Food and Agriculture Organization of the United Nations

Hand-in-Hand Initiative

Bangladesh

for 2023 Investment Forum
Outline

1. Bangladesh at a glance

2. Why invest in Bangladesh

3. Overview of Investment Opportunities:
   - Develop Multiple Cold Storage facilities
   - Develop Agroprocessing facilities
   - Efficient irrigation and water management
   - Speed breeding & CSA: Distribute Climate Smart Rice seed
Section 1: Overview of Bangladesh

170M
8th highest Population, Density 1,200/Km²

USD 2,657
(in current price)
Per capita income in 2022-23

580km
Of coastline containing the Sunderbans, a complex mangrove ecosystem

1/3rd
Of all area is wetlands, characterized by unique haors

~11%
Of GDP is from the agriculture sector

~45%
Of the labour force works in agriculture

Source: BBS
Section 2: Why Invest in Bangladeshi agriculture

1. Rapid national progress over the years, with specific future goals
2. Agriculture sector strong driver of employment and economy
3. The government is heavily investing in infrastructure and attractive fiscal policy
Section 2: Why Invest in Bangladeshi agriculture

Rapid national successes….

• +300% GDP per capita since 2013
• Achieved Lower-Middle Income status in 2015
• 18.7% absolute Poverty rate; halved from 2005 to 2022
• Decline in undernourishment by 25% since 2000

...combined with specific goals

• LDC graduation by 2026
• Upper-Middle Income status by 2031, High Income status by 2041
• Decreased agricultural emissions to meet NDC targets
• Growing processed food market to ~USD 6bn by 2030

Source: BBS, 2023; MoA, 2023; FICCI, 2021; FAO, 2023
Section 2: Why Invest in Bangladeshi agriculture

The agriculture sector presents huge opportunity for impact: it is core to the economy (11%), growing fast, and employs 45% of the workforce.

- Globally, a Top-3 producer of rice, vegetables, onion, jackfruit, and jute.
- Top-7 producer of Tea, Potato and Mango.

Source: World Bank, 2021; DAE 2022; FAO 2022
Section 2: Why Invest in Bangladeshi Agriculture

**Rapid infrastructure development underway**

- Building 100 Special Economic Zones
- New deepwater port and 4th international airport being built
- New government facilities to ensure high quality of export-ready products

**Fiscal policies being rolled out to support foreign investment and exports**

- Exemption on regular tax for new agro investments
- Free Trade Agreements that reduce trade costs
- 20% cashback incentives for export

**Government agencies to support private sector investments, including through Bangladesh Delta Plan 2100 and Mujib Climate Prosperity Plan - Decade 2030**

Source: BIDA
Section 2: Strong and growing investment pipeline

- **Ministry of Agriculture funding is very strong**
  - Investment + commits of USD 3.2bn

- **USD 1bn+ commits from development partners**
  - e.g. USD 543M PARTNER program signed

- **Growing interest from private sector**
  - USD 1bn interest
  - **Bangladesh Agriculture Investment Forum** held in Aug 2023 drew formal expressions of interest for investment

Multistakeholder collaborations and joint fundraising also being facilitated by FAO’s Hand in Hand Initiative

Source: Ministry of Finance, ADP 2023-24 (July 2023)
Section 3: HiH investments tackle 7 critical value chains

Production (million MT)

- Rice
- Wheat
- Maize
- Potato
- Pulse
- Oil seed
- Vegetables
- Mango
- Jackfruit
- Tomato
- Pineapple

- Post harvest losses are 25-40%
- Agro Processing at ~15% of agriculture sector; **high export potential**
- Seasonal water scarcity impacts horticulture

Top 3 producer of rice; production threatened by climate effects; global supply by export ban in India (July 2023)

Source: FAOSTAT and BBS, 2023

HiH investments

1. Develop cold storage facilities
2. Develop Agroprocessing facilities
3. Distribute alternative drip irrigation kits
4. Distribute climate resilient rice seed
Section 3: Target investment areas chosen based on typologies (not exhaustive)

**further tuning might require**
Opportunity 1: Develop Multipurpose Cold Storage Facilities
## Opportunity 1: Develop Multipurpose Cold Storage Facilities

