Leveraging Opportunities for Investment in Agrifood Systems in Bhutan

Hand-in-Hand Investment Forum | Rome-Italy | 17-20 October 2023
Overview of Bhutan and Agrifood Systems

BHUTAN

<table>
<thead>
<tr>
<th>Land area</th>
<th>Population</th>
<th>GDP (USD Mil)</th>
<th>GDP per capita (USD)</th>
<th>Poverty rate</th>
<th>Unemployment rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>38 394 Km²</td>
<td>770 276</td>
<td>2 898</td>
<td>3 833</td>
<td>12.4% (NSB 2022)</td>
<td>5.9%, Youth (28.6%)</td>
</tr>
</tbody>
</table>

Economy: Agriculture, Tourism, Industry

Climatic condition: Humid Subtropical - Warm Temperate - Cold Alpine

Special features: Unique Geographical Location; Pristine Environment; Rich Biodiversity; Clean & Green Farming; Carbon Neutral; 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

Overall agrifood trade balance: -168 Mil USD (2022)
Enabling Environment for Investment in Agriculture Sector

1. Land availability
   - Arable land
     - Permanent crop 11%
     - Fallow land 27%
     - Annual crops 53%

   Land holdings + state land lease

2. Economically active population

3. Abundance & access to quality water
   - Per Capita fresh water: 94,500 m³

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
   - 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

Availability and Access to Resources

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

Source: FAO-HiH analysis team
Enabling Environment for Market access, Accelerated Trade and Economic Growth

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

- Upgrading domestic airport to international airport
- Mega dry ports in entry-exit points
- Outbound flights are normally with half-filled cargo space

4. Increasing access to export market

- India
- Bangladesh
- Singapore
- Thailand
- Nepal

- “Bhutan positioning itself at 30th 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”

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 (4th in Asia) – (Lowest in South Asia)
- Peace & Happiness as per 2022 Global Index (19th 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
Ease of Doing Business & Critical Reforms to Enable Investments

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

Critical reforms undertaken to improve ease of doing business

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

Bhutan’s rank of DB improved from 146 in 2012 to 89 in 2019
Potential for Investment and Returns

• 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

Source: Stochastic frontier analysis FAO-HiH task force (2022)
Investment Priorities based on Agricultural Typologies

**Priority Value Chains**

- **Citrus Mandarin**
- **Quinoa**
- **Rainbow Trout**
- **Black Pepper**
- **Organic Asparagus**

Agricultural typologies map_ Targeted Locations for Investment

Source: Stochastic frontier analysis, FAO-HiH task force (2022)
Investment Case-1: Expansion of Citrus Mandarin Production & Processing

Opportunity & Reach

Location
Samdrup Jongkhar, Dagana, Samtse, Pemagatshel, Trongsa, Zhemgang
Production: 5000 acres~28800MT/year, 5000 households

Target
Processing: 3 plants ~30000 Mt/season (cleaning, sorting, grading, packing, standardization, certification)

Scope & opportunity
• Economically viable, climatically suitable, availability of land, water, labour
• RICH production experience: currently 23 817 growers; growing local + diverse varieties
• High efficient transportation facilities for collections (engage >6000 trucks of 6MT capacity)
• CLIMATE CHANGE projects increase in area by 70-120% & production by 100% (RCP 8.5)
• High Demand in Bangladesh: unique flavour and high quality
• Annual Imports: Bangladeshi >260,000 MT; India >153 000 MT/year, high market opportunity
• CIF-Bhutan Mandarin at B/desh: US$0.75 to 1.5/kg, Retail price: US$2 to 5/kg
• Investment allowance (5% of the total investment + USD 0.18 mill), tariff free export, tax rebate-inputs

Investment and returns (20 years)

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Investment</th>
<th>FNPV @ 8%</th>
<th>IRR</th>
</tr>
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<tbody>
<tr>
<td>Production</td>
<td>37.49 Mil USD</td>
<td>14.23 Mil USD</td>
<td>14.23%</td>
</tr>
<tr>
<td>Processing</td>
<td>3.59 Mil USD</td>
<td>4.87 Mil USD</td>
<td>54.21%</td>
</tr>
</tbody>
</table>

Impact

Social
• Net Income Increase: 2846USD/farmer
• 1056 full-time equivalent jobs/year (581 women)
• Increase business opportunities for youths and private sectors (processing + transportation)
• Indirect benefits: 20,000 People

Environmental
• GHG emission: -54 815 tCO2e
• Total food loss: 5716 MT/year
• Water use: 197,147 litres/year
• Improve biodiversity and land stability
### 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)

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Rainfed</th>
<th>Irrigated</th>
</tr>
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<tr>
<td>Production</td>
<td>FNPV @8% (Rainfed)</td>
<td>FNVP@8% (Irrigated)</td>
</tr>
<tr>
<td></td>
<td>7.94 Mil USD</td>
<td>5.82 Mil USD</td>
</tr>
<tr>
<td>Processing</td>
<td>1.68 Mil USD</td>
<td></td>
</tr>
</tbody>
</table>

### Impact

- **Social**
  - Net Income Increase: 1623USD/farmer
  - 893 additional full-time jobs
  - 250 full-time jobs for women
  - Business opportunities for youths increase +Private sector (processing + transport)
  - Indirect benefits: 16000 People

- **Environmental**
  - GHG emissions: -22 921 tCO2e
  - Water use increases by 32 litres in processing
  - Food loss: 101 tonnes of Quinoa as post-harvest loss on farm and 125 tonnes of Quinoa as de-husking loss
  - Improve biodiversity
Investment Case-3: Increase Rainbow Trout Production & Processing

