



Food and Agriculture Organization  
of the United Nations



**Hand-in-Hand**  
Initiative



## Leveraging Opportunities for Investment in Agrifood Systems in Bhutan



**Hand-in-Hand**  
Initiative

Hand-in-Hand Investment Forum|Rome-Italy| 17-20 October 2023



**BHUTAN**

## BHUTAN

<b>Land area</b>	38 394 Km <sup>2</sup>	<b>Population</b>	770 276
<b>GDP (USD Mil)</b>	2 898	<b>GDP per capita (USD)</b>	3 833
<b>Poverty rate</b>	12.4% (NSB 2022)	<b>Unemployment rate</b>	5.9%, Youth (28.6%)
<b>Economy</b>	Agriculture, Tourism, Industry		
<b>Climatic condition</b>	Humid Subtropical - Warm Temperate - Cold Alpine		
<b>Special features</b>	Unique Geographical Location; Pristine Environment; Rich Biodiversity; Clean & Green Farming; Carbon Negative; Gross National Happiness Values		



## Agrifood Systems and National Targets

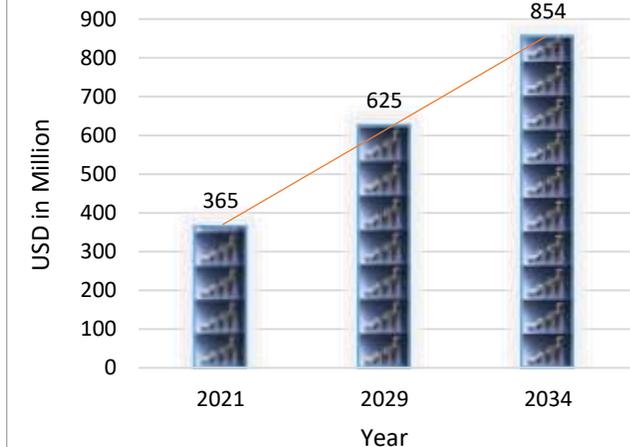
**“Arable land of 2.75% contributes 14.67% GDP, and agriculture sector provides 43.50% employment”**

❖ transforming agrifood systems from a deficit to a food and resource surplus nation

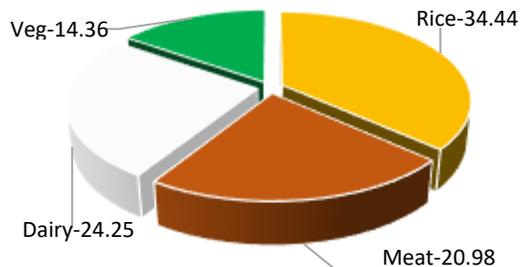
❑ **Investing on opportunities that will;**

- increase productivity, competitiveness, economic growth, income; and alleviate poverty
- increase provision of meaningful, dignified and well remunerated employment
- proactively mitigate carbon emissions to ensure persistence in nature, biodiversity and ecosystem services

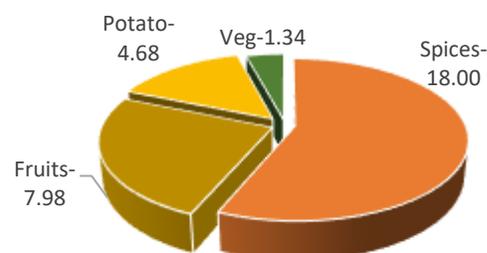
**GDP target-Agriculture**



**Major Agri-imports (USD Mil)**



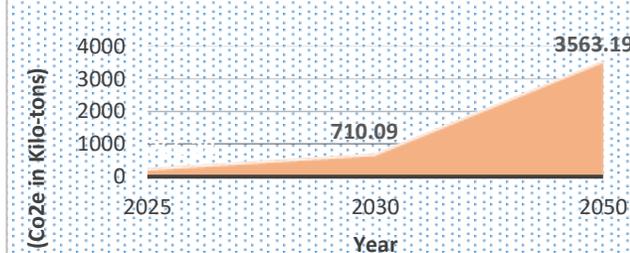
**Major Agri-export ( USD Mil)**



**Export target-Agriculture**



**GHG Reduction Target-Agriculture**

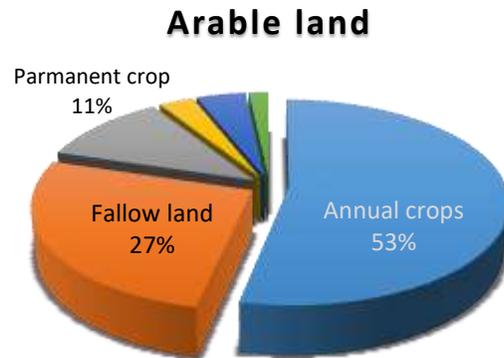


**Overall agrifood trade balance: -168 Mil USD (2022)**

# Enabling Environment for Investment in Agriculture Sector

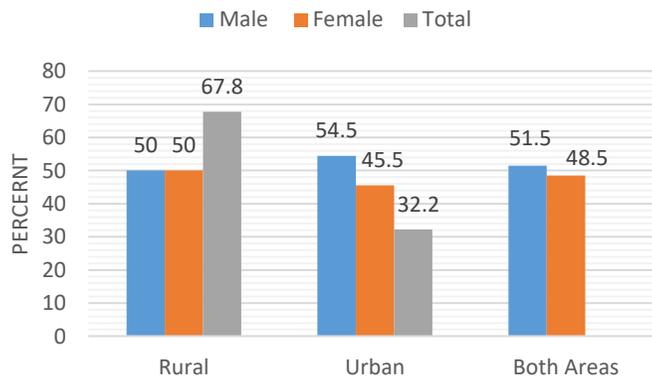
Availability and Access to Resources

## 1. Land availability



land holdings + state land lease

## 2. Economically active population



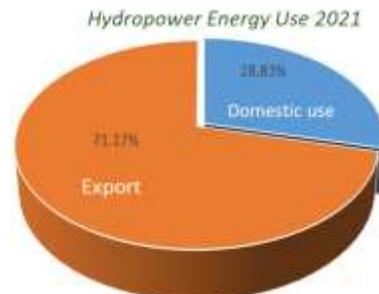
- labour force participation rate: 63.1%
- 28.60% youth unemployed
- literacy-70.2%(overall), 97.70% (youth)
- rich experience in agriculture farming

## 3. Abundance & access to quality water



Per Capita fresh water: 94 500m<sup>3</sup>

## 4. Access to clean, green and price competitive renewable energy



Solar and wind energy explored + 4 hydropower to commission

## 5. Access to Finance & Credits

- government finance for common infrastructure (roads, irrigation, storage)
- start-up fund + collateral free loans
- GEF, GCF, EU,FAO projects- ongoing/pipeline

