraya Foundation, NWAB, SJI, etc) and private entrepreneurs (Bio Bhutan, Charo Tshongdrel)
- Promoting sustainable utilization of agriculture land
- Developing post harvest storage, processing facilities and distribution systems
- Promoting agro-based rural enterprises (Common facility centre)
- Promoting climate smart agriculture and farming practices (drips, sprinklers, stress tolerant varieties, etc)
- One Geog Three Products; Commodity approach, One geog one product,
- Market-led production

- Encouraging sustainable harvesting and consumption of Wild vegetables
- Enticing youth in agricultural farming and agritourism activities
 - Protected cultivation, Floriculture, Hydroponics, Aeroponics, New crops, etc

Key Thrust Areas in the 11th FYP

- Irrigation & Water Management
- Enhancing farm mechanization services (Hiring)
- Human wild-life conflict management – Electric fencing
- Enhancing production support

Conclusion

1. At a broader level, our rationale for investing in horticulture should be guided by the changes that are taking place globally which impact us directly:
 - the climate change scenario and the resultant impact on our economy in general and food security in particular;
 - the global and regional economic and political vulnerability
2. At our national level, our economic strength in the sense of “stability” lies in investing in horticulture as it will:
 - Include all segments of economy and population and hence, impact positively on the lives of all citizens – capitalize on our pristine production system.
 - Act as a stabilizing factor in situations of economic vulnerability since agriculture engages over 62% of population directly or indirectly;
 - The GDP growth indicator for the economy will then be good national human development index (HDI) as the GDP will then be much more encompassing of the GNH indicator for indicating the well being of citizens
3. Focus should be on prioritization of investment and promotion of private entrepreneurs in identified components of a sector of economy through longer term fiscal policy developed based on research and analysis:
 - Fiscal policies that will promote private sector investment
 - Institutions for facilitating business environment
 - Capital source that are readily accessible for investors
 - Capacities – develop professional capacities of both in public and private sector to support national economic development