**Opportunity & Reach**

**Location**
3 districts (Haa, Paro, Chukha); Processing plant- Paro

**Production:** 13 Farms; Volume-72MT/year;

**Target**

**Processing:** 600-700kg/day (degutting, cleaning, grading, standardization, packaging + certification)

- 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)**

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<tr>
<td>Production</td>
<td>1.34 Mil USD</td>
<td>0.47 Mil USD</td>
<td>14.32%</td>
</tr>
<tr>
<td>Processing</td>
<td>0.50 Mil USD</td>
<td>0.97 Mil USD</td>
<td>44.58%</td>
</tr>
</tbody>
</table>

**Impact**

**Social**
- Net Income Increase: 36154USD/farmer
- 53 additional full-time equivalent jobs
- Business opportunities for youths and private sectors
- Indirect benefits: 52 People

**Environmental**
- GHG emission: 552 tCO2e
- 978 litres of water use/per year at the processing level.
- Improve biodiversity
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 Areca nut 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

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<th>FNPV @ 8%</th>
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<tbody>
<tr>
<td>Production</td>
<td>9.25 Mil USD</td>
<td>62.15 Mil USD</td>
<td>32.75%</td>
</tr>
</tbody>
</table>

**Impact**

**Social**
- Net Income increase: 20717USD/farmer
- 900 additional full-time equivalent jobs
- Business opportunity for youths and private sector for transport/aggregator
- Indirect Benefits: 12 000 People

**Environmental**
- GHG emission: -68 640tCO2e
- Food loss is estimated to be 56 tonnes of pepper per year
- Improve biodiversity

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, environmentally 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)

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<tr>
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<tbody>
<tr>
<td>Production</td>
<td>Rainfed</td>
<td>Irrigated</td>
</tr>
<tr>
<td></td>
<td>1.54 Mil USD</td>
<td>3.18 Mil USD</td>
</tr>
<tr>
<td>Processing</td>
<td>0.65 Mil USD</td>
<td>3.41 Mil USD</td>
</tr>
</tbody>
</table>

### Impact
- **Social**
  - Net Income Increase-USD1655/hh
  - Employment 206 direct/full time equivalent
  - Business for youth and private sector increase
  - Indirect benefits: 8000 People

### Environmental
- GHG emission: -255.8tCO2eq
- Food loss: 30 tones/year (transport & handling)
- Land stabilization
Supply Chain and Logistics Arrangement Plan

Asparagus, Trout

Production
- production using certified inputs
- regular field monitoring by BFDA and field certification
Packhouse
- collection using reefers from field, cleaning
- sorting/grading, testing, packing, labelling, certification
Airport
- deliver to airport using reefer vans

Quinoa, Citrus, Black Pepper

Production
- production using certified seeds
- field monitoring for production standards
Aggregation
- farmers deliver to community aggregation point
- Processing centre collects from aggregation centre
Processing/packhouse
- collection, processing, cleaning, grading, packaging, labelling, certification, marketing
Local market
- processing centre collects from aggregation centre
Export market
- delivered by road to airport
Deliver to identified wholesalers
BHUTAN’S INVESTMENT PLAN & IMPACT SUMMARY

<table>
<thead>
<tr>
<th>KEY INVESTMENTS</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intervention</strong></td>
<td>Citrus: i) Production ii) Packhouse</td>
<td>Quinoa Production i) rainfed ii) irrigated iii) processing</td>
<td>Trout production i) Trout processing ii) Trout processing</td>
</tr>
<tr>
<td><strong>Cost (USD)</strong></td>
<td>US$37.49M ii) 3.59M</td>
<td>US$7.94M ii) US$5.82M iii) US$1.68M</td>
<td>US$1.34M ii) US$0.50M</td>
</tr>
<tr>
<td><strong>IRR (%)</strong></td>
<td>i) 14.23% ii) 54.21%</td>
<td>i) 20.05% ii) 29.41% iii) 44.78%</td>
<td>i) 14.32% ii) 44.58%</td>
</tr>
<tr>
<td><strong>NPV</strong></td>
<td>US$14.20M ii) US$4.87M</td>
<td>US$3.06M ii) US$3.43M iii) US$2.09M</td>
<td>US$0.47M ii) US$0.97M</td>
</tr>
<tr>
<td><strong>Sustainability Benefits</strong></td>
<td>Beneficiaries: 5000 households Indirect Beneficiary: 20 000 People Income increase per capita: US$142 Emission reduction per capita: 1.17 tCO2eq</td>
<td>Beneficiaries: 4000 households Indirect Beneficiaries: 16000 People Income increase per capita: US$81.13 Emission reduction per capita: 0.39tCO2eq</td>
<td>Beneficiaries: 13 farms Indirect Beneficiaries: 52 People Income increase per capita: US$1807.70 Emission reduction per capita: i) -0.16 tCO2eq</td>
</tr>
</tbody>
</table>

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 beneficiaries.
## BHUTAN’S INVESTMENT PLAN & IMPACT SUMMARY

<table>
<thead>
<tr>
<th>US$73M</th>
<th>30%</th>
<th>14013</th>
<th>US$630</th>
<th>0.52tCO2eq</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Investment</td>
<td>Overall Average IRR</td>
<td>Households Beneficiaries</td>
<td>Income Increase Per Capita</td>
<td>Emission Reduction Per Capita</td>
</tr>
</tbody>
</table>

### KEY INVESTMENTS

#### 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: 1.18tCO2eq

#### 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: 0.03tCO2eq

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