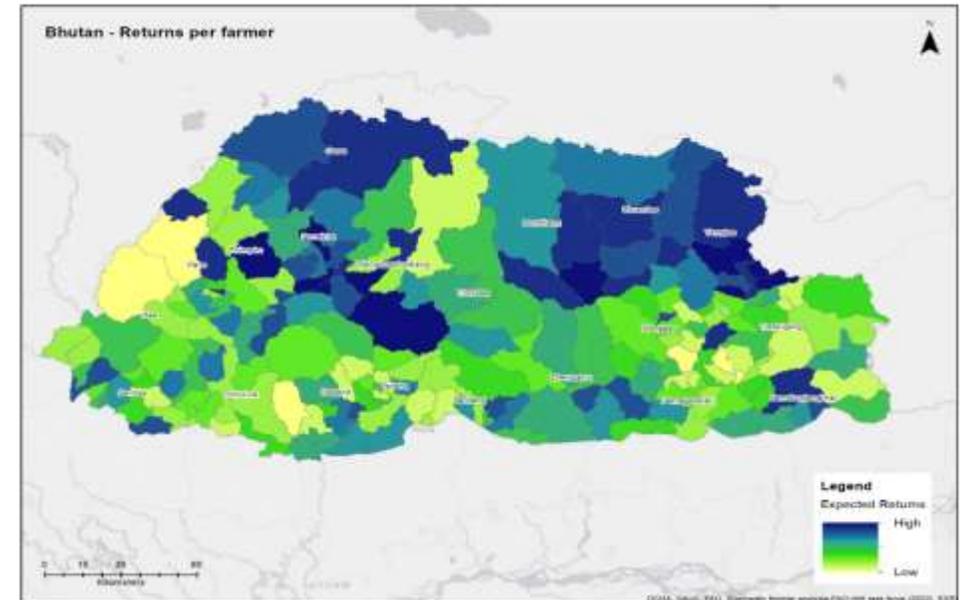


## 6. Suitable production environment

- favourable diverse agro-ecological conditions
- projected positive impact of climate change
- growth in technical capacity of farmers



## 7. High Potential Returns to the Farmer



Source: FAO-HiH analysis team

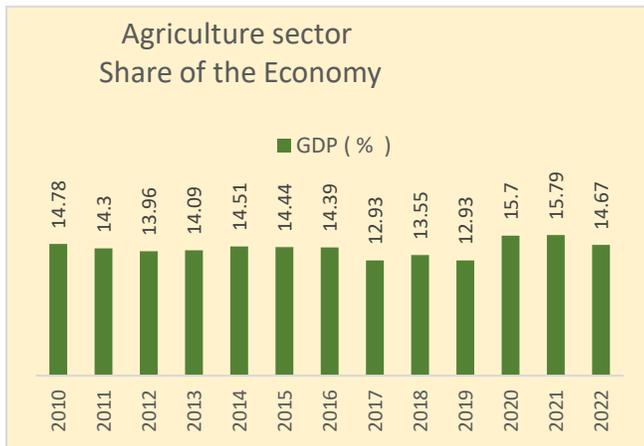
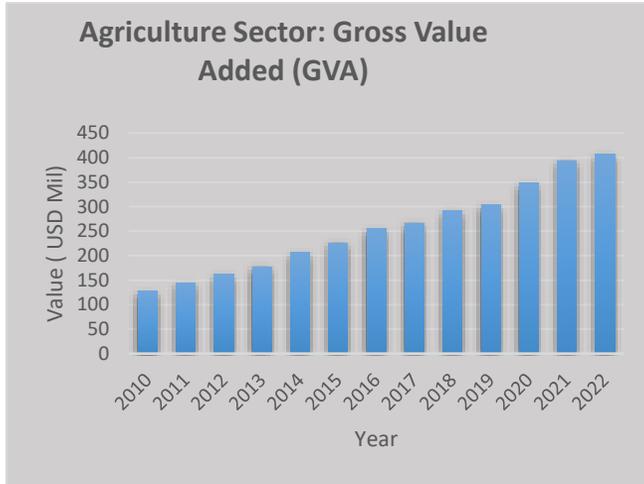
- Significant unexploited potential** in agriculture not only for investors but also for the farmers
- Investments and interventions are socially inclusive with **high returns to the farmers**
  - Valorizing the potential with well targeted investments signifies **higher farm incomes and lower poverty**

# Enabling Environment for Market access, Accelerated Trade and Economic Growth



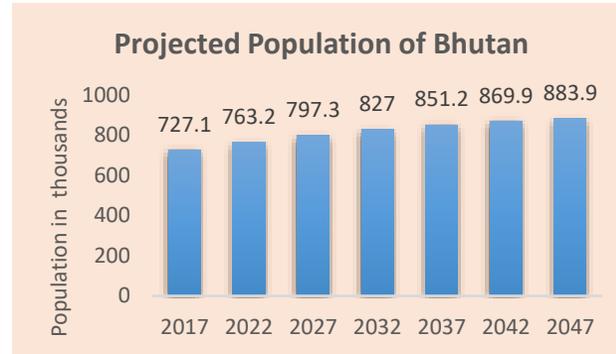
Economic Growth & Market Expansion

## 1. Positive growth value



- GVA in agri-sector increases
- Bhutan marks a significant milestone in its economic development with LDC graduation on the horizon

## 2. Increasing demand for food



Urban pop. share projected at 56.8% by 2047; and expected increase in tourists arrival

## 3. Improved access to domestic market



- reliable highways and rural roads
- Indian highways & waterways in India/Bangladesh connection
- industrial parks in the regional clusters

## 4. Increasing access to export market

- India
- Bangladesh
- Singapore
- Thailand
- Nepal



- Upgrading domestic airport to international airport
- Mega dry ports in entry-exit points

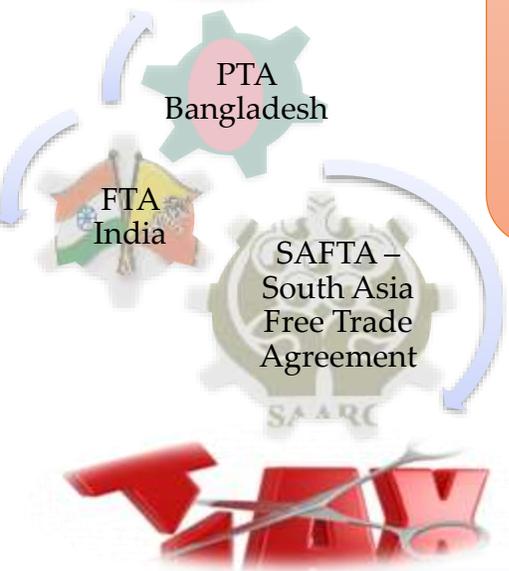
*-outbound flights are normally with half-filled cargo space*