### Investment Overview

<table>
<thead>
<tr>
<th>Business model:</th>
<th>Investments needed</th>
<th>Risks &amp; mitigation</th>
</tr>
</thead>
</table>
| Farmers and farmer groups rent cold storage space; services to be financed using credit vouchers in existing e-voucher system | USD 432mn | - Interrupted power supply; mitigated by using solar energy  
- Lowered uptake in the past driven by high rental cost and financial insolvency to be mitigated with farmer-friendly financial solutions |

### Why invest in Cold Storage?

- Win-win for all stakeholders due to reduced:
  - Price volatility for consumers
  - Income volatility for farmers
  - Reduced import dependency
  - Improved food quality and safety
  - Improved farmer incomes

### Investment Outlay

Build ~1100 multipurpose cold storage facilities of 2000MT capacity each; which can store 6 key value chains
### Opportunity 1: Develop Multipurpose Cold Storage Facilities

<table>
<thead>
<tr>
<th><strong>USD ~396M Investment</strong> for selected VCs</th>
<th>~15-18% <strong>Overall IRR</strong></th>
<th>~3.5M <strong>Beneficiaries</strong></th>
<th>~USD 251 <strong>Extra-Income Per Farmer</strong></th>
<th>~6M T <strong>Emission Reduction</strong></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>Investment goal</strong></th>
<th>Incremental 5% capacity</th>
<th>Incremental 15% capacity</th>
<th>Incremental 30% capacity</th>
<th>Incremental 30% capacity</th>
<th>Incremental 30% capacity</th>
<th>Incremental 30% capacity</th>
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</thead>
<tbody>
<tr>
<td><strong>Selling markets</strong></td>
<td>100% domestic</td>
<td>100% domestic</td>
<td>100% domestic</td>
<td>20% to Gulf, EU, USA, Japan</td>
<td>30% to Gulf, EU, USA, Japan</td>
<td>30% to Gulf, EU, USA, Japan</td>
</tr>
<tr>
<td><strong>Investment need (USD)</strong></td>
<td>~82M</td>
<td>~58M</td>
<td>~26M</td>
<td>~70M</td>
<td>~63M</td>
<td>~12M</td>
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<tr>
<td><strong>IRR (%)</strong></td>
<td>~15%</td>
<td>~16%</td>
<td>~17%</td>
<td>~18%</td>
<td>~15%</td>
<td>~17%</td>
</tr>
<tr>
<td><strong>VPN (USD)</strong></td>
<td>~27M</td>
<td>~22M</td>
<td>~9M</td>
<td>~26M</td>
<td>~21M</td>
<td>~4M</td>
</tr>
<tr>
<td><strong>Beneficiaries</strong></td>
<td></td>
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<tr>
<td>Direct</td>
<td>30,300</td>
<td>306,000</td>
<td>8,800</td>
<td>146,000</td>
<td>187,000</td>
<td>17,000</td>
</tr>
<tr>
<td>Indirect</td>
<td>123,000</td>
<td>1,243,000</td>
<td>35,000</td>
<td>590,000</td>
<td>760,000</td>
<td>70,000</td>
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<tr>
<td><strong>Income increase per farmer (USD)</strong></td>
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<td></td>
<td>~164 /yr</td>
<td>~243 /yr</td>
<td>~410 /yr</td>
<td>~317 /yr</td>
<td>~214 /yr</td>
<td>~339 /yr</td>
</tr>
<tr>
<td><strong>Emission reduction (tonnes of CO2-e)</strong></td>
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<tr>
<td></td>
<td>~1.9M</td>
<td>~1.5M</td>
<td>~0.5M</td>
<td>~1.0M</td>
<td>~0.17M</td>
<td>~0.3M</td>
</tr>
</tbody>
</table>
Opportunity 2: Develop Agroprocessing Facilities
## Opportunity 2: Develop Agroprocessing Facilities

### Investment Overview

<table>
<thead>
<tr>
<th>Business model:</th>
<th>Processing facilities enter offtaker contracts with farmers and manufacture higher value products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investment needed</td>
<td>USD 242mn</td>
</tr>
</tbody>
</table>
| Risks & mitigation | • Issues with power can be mitigated by using solar energy  
• Shortage of skilled staff to be mitigated through training programs |

### Why invest in Agroprocessing?

- Win-win for all stakeholders due to increased:
  - Value addition for produce
  - Export potential
  - Income for farmers; reduced PHL
  - Food quality, longevity, and safety
  - Reduced dependence on import

