INVENTORY MANAGEMENT STRATEGIES TO REDUCE FOOD LOSS & WASTE

EFFORTS OF FOOD CORPORATION OF INDIA IN REDUCING FOOD LOSSES AND WASTE IN WORLD’S LARGEST FOOD SYSTEM

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OUTLINE

• Quick recap on importance of reducing FLW
• FCI’s inventory management system
• Status of FLW in FCI’s operations during last decade
• Quantum of food and GHGs saved during last decade
• Conclusion and Lessons Learnt
FLW: DOUBLE WHAMMY PROBLEM

- It exacerbates food insecurity, and
- Worsens climate change problem due to avoidable extra GHGs emissions
- Its control and reduction can make the world more sustainable and are directly related to two important SDGs:
  - SGD 2: Zero Hunger by 2030
  - SDG 12.: Ensure sustainable consumption and production pattern,
  - SDG 12.3 particularly calls for halving FLW
  - Corelated to many other SDGs and targets
FLW: DOUBLE WHAMMY PROBLEM

• Threat to food security: food insecurity is increasing
  • Globally about 828 million people face hunger everyday in 2021, (9.8%), 331 million under acute hunger
  • It is much higher than 570 (2013), 571 (2014) and 573 (2017)
  • 2.3 billion people have been food insecure with 924 million severely insecure to some extent in 2021
  • 31.9% of all women and 27.6% of men constituted food insecure people in the world
  • 3.1 billion people could not afford healthy diet in 2020
  • 45 million children wasted and 112 million stunted

• So FLW reduction offers immense opportunity to make many more people food secure without much increase in production

Source: FAO, 2022
FLW: DOUBLE WHAMMY PROBLEM

- Significant source of GHGs:
  - Green house gases emission due to food waste would occupy third position among countries
  - Average CO$_2$ equivalent per MT food lost in Central and South Asia are:
    - Cereals and pulses 2.2 Tonne/MT
    - Meat and animal products 2.3 Tonne/MT
    - Fruits and vegetables 1.1 Tonne/MT
    - Roots and oil bearing crops 0.2 Tonne/MT

Source: UNEP, 2021
INVENTORY MANAGEMENT IN FCI

• Globally it is the Largest Food Supply Chain
  • Has handled about 31% of total wheat produced and 38% of total Rice produced in the country during the last decade
  • Average procurement of wheat per year 31 million MT
  • Average procurement of rice per year 40 million MT
  • More than a million farmers benefited by direct credit of proceeds into their account
  • Stores food grains in about 70 million MT scientific storage across the country
  • Transports about 50 million MT from surplus to deficit regions through all means of transport
  • Distributes 65 million MT among 813 million citizens across the country
SUPPLY CHAIN AND SOURCES OF LOSSES

• A very elaborate, complex but stable supply chain
• Starts from purchase yard and goes up to retail shops (Fair Price Shops)
• Has standard operating procedures for storage, preservation and transportation evolved over 6 decades
• Major sources of Loss:
  • Storage and Preservation Operations
  • Transport Operations
Trend of Storage Losses of Wheat and Rice in FCI's operations

Storage Loss of Rice (%)
Storage Gain of Wheat (%)

<table>
<thead>
<tr>
<th>Year</th>
<th>Storage Loss of Rice (%)</th>
<th>Storage Gain of Wheat (%)</th>
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</thead>
<tbody>
<tr>
<td>2012-13</td>
<td>0.52</td>
<td>-0.04</td>
</tr>
<tr>
<td>2013-14</td>
<td>0.39</td>
<td>-0.05</td>
</tr>
<tr>
<td>2014-15</td>
<td>0.29</td>
<td>-0.36</td>
</tr>
<tr>
<td>2015-16</td>
<td>0.18</td>
<td>-0.43</td>
</tr>
<tr>
<td>2016-17</td>
<td>0.23</td>
<td>-0.45</td>
</tr>
<tr>
<td>2017-18</td>
<td>0.16</td>
<td>-0.49</td>
</tr>
<tr>
<td>2018-19</td>
<td>0.16</td>
<td>-0.46</td>
</tr>
<tr>
<td>2019-20</td>
<td>0.15</td>
<td>-0.47</td>
</tr>
<tr>
<td>2020-21</td>
<td>0.06</td>
<td>-0.47</td>
</tr>
<tr>
<td>2021-22</td>
<td>0.10</td>
<td>-0.50</td>
</tr>
<tr>
<td>2022-23</td>
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STRATEGIES ADOPTED TO REDUCE LOSSES

• Scientific storage and preservation
  • Covered storage
  • Preventive and prophylactic treatment of stored food grains against various pests
  • Exhaustive collection and cleaning of spillage
  • Quick segregation and salvation of any degraded stock due to unforeseen calamity

• Minimize operational losses by standardized SOPs such as bag handling, stacking and inspections

• Proper loading unloading, storage, accounting and reporting
### FLW reduced and CO$_2$ Equivalent saved by FCI in last 10 years

<table>
<thead>
<tr>
<th></th>
<th>Storage Loss/ Storage Gain</th>
<th>TL</th>
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<tbody>
<tr>
<td></td>
<td>Wheat (gain)</td>
<td>Rice</td>
</tr>
<tr>
<td>Qty handled (mMT)</td>
<td>560</td>
<td>594</td>
</tr>
<tr>
<td>Gain/Loss (mMT)</td>
<td>2.01</td>
<td>1.27</td>
</tr>
<tr>
<td>% Loss/gain in 2012-13</td>
<td>0.04</td>
<td>0.52</td>
</tr>
<tr>
<td>Loss/gain @ 2012-13 (mMT)</td>
<td>0.22</td>
<td>3.09</td>
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<tr>
<td>Savings in mMT</td>
<td>1.79</td>
<td>1.81</td>
</tr>
<tr>
<td>Current value INR/MT</td>
<td>23205</td>
<td>33835</td>
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<tr>
<td>Current Value (Rs Cr.)</td>
<td>4155</td>
<td>6142</td>
</tr>
<tr>
<td>Total</td>
<td>10297</td>
<td>3448</td>
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<tr>
<td>CO$_2$ Equivalent (mMT)</td>
<td>3.93</td>
<td>3.99</td>
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CONCLUSION AND LESSONS LEARNT

• We have reduced losses to less than half in last 10 years
• Savings @ losses during 2012-13 is about
  • 3.6 mMT in storage and 1.08 mMT in transit losses
  • Lesser emissions of GHGs by 7.93 mMT CO₂ equivalent in storage and 2.37 mMT in transit
  • Total financial savings is about INR 46.81 trillion
• Indian experience can be useful in reducing FLW in low income countries
• Food security can also be enhanced by adopting SOPs of Indian Food System
• The Food Policy Design in India has very cost effective supply chain with minimal FLW
THANKS