<b>Bangkok, Thailand</b> (Daily) 2 flights	<b>Singapore</b> (Twice Weekly) 2 flights	<b>Kathmandu, Nepal</b> (Daily) 2 flights
<b>Kolkata, India</b> (Daily) 2 flights	<b>Delhi, India</b> (5 Times Weekly) 2 flights	<b>Dhaka, Bangladesh</b> (Thrice Weekly)

**“Bhutan positioning itself at 30<sup>th</sup> in Trading Across Border in 2020 out of 183 economies”**

# Enabling Policies for Investment and Agri-business

*“Sustainable policies and programmes supporting agrifood system growth, market expansion and trade”*



Regulation for Environmental Clearance of Projects  
2016

## Bhutan is geo-politically stable with sound Foreign Policy, strong and enabling National Laws and Security

- member to 39 UN agencies, 39 Regional Organizations; and diplomatic relations with 56 Nations
- Low Level of Crime and Corruption (4<sup>th</sup> in Asia) – (Lowest in South Asia)
- Peace & Happiness as per 2022 Global Index (19<sup>th</sup> out of 163)

- **PTA negotiation with Thailand & Nepal**-advanced + reaching out to 89 other countries for trade
- Member of Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC)
- **Niche product export** to developed countries under EBA & GSP, and GSP for LDCs (global policies)
- **Export promotion and market reach through “Brand Bhutan” approach**
  - **Organic Produce** -BFDA(ISO1765); IFOAM standards; regional/global accreditation
  - legalizing **Brand Bhutan & GI system**

- **SDF waiver for investors**
- **Corporate Income Tax holiday-10 Years** + Sales tax and custom duty rebate for inputs
- **Innovative Finance:** blended finance and impact investment: 10 FDIs for agriculture, *example: Mountain Hazelnut and Wine Grapes*
- Investment Allowance for 14 priority sectors including agriculture

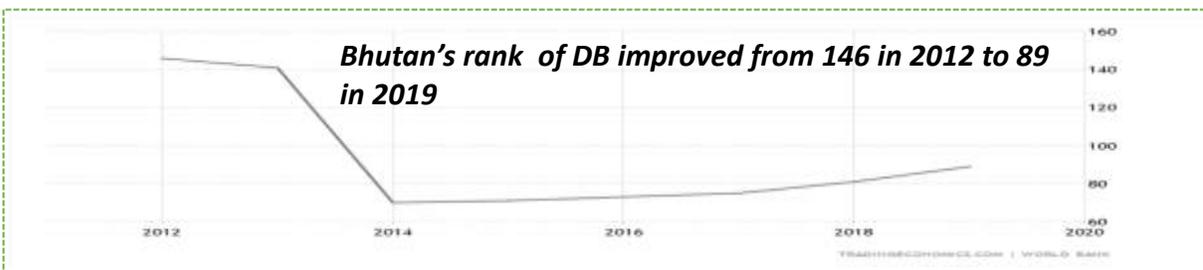
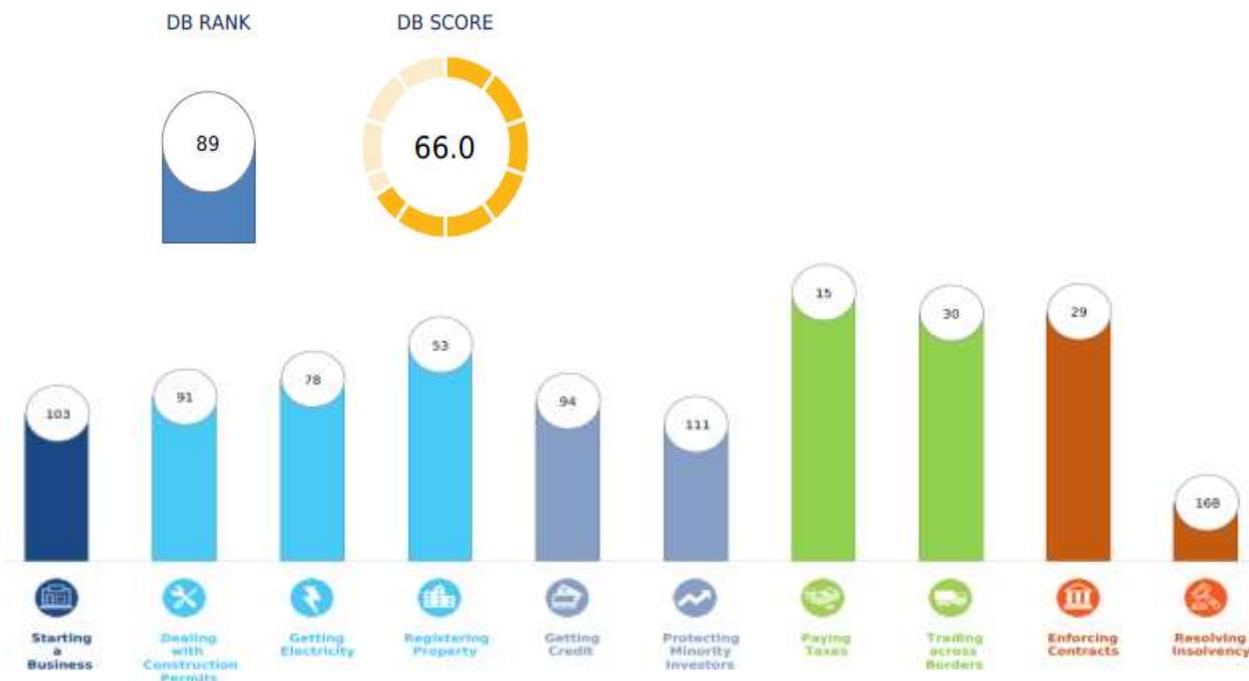
Food and Nutrition Security Policy, Food System Pathways, Strategies (Agrifood Systems, LEDS), Standards (BSB, Organic, GAP), HiHi & One County One Product(OCOP), 5-year and 10-year plans/programmes, actions plans (biosecurity & food safety); Land lease and ownership, strong social and environmental safeguard policy, and vibrant governance system

འབྲུག་གི་ལམ་མི་དང་ལུ་གཤོག་གཙམ་གྱི་ལོ་ ༢༠༠༧ ཅན་མ།  
LABOUR AND EMPLOYMENT ACT OF BHUTAN 2007