<table>
<thead>
<tr>
<th>Develop 4% of production into chips</th>
<th>Develop 10% of production into juice and pulp</th>
<th>Develop 10% of production into chips</th>
</tr>
</thead>
<tbody>
<tr>
<td>40 facilities of 10,000MT each</td>
<td>12 facilities of 10,000MT each</td>
<td>10 facilities of 10,000MT each</td>
</tr>
<tr>
<td>Reach of 88,000 producers</td>
<td>Reach of 48,000 producers</td>
<td>Reach of 63,000 producers</td>
</tr>
<tr>
<td><strong>Investment</strong></td>
<td><strong>Selling markets</strong></td>
<td><strong>Investment need (USD)</strong></td>
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<tr>
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</tr>
<tr>
<td>USD ~242M for selected VCs</td>
<td>Convert 4% of potato production to chips</td>
<td>50% to the Gulf 50% domestic</td>
</tr>
<tr>
<td>22-39% IRR</td>
<td>Convert 10% of mango to juice and pulp</td>
<td>100% to the Gulf, EU, USA, Japan</td>
</tr>
<tr>
<td>~1M Beneficiaries</td>
<td>Convert 10% of jackfruit production to chips</td>
<td>50% to Gulf, EU, USA, Japan 50% domestic</td>
</tr>
<tr>
<td>~1.5M T Emission Reduction</td>
<td>~1.5M T Emission Reduction</td>
<td>~1.5M T Emission Reduction</td>
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</tbody>
</table>
Opportunity 3: Efficient irrigation and water management
Opportunity 3: Efficient irrigation and water management

Priorities: Buried pipes, drip and sprinkle irrigation; water harvesting; eliminating water logging

Example: for tomato

Why drip irrigation?
Drip irrigation allows irrigation with savings on:
• Water usage
• Energy as less groundwater gets pumped
• Time and Labor due to efficiency gain
• Inputs such as fertilizers and pesticide
• Diseases by minimizing water contact with leaves, stems and fruit of plants

Investment Overview
• Distribution of low-cost drip irrigation kit to tomato farmers in high producing regions to cover up to 8,000 Ha (or 50% of major tomato producing areas) by 2030

- Heavy reliance on imports
- Dramatic price swings
- Increasing yields through drip irrigation will boost domestic supply; potentially reducing swings
Opportunity 3: Drip irrigation for tomato cultivation

Business model:
- Farmers purchase low-cost drip irrigation toolkit from distributor company, which runs training programs to ensure proper dissemination

Investment needed: ~USD 7M

Financials
- NPV: ~1.4 M
- IRR: ~14%

Sustainability Benefits
- Beneficiaries: Direct ~0.18M farmers, Indirect ~0.72M
- New jobs created: ~180
- Additional profit per farmer: USD 186 p.a.

Risks & mitigation:
- Level of uptake of the drip irrigation may be ensured by temporary subsidy; HYV to be adopted to get full yields’ improvement of drip irrigation
Opportunity 4: Speed breeding & Climate smart agriculture - Distribute Climate Resilient Rice Seed
## Opportunity 4: CSA--Distribute Climate Resilient Rice Seed

### The case for prioritizing rice production

- Rice forms 5% of GDP
- 93% of irrigation water goes to rice
- Rice is prioritized for CSA

### Rice production faces climate challenges

- Saline intrusion affecting the South
- Water scarcity affecting the North
- Serious threats posed by climate change which may reduce available cropland by 24%

### Investment Overview

- **Seed development, sales, and distribution:**
  - Drought resistant short-duration *Aman/Aus* rice varieties on 30% of current rice area in Barind area (north-west) (1.15M ha)
  - Salt resistant short-duration *Aman/Aus* rice varieties on 30% of current rice area in Khulna, Barisal and Chattogram (1.26M ha)
Opportunity 4: Distribute Climate Resilient Rice Seed – operating model

- Buy breeding seeds of drought resistant & saline resistant varieties
- Through contract farmers multiply certified HYV seeds and then store them
- Rent, seed drying, processing, grading and storage facilities
- Provisions seeds to farmers over the years through dealers and increase area covered by the new seeds
Opportunity 4: Distribute Climate Resilient Rice Seed

**Business model:**
- Farmers purchase saline and/or drought resistant seed from distributor company, which runs training programs to ensure proper dissemination

<table>
<thead>
<tr>
<th>Financials</th>
<th>Investment needed</th>
<th>~USD 180M</th>
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</thead>
<tbody>
<tr>
<td>NPV</td>
<td>~218 M</td>
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<tr>
<td>IRR</td>
<td>~26%</td>
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</table>

