Government and Mill Costs of Fortification

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Training and Technical Support Group,
Flour Fortification Initiative
Costs of Fortification

• Milling Industry costs

• Government costs
Milling Industry: Components and Costs

• Start Up Costs
• Premix Procurement
• Mill Operation
Start up Costs

• Feeders for all mills in the programme
  – Number of mills
  – Number of Production Lines

• Installation and Training

• Feeder Costs
  – Manual system
  – Computer controlled systems
Premix Procurement

• Premix Requirements
  – Annual flour Production MT
  – Premix Addition Rate g/MT
  – Premix needs kg

• Premix Costs
  – Cost to point of entry
  – Domestic Storage & Distribution
  – Taxes & Duties % Value of premix
  – Processing & Certification Costs based on number of Shipments
Mill Operations

• Process Labour: 2 employees per mill @10% annual salary
• Maintenance (new feeders & spare parts): 5% of feeder cost
• QA Spot Tests Reagents and Labour: $0.25 per test
  Feeder Adjustment: 2/day at 200 days/mill
• Incremental Packaging Costs 50kg bags: %0.25 per bag
• Management, Overhead: 5% of premix costs
Government Costs

• Import duty and VAT exemptions
• Food Control – National and Imports Supply
  – Inspection costs
  – Laboratory Analysis costs
• Market Surveillance
  – Market surveys
Inspection: Product Testing versus Process Control

• Product Testing is a one off assessment of fortified food sample.
  – Subject to sampling and laboratory analysis errors

• Process Control Inspection assesses the degree to which the system is under control

• Using both tools is more effective food inspection than finished product inspection
Food Inspection:
Premix Control Record Calculation

• A. Starting Inventory \( \text{kg} \)
• B. Amount purchased \( \text{kg} \)
• C. Ending Inventory \( \text{kg} \)
• D. Amount used \((A+B-C)\) \( \text{kg} \)
• E. Fortified Flour produced \( \text{MT} \)
• F. Actual Addition Rate \((D/E \times 1000)\) \( \text{g/MT} \)
• G. Target Rate* \( \text{g/MT} \)
• H. Percent of Target \((F/G \times 100)\) \( \% \)

* Based on supplier specifications
Food Inspection: Laboratory Costs

- Iron Analysis - $20 per sample
- Folic Acid Analysis - $50 per sample
- Vitamin A (if added in flour) - $30 per sample
Market Surveillance

- Market Surveillance – Lump sum bi-annual $50,000
- Ongoing surveys i.e. HIECS, DHS, Nutrition surveys additional component to survey $500,000
## Mill Fortification Cost

<table>
<thead>
<tr>
<th>Mill Fortification Cost</th>
<th>Unit</th>
<th>Number</th>
<th>Cost/Unit</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feeders and Start-Up</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feeders for expansion into private sector</td>
<td># Mills/Production Lines</td>
<td>9</td>
<td>$15,000</td>
<td>$135,000</td>
</tr>
<tr>
<td>Installation and Training</td>
<td>Mills/Companies</td>
<td>3</td>
<td>$10,000</td>
<td>$30,000</td>
</tr>
<tr>
<td>Lab and other Capital Improvement</td>
<td>Mills/Companies</td>
<td>3</td>
<td>$10,000</td>
<td>$30,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$195,000</td>
</tr>
<tr>
<td>Mill Operation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Wage Mill Worker</td>
<td></td>
<td></td>
<td>$2,233</td>
<td>150% Average Wage</td>
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<tr>
<td>Process Labor</td>
<td>4 Employees Per Mill @ 10% $2500/yr annual salary</td>
<td>36.0</td>
<td>$223</td>
<td>$8,040</td>
</tr>
<tr>
<td>Maintenance (new feeders &amp; spare parts)</td>
<td>5% feeder value</td>
<td>135,000</td>
<td>5%</td>
<td>$6,750</td>
</tr>
<tr>
<td>Quality Assurance: Spot Tests Reagents</td>
<td>12 Spot Test/dy at 200 operating days/mill:</td>
<td>21600</td>
<td>$0.25</td>
<td>$5,400</td>
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<tr>
<td>Incremental Packaging Cost</td>
<td>50 kg bags</td>
<td>3,756</td>
<td>$0.25</td>
<td>$939</td>
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<tr>
<td>Subtotal Operating Costs</td>
<td></td>
<td></td>
<td></td>
<td>$21,129</td>
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<tr>
<td>Management, Overhead, Administration</td>
<td>% Premix Costs</td>
<td></td>
<td>$755,464</td>
<td>5%</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$37,773</td>
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<td></td>
<td></td>
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<td>$58,903</td>
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## Government Cost

<table>
<thead>
<tr>
<th>Start-Up Cost Estimates</th>
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<tbody>
<tr>
<td>Training Food Control Agency</td>
<td>$50,000</td>
</tr>
<tr>
<td>Training Program Monitors</td>
<td>$50,000</td>
</tr>
<tr>
<td>Advocacy/Social Marketing</td>
<td>$250,000</td>
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<tr>
<td>Capital Improvement</td>
<td>$50,000</td>
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<tr>
<td><strong>Total Start-Up</strong></td>
<td><strong>$400,000</strong></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Recurring Costs</th>
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<tbody>
<tr>
<td>Food Control Mill Inspection</td>
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</tr>
<tr>
<td>Inspections/Yr</td>
<td>4</td>
</tr>
<tr>
<td>Projected Insection /Yr</td>
<td>12</td>
</tr>
<tr>
<td>Estimated Total Cost/Inspection</td>
<td>$250</td>
</tr>
<tr>
<td>Subtotal Inspection Costs</td>
<td>$3,000</td>
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<tr>
<td>Lab Costs/Inspection</td>
<td>$350</td>
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<tr>
<td>Subtotal Lab Costs</td>
<td>$4,200</td>
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<tr>
<td><strong>Other</strong></td>
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<tr>
<td><strong>Total Food Control Direct Expense</strong></td>
<td><strong>$7,200</strong></td>
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<table>
<thead>
<tr>
<th>Market/Monitoring/Sweeps</th>
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<tbody>
<tr>
<td>Lump Sum Bi Annual</td>
<td>$50,000</td>
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<table>
<thead>
<tr>
<th>Add Components to Ongoing Surveys</th>
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<tbody>
<tr>
<td>DHS, HCIES, Nutrition ect per 5 Years</td>
<td>$100,000</td>
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