# Ease of Doing Business & Critical Reforms to Enable Investments

## ☐ Ease of Doing Business



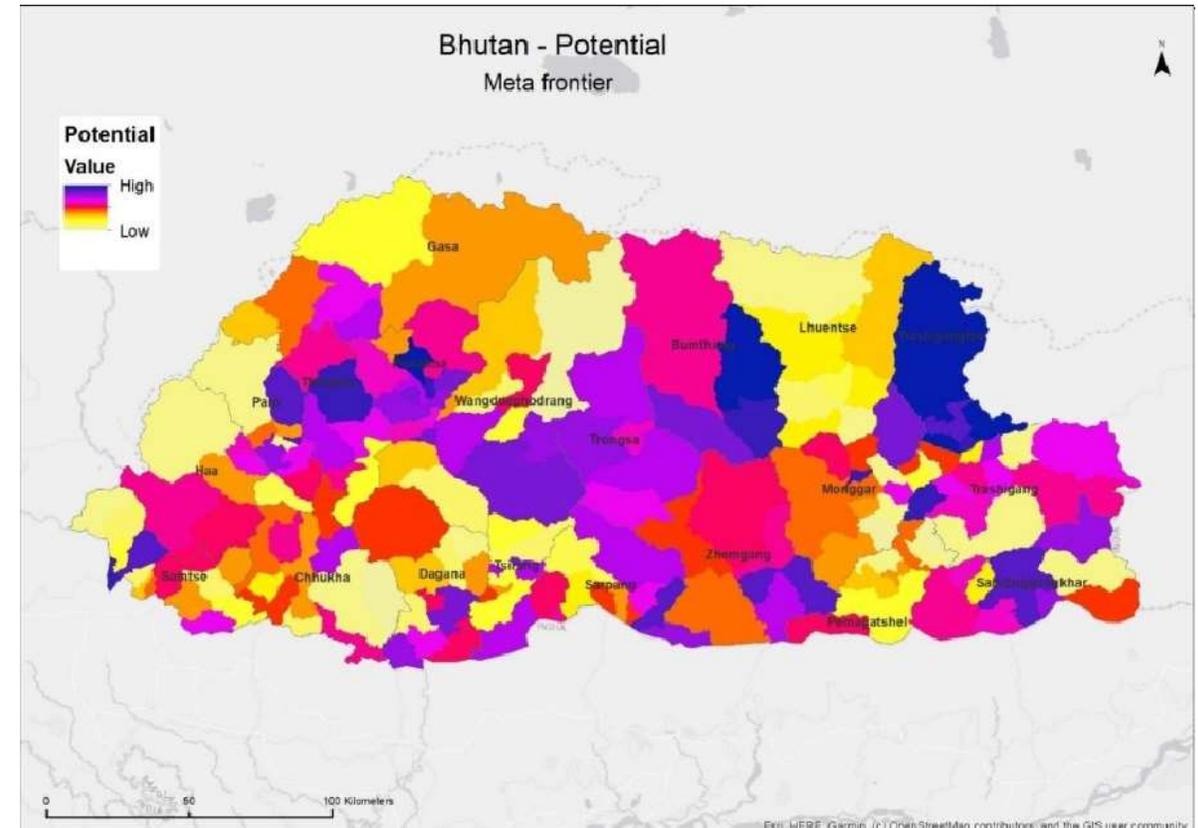
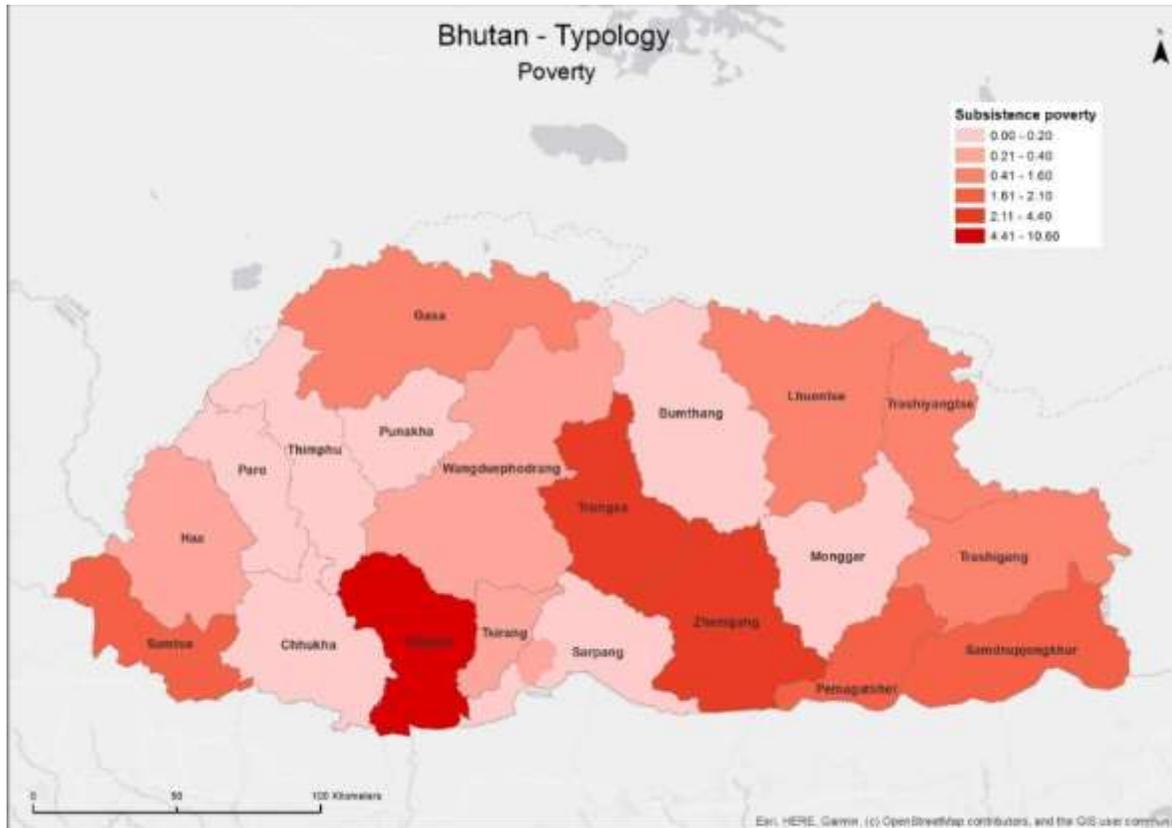
## Critical reforms undertaken to improve ease of doing business

- **Single Window Corporate Registry System**
- **Facilitation of Exports:** *consolidated shipments, improved firm capacity to test and certify products*
- **FDI Policy 19-***allows foreign investments in both the manufacturing and services, more relaxed investment size*

### Improving logistics for investment & trade

- **State land suitability demarcation** for agricultural investment
- **Investment allowance** for 14 high priority sectors (includes- *Agriculture*)
- Establishment of four **Economic Hub** to facilitate primary processing, standardisation, certification, export
- Increasing designated **entry/exit points** + develop **rail link**
- **Negotiating waterways connectivity** and seaports access
- Introducing **Air freight and subsidy**
- HiHi for investment planning and analysis (policy & planning) & capacity enhancement on “*impact investment analysis*”
- **Co-financing** from government+ project-GEF, IFAD, EU (example: USD 4.4 mil allocated for priority commodities)
- **Access to Customs Management System (eCMS)** and Integrated Check Post (ICP) for goods/routes plying to/through India

# Potential for Investment and Returns



Source: Stochastic frontier analysis FAO-HiH task force (2022)