**Sustainability Benefits**

<table>
<thead>
<tr>
<th>Beneficiaries:</th>
<th>New jobs created</th>
<th>~4,400</th>
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</thead>
<tbody>
<tr>
<td>Direct</td>
<td>Additional profit per farmer</td>
<td>USD 365 p.a.</td>
</tr>
<tr>
<td>~4.4M farmers</td>
<td>Emissions saved (T CO$_2$-e)</td>
<td>~11.7M</td>
</tr>
<tr>
<td>Indirect</td>
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<tr>
<td>~20M</td>
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**Risks & mitigation**
- Shortage of skilled staff to run high quality training programs, extension services and communication campaigns on quality seeds to be mitigated by proper resourcing
Further investment opportunities-estimates ongoing

Production, multiplication and distribution of non-rice stress tolerant varieties

Mini low-cost solar powered community cold storage & processing facilities
Expanding Fertilizer storage

Speed breeding; biotech research-gene editing;
Smart and precision agriculture using 4IR Technology; IPM/ICM/GAP

HR & Institutional Capacity for research, extension, regulation and governance

Scale up investments in buried pipes and sprinkle irrigation from surface water;
water harvesting and elimination of water logging
<table>
<thead>
<tr>
<th>KEY INVESTMENTS</th>
<th>USD ~825M</th>
<th>14-39%</th>
<th>~29M</th>
<th>~USD 340</th>
<th>~20M T</th>
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<tbody>
<tr>
<td>GoB Investment + Commitments (USD)</td>
<td>88.5M</td>
<td>454.1M</td>
<td>725.5M</td>
<td>1,862.3M</td>
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<tr>
<td><strong>Investment</strong></td>
<td><strong>Investment</strong></td>
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<td><strong>Investment</strong></td>
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<tr>
<td>Build ~1100 multipurpose cold storage facilities to store fruits &amp; vegetables</td>
<td>Grow processing capacity across mango (10%), potato (4%), jackfruit (10%)</td>
<td>Distribute low-cost drip irrigation kit to tomato farmers to cover up to 8Th Ha in highly producing regions</td>
<td>Convert 2.4M Ha of rice growing area to saline or drought resistant breeds</td>
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<tr>
<td>Investment needed (USD)</td>
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<td>Investment needed (USD)</td>
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<tr>
<td>~396M</td>
<td>~242M</td>
<td>~7M</td>
<td>~180M</td>
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<tr>
<td>IRR (%)</td>
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<td>15-18%</td>
<td>22-39%</td>
<td>~14%</td>
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<td>VPN (USD)</td>
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<tr>
<td>~108M</td>
<td>~267M</td>
<td>~1.4M</td>
<td>~218M</td>
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<tr>
<td><strong>Sustainability Benefits</strong></td>
<td><strong>Sustainability Benefits</strong></td>
<td><strong>Sustainability Benefits</strong></td>
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<tr>
<td>Direct beneficiaries: ~0.7M</td>
<td>Direct beneficiaries: ~0.2M</td>
<td>Direct beneficiaries: ~0.18M</td>
<td>Direct beneficiaries: ~4.4M</td>
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<tr>
<td>Indirect beneficiaries: 2.8M</td>
<td>Indirect beneficiaries: 0.8M</td>
<td>Indirect beneficiaries: ~0.72M</td>
<td>Indirect beneficiaries: ~20M</td>
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</tr>
<tr>
<td>Income increase per farm: ~USD 251/yr</td>
<td>Income increase per farm: ~USD 259/yr</td>
<td>Income increase per farm: ~USD 186/yr</td>
<td>Income increase per farm: ~USD 365/yr</td>
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<tr>
<td><strong>SUMMARY</strong></td>
<td><strong>HAND IN HAND INVESTMENT PLAN</strong></td>
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Way forward

• The estimates presented is a small part of the whole picture being pursued
• Dissect/evaluate past and ongoing investments—across themes, across geography, across beneficiaries/gender
• Formulate priority investment plan based on evidence (exhaustively costed) for crop sector based on targets set for 2030 & 2041
• Assess investments by Govt., private, public-private, public-DPs
• Mobilize resources towards planned investments/projects/programs—including global financing for CSA
• Evolve Result based monitoring and evaluation; data-driven decision support system