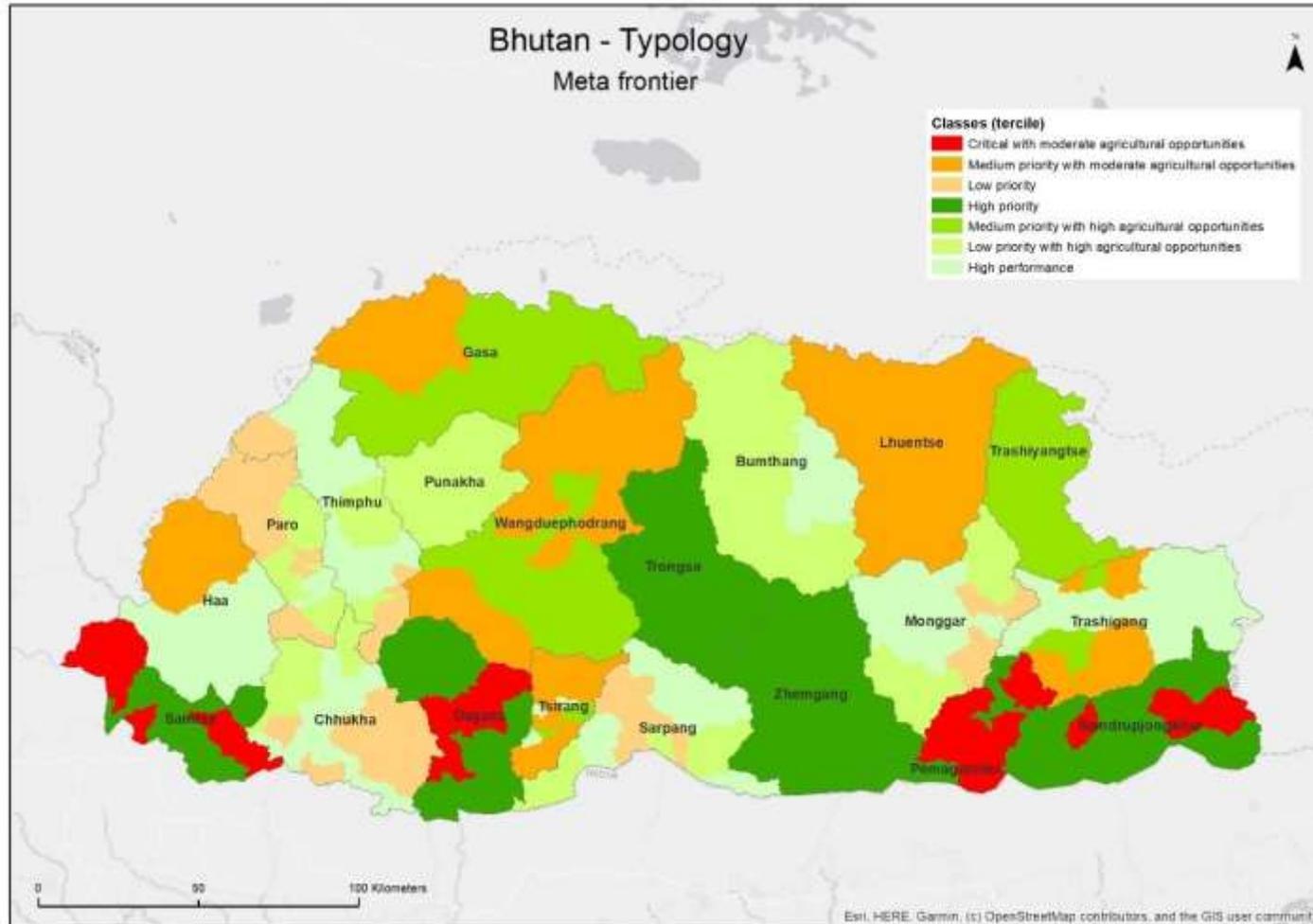
- Poverty rate is estimated at 12.4%
- Poverty in rural areas (17.5%), significantly higher than urban areas (4.2%)

Source: National Statistics Bureau of Bhutan, 2022

- Investments and policies aim at **alleviating** the constraints responsible for this potential left unexploited or not realized area
- Agriculture potential is not confined to one specific region and is distributed across different parts of the country

# Investment Priorities based on Agricultural Typologies

Agricultural typologies map\_ Targeted Locations for Investment



## Priority Value Chains



Source: Stochastic frontier analysis, FAO-HiH task force (2022)

# Investment Case-1: Expansion of Citrus Mandarin Production & Processing

## Opportunity & Reach

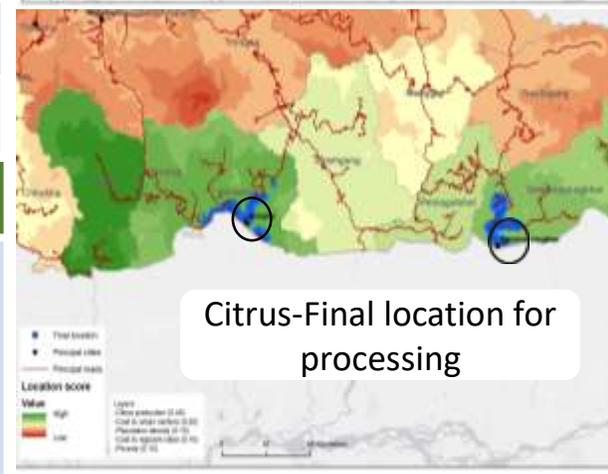
<b>Location</b>	Samdrup Jongkhar, Dagana, Samtse, Pemagatshel, Trongsa, Zhemgang
<b>Target</b>	Production: 5000 acres~28800MT/year, 5000 households
<b>Scope &amp; opportunity</b>	<p>Processing: 3 plants ~30000 Mt/season (cleaning, sorting, grading, packing, standardization, certification)</p> <ul style="list-style-type: none"> <li>Economically viable, climatically suitable, availability of land, water, labour</li> <li>RICH production experience: currently 23 817 growers; growing local + diverse varieties</li> <li>High efficient transportation facilities for collections (engage &gt;6000 trucks of 6MT capacity)</li> <li>CLIMATE CHANGE projects increase in area by 70-120% &amp; production by 100% (RCP 8.5)</li> <li><b>High Demand in Bangladesh:</b> unique flavour and high quality</li> <li>Annual Imports: Bangladeshi &gt;260,000 MT; India &gt;153 000 MT/year, high market opportunity</li> <li>CIF-Bhutan Mandarin at B/desh: US\$0.75 to 1.5/kg, Retail price: US\$2 to 5/kg</li> <li>Investment allowance (5% of the total investment + USD 0.18 mill), tariff free export, tax rebate-inputs</li> </ul>



## Investment and returns (20 years)

Intervention	Investment	FNPV @ 8%	IRR
Production	37.49 Mil USD	14.23 Mil USD	14.23%
Processing	3.59 Mil USD	4.87 Mil USD	54.21%

	Social	Environmental
<b>Impact</b>	<ul style="list-style-type: none"> <li>Net Income Increase: 2846USD/farmer</li> <li>1056 full-time equivalent jobs/year (581 women)</li> <li>Increase business opportunities for youths and private sectors (processing + transportation)</li> <li>Indirect benefits: 20,000 People</li> </ul>	<ul style="list-style-type: none"> <li>GHG emission: <b>-54 815 tCO2e</b></li> <li>Total food loss: 5716 MT/year</li> <li>Water use: 197,147 litres/year</li> <li>Improve biodiversity and land stability</li> </ul>



# Investment Case-2: Expand Quinoa Production & Processing



## Opportunity & Reach

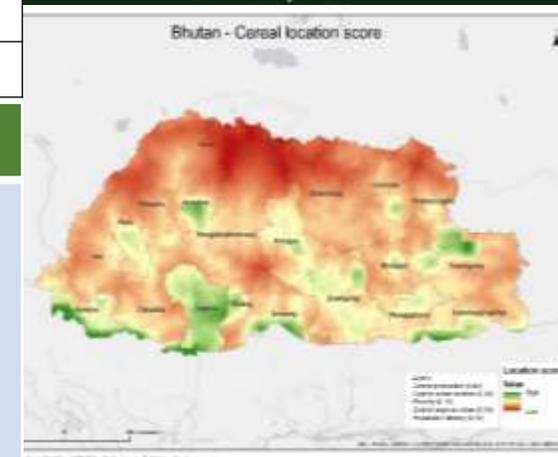
- Location** Samtse, Dagana, Samdrup Jongkhar, Zhemgang, Trongsa, Trashi Yangtse & Wangduephodrang
- Target** **Production:** 4000 acres (4000 Households): 70% (rain-fed), 30% (irrigated); Volume-2360T/year  
**Processing:** Existing-4MT/day; **New-8MT/day** (9 months operation): cleaning, grading, standardization + certify
- 
- Scope & opportunity**
- FAST to make returns; climate resilient; varieties: *Amarilla Marangani* and *Amarilla Saccaca*
  - Grow-on rotation/main crop with maize, potato and paddy; potential (>30 000 acres)
  - High efficient transportation for collection and market reach
  - Demand in Bangladesh after Trade Fair 2023; unique-produce of clean and green system, GAP standard
  - Known for super food; high potential for product diversification
  - Govt. plans for school and hospital feeding to improve nutrition and substitute cereals import
  - Sold at cheaper price (US\$2.7/kg) in the local market against imported price of about US\$6/kg
  - Investment allowance (5% of the total investment + USD 0.18 mill), tax rebate for inputs & tariff free export



## Investment and Returns (20 years)

Intervention	Investment		Returns			
	Rainfed	Irrigated	FNVP @8% (Rainfed)	FNVP@8%(Irrigated)	IRR (Rainfed)	IRR (Irrigated)
<b>Production</b>	7.94 Mil USD	5.82 Mil USD	3.06 Mil USD	3.43 Mil USD	20.05%	29.41%
<b>Processing</b>	1.68 Mil USD		2.09 Mil USD		44.78%	

Impact	Social	Environmental
	<ul style="list-style-type: none"> <li>Net Income Increase: 1 623 USD/farmer</li> <li>893 additional full-time jobs                             <ul style="list-style-type: none"> <li>250 full-time jobs for women</li> </ul> </li> <li>Business opportunities for youths increase + Private sector (processing + transport)</li> <li>Indirect benefits: 1 6000 People</li> </ul>	<ul style="list-style-type: none"> <li>GHG emissions: <b>-22 921 tCO<sub>2</sub>e</b></li> <li>Water use increases by 32 litres in processing</li> <li>Food loss: 101 tonnes of Quinoa as post-harvest loss on farm and 125 tonnes of Quinoa as de-husking loss</li> <li>Improve biodiversity</li> </ul>



# Investment Case-3: Increase Rainbow Trout Production & Processing

## Opportunity & Reach

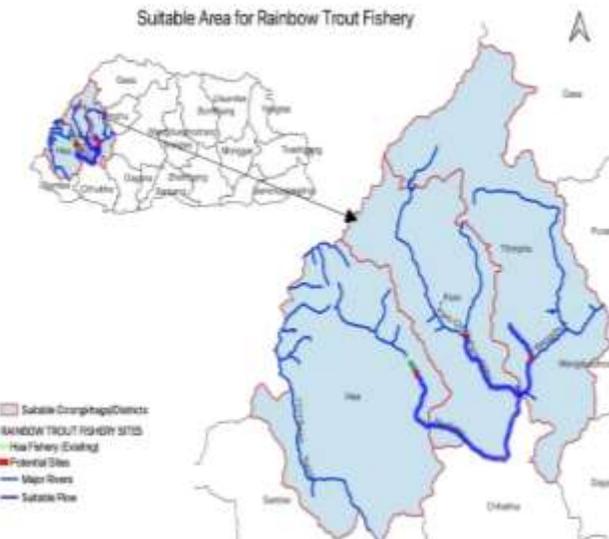
- Location** 3 districts (Haa, Paro, Chukha); Processing plant- Paro
- Target** **Production:** 13 Farms; Volume-72MT/year;  
**Processing:** 600-700kg/day (degutting, cleaning, grading, standardization, packaging + certification)
- Scope & opportunity**
- FAST to make returns
  - Produce under fresh and quality running water system; farmers with production experiences
  - Abundance of FRESH and CLEAN water, scope for upscaling production
  - Competitive in export market- **UNIQUE Value**, being a mountain river based fresh water produce
    - Singapore market (from Bhutan, CIF Singapore at S\$17/kg); currently market price ranges from \$25 to S\$30/kg gutted fish in Singapore market
    - Import substitution and explore high-end hotels + diplomats/business in Bangladesh
    - Investment allowance (5% of the total investment + USD 0.18 mill), tax rebate for inputs & tariff free export



## Investment and Returns (20 years)

Intervention	Investment	FNPV @ 8%	IRR
Production	1.34 Mil USD	0.47 Mil USD	14.32%
Processing	0.50 Mil USD	0.97 Mil USD	44.58%

Impact	Social	Environmental
	<ul style="list-style-type: none"> <li>Net Income Increase: 36154USD/farmer</li> <li>53 additional full-time equivalent jobs</li> <li>Business opportunities for youths and private sectors</li> <li>Indirect benefits: 52 People</li> </ul>	<ul style="list-style-type: none"> <li>GHG emission: <b>552 tCO<sub>2</sub>e</b></li> <li>978 litres of water use/per year at the processing level.</li> <li>Improve biodiversity</li> </ul>



# Investment Case-4: Promote Black Pepper Production

## Opportunity & Reach

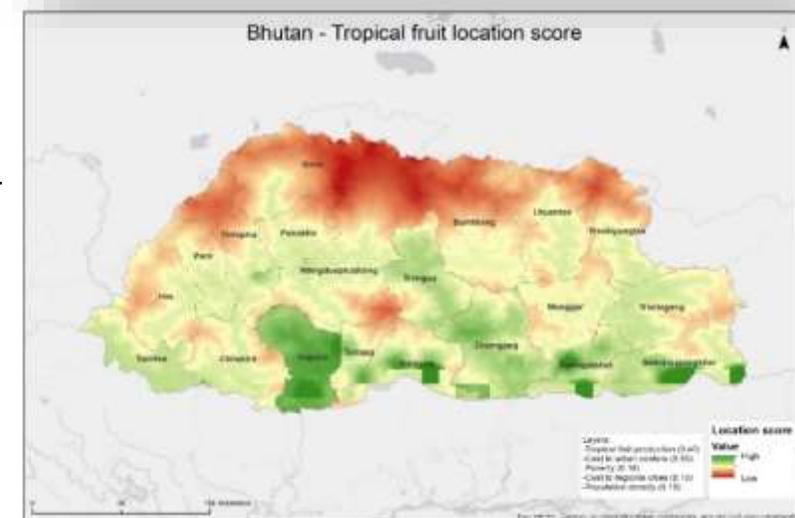
- Location**
  - Five districts: Samtse, Chukha, Sarpang, Samdrup Jongkhar, Dagana
- Target**
  - 3000 acres (3000 Households); Volume-4320MT/year (raw/dried)
- Scope & opportunity**
  - Integrate with Arecanut plantation; highly suitable and economically viable
  - Low requirement of labour and inputs; less prone to pests and diseases
  - ESAY to grow and SUSTAIN returns over 30+ years
  - Easy postharvest management- sun dry
  - High quality and competitive in the border towns of India (could be supplied at <US\$5/kg, against normal price ranges from US\$ 6-8/kg)
  - Opportunity to explore in markets overseas- GAP or Organic standard
  - Unique value-grown under clean and green environment
  - FTA with India; easy access and reach
  - Investment allowance (5% of the total investment + USD 0.18 mill), tax rebate for inputs & tariff free export



## Investment and returns (20 years)

Intervention	Investment	FNPV @ 8%	IRR
Production	9.25 Mil USD	62.15 Mil USD	32.75%

Impact	Social	Environmental
	<ul style="list-style-type: none"> <li>Net Income increase: 20717USD/farmer</li> <li>900 additional full-time equivalent jobs</li> <li>Business opportunity for youths and private sector for transport/aggregator</li> <li>Indirect Benefits: 12 000 People</li> </ul>	<ul style="list-style-type: none"> <li>GHG emission: <b>-68 640tCO<sub>2</sub>e</b></li> <li>Food loss is estimated to be 56 tonnes of pepper per year</li> <li>Improve biodiversity</li> </ul>



Source: Marjan Andrija, (2016) (unpublished) MAH research report

*Black pepper can be grown in arecanut growing areas (sub-tropical/tropical) + adaptable under agroforestry systems*

# Investment Case-5: Expand Organic Asparagus in Open-field Condition



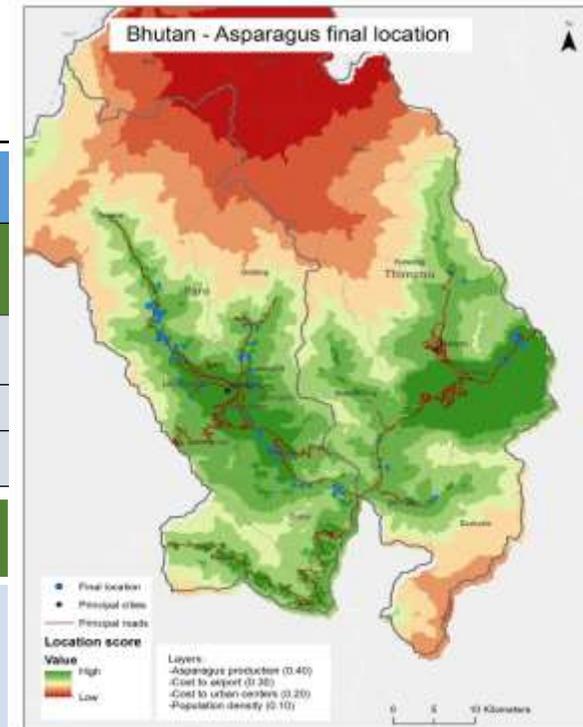
## Opportunity & Reach

- Location**
  - Thimphu and Paro district
- Target**
  - Production:** 1000 ac (2000 Households): 50% (rain-fed) & 50% (irrigated); Volume-900MT/year
  - Processing:** 2 units of 3-7MT/day; cold storage-25 MT and 1 set of reefer trucks for each facility
- Scope & opportunity**
  - Economically viable, climatically suitable, environmental friendly, low pests and diseases
  - Available during the off/lean-season for other vegetables
  - Availability of land & labour, upscale in all temperate region + production experience
  - Highly sought vegetable in Singapore market, no issues with volume and quality
  - Organic produce- competitive for quality and opportunity for better price
  - High scope in Bangladesh and Indian market,
    - India imports from Thailand and Netherlands; Can offer at <US\$15 (current selling price is US\$25-30/kg) in Bangladesh Market
  - Investment allowance (5% of the total investment + USD 0.18 mill), tax rebate-inputs & tariff free export

## Investment and Returns ( 20 years)

Intervention	Investments		Returns			
Production	Rainfed	Irrigated	FNPV @8% (Rainfed)	FNPV@8%(Irrigated)	IRR (Rainfed)	IRR (Irrigated)
		1.54 Mil USD	3.18 Mil USD	0.92 Mil USD	2.39 Mil USD	15.50%
Processing	0.65 Mil USD		3.41 Mil USD		24.06%	

Impact	Social	Environmental
	<ul style="list-style-type: none"> <li>Net Income Increase-USD1655/hh</li> <li>Employment 206 direct/full time equivalent</li> <li>Business for youth and private sector increase</li> <li>Indirect benefits: 8000 People</li> </ul>	<ul style="list-style-type: none"> <li>GHG emission: -255.8tCO<sub>2</sub>e<sub>q</sub></li> <li>Food loss: 30 tones/year (transport &amp; handling)</li> <li>Land stabilization</li> </ul>

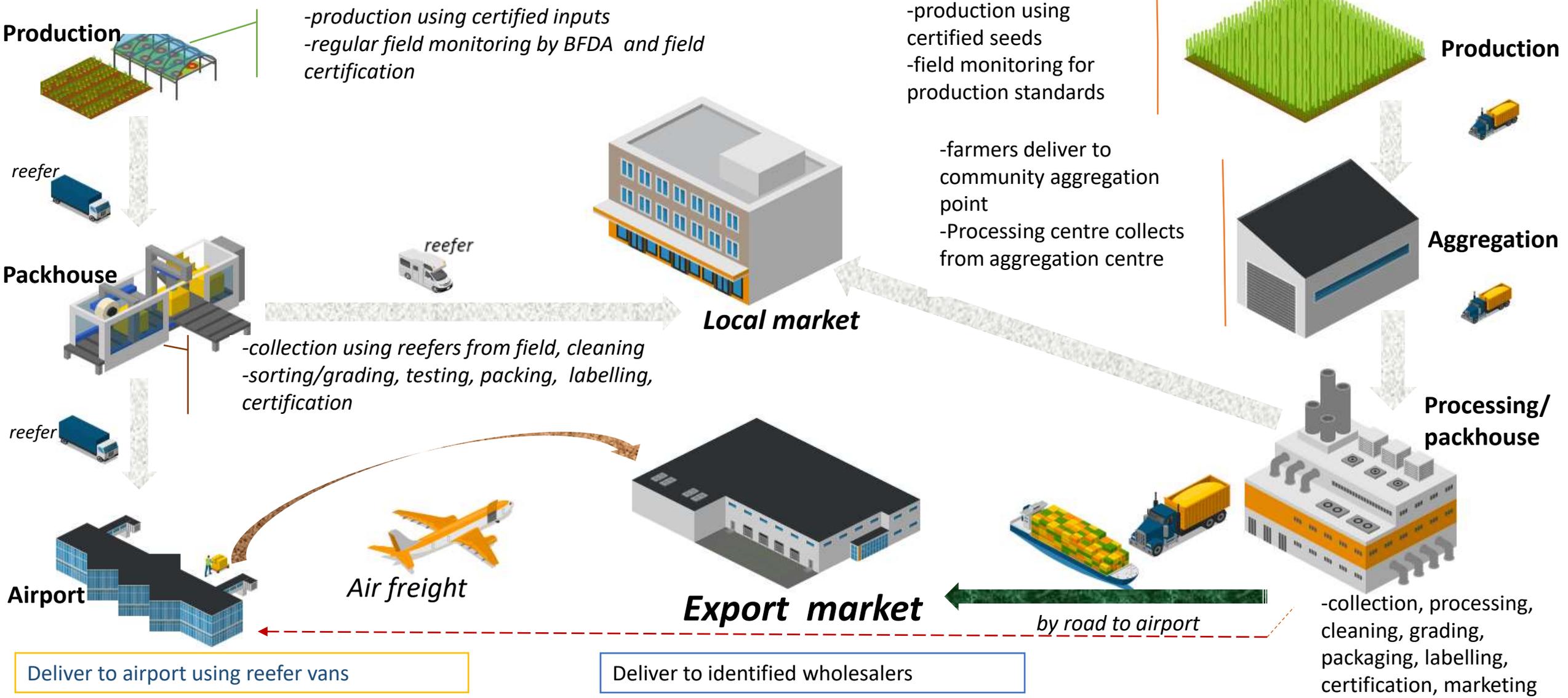


# Supply Chain and Logistics Arrangement Plan

Asparagus, Trout



Quinoa, Citrus, Black Pepper



# BHUTAN'S INVESTMENT PLAN & IMPACT SUMMARY



<b>US\$73M</b> Total Investment	<b>30%</b> Overall Average IRR	<b>14013</b> Households Beneficiaries	<b>US\$630</b> Income Increase Per Capita	<b>0.52tCO2eq</b> Emission Reduction Per Capita
------------------------------------	-----------------------------------	--	--	--

## KEY INVESTMENTS

1

**Intervention**  
Citrus: i) Production ii) Packhouse

**Cost (USD)**  
i) US\$37.49M ii) 3.59M

**IRR (%)**  
i) 14.23% ii) 54.21%

**NPV**  
i) US\$14.20M ii) US\$4.87M

**Sustainability Benefits**  
Beneficiaries: 5000 households  
Indirect Beneficiary: 20 000 People  
Income increase per capita: US\$142  
Emission reduction per capita: 1.17 tCO2eq

2

**Intervention**  
Quinoa Production  
i) rainfed ii) irrigated iii) processing

**Cost (USD)**  
i) US\$7.94M ii) US\$5.82M iii) US\$1.68M

**IRR (%)**  
i) 20.05% ii) 29.41% iii) 44.78%

**NPV**  
i) US\$3.06M ii) US\$3.43M iii) US\$2.09M

**Sustainability Benefits**  
Beneficiaries: 4000 households  
Indirect Beneficiaries: 16000 People  
Income increase per capita: US\$81.13  
Emission reduction per capita: 0.39tCO2eq

3

**Intervention**  
i) Trout production ii) Trout processing

**Cost (USD)**  
i) US\$1.34M ii) US\$0.50M

**IRR (%)**  
i) 14.32% ii) 44.58%

**NPV**  
i) US\$0.47M iii) US\$0.97M

**Sustainability Benefits**  
Beneficiaries: 13 farms  
Indirect Beneficiaries: 52 People  
Income increase per capita: US\$1807.70  
Emission reduction per capita: i) -0.16 tCO2eq

Note: NPV@8%, 20-year cycle, spill over beneficiaries not included, per capita income increase (discounted net) and GHG per capita included only for farm level

# BHUTAN'S INVESTMENT PLAN & IMPACT SUMMARY



Food and Agriculture Organization  
of the United Nations



Hand-in-Hand  
Initiative

**US\$73M**  
Total Investment

**30%**  
Overall  
Average IRR

**14013**  
Households  
Beneficiaries

**US\$630**  
Income Increase  
Per Capita

**0.52tCO<sub>2</sub>eq**  
Emission Reduction  
Per Capita

## KEY INVESTMENTS

4

### Intervention

Black Pepper

#### Cost (USD)

US\$9.25M

#### IRR (%)

32.75%

#### NPV

US\$62.15M

#### Sustainability Benefits

Beneficiaries: 3000 households

Indirect Beneficiaries: 12000 People

Income increase per capita:  
US\$1035.85

Emission reduction per capita:  
1.18tCO<sub>2</sub>eq

5

### Intervention

Asparagus production: i) Rainfed  
ii) Irrigated iii) Central packhouse

#### Cost (USD)

i) US\$1.54M ii) US\$3.18M iii) US\$0.65M

#### IRR (%)

i) 15.50% ii) 20.65% iii) 24.06%

#### NPV

i) US\$0.92M ii) US\$2.40M iii) US\$3.41M

#### Sustainability Benefits

Beneficiaries: 2000 households

Indirect Beneficiaries: 8000 People

Income increase per capita:  
US\$83.00

Emission reduction per capita:  
0.03tCO<sub>2</sub>eq

Note: NPV@8%, 20-year cycle, spill over beneficiaries not included, per capita income increase (discounted net) and GHG included only for farm level