South Asia & East Asia
Reducing Food Loss and Waste: National to Regional Perspective to Address Climate Change and Improve Nutrition

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The Global Alliance for Improved Nutrition (GAIN) is a Swiss-based foundation launched at the UN in 2002 to tackle the human suffering caused by malnutrition.

Working with both governments and businesses, we aim to transform food systems sustainably so that they deliver more nutritious food for all people, especially the most vulnerable.

**Mission:**
Improve the consumption of healthier diets for all, especially the most vulnerable, by improving the availability, affordability, desirability and sustainability of nutritious and safe foods and reducing the consumption of unhealthy and unsafe foods.

 linking public sector

Focus on Transforming food systems (environment, climate, biodiversity livelihoods, resilience)

To Improve nutrition outcomes via healthier and safe diets

And private sector
GAIN BANGLADESH PORTFOLIOS AT A GLANCE

1. Food Quality, Safety & Standards
   - Industrial Fortification
     - Current:
       - Edible Oil
       - Salt
       - Rice
     - Future:
       - Wheat flour (future work)
   - Biofortification
     - Current:
       - Rice with Zinc & Lentil with Iron and Zinc
     - Future:
       - Wheat with Zinc & OFSP with Vitamin A

2. Development and support to Private Sector and Innovative Financing
   - Workforce Alliance
     - Farmers’ Health & Nutrition
     - Industrial Workforce Nutrition
   - Private Sector engagement & investments
     - Investing in capacities targeting SMEs and Business Networks

3. Drivers of Food Systems Change: Sustainable Healthy and Safe Diets
   - Climate Change Adaptation and ONE Health
     - Keeping Food Market Working
   - Children, Adolescent and Youth: Life Cycle Approach, Youth, Women, Multiple Micronutrient Supplements, Urban, Social Safety Nets

Continuous investment towards sustainability and influencing:

Policy and Governance: Influencing Objectives
   - Public Policy influencing:
     - New Policy Formulation, Revision/Amendment of Policy and Influence national priorities, plans, acts, strategies and budget
   - Private Sector onboarding,
     - support, buy in and investment by private sector
   - Shaping Public Perceptions
     - campaigns, mobilisation, media advocacy

Knowledge & Learning
   - Knowledge Mobilisation through data and researches e.g. National Micronutrient Surveys, Human Centric Designs, Consumers’ Motivations
   - Evidences from existing researches for policy learning and policy briefs
   - Foresight and contribute to generate new evidence & knowledge

Nourishing Food Pathways (NFP)
- Policy and Governance (UNFSS, COP, N4G & Influencing)

Food Systems Dashboard (FSD) & Foresight for Food Systems

Gender

Environment

Governance
Including climate considerations into food procurement guidelines

Revising FBDGs to take climate into account

Identifying foods that minimize climate emissions per unit of nutritional value

Accelerate climate action by unlocking the nutrition space

Increase focus on preventing food loss in nutritious foods

Bigger focus of adaptation on climate resilient nutritious foods

Identifying foods that maximise nutrition per unit of climate emissions

Accelerate nutrition action by unlocking the climate space

Champion healthy diets that are also low emission

Include food and nutrition opportunities in NDCs and NAPs

Include climate considerations into national food and nutrition plans

Increase share of public and private sector resources that focus on climate AND nutrition

Accelerate climate and nutrition action at the same time

GAIN’S APPROACH TO CLIMATE AND NUTRITION
HOW DOES GAIN SUPPORT COUNTRIES?

**NOURISHING FOOD SYSTEMS PATHWAYS PROGRAMME (NFP)**

An ambitious program that supports inclusive and coherent food systems transformation in ten countries incl. India, Pakistan, Indonesia & Bangladesh. It aims to:

1. Increase access to safe, nutritious food in an environmentally sustainable way.
2. Strengthen in-country support systems to continue to develop and deliver their national food systems transformation pathways.
3. Provide inspiration and guidance to other countries and stakeholders as pathways are developed and implemented.

**INITIATIVE ON CLIMATE ACTION AND NUTRITION (I-CAN)**

- Co-chair of I-CAN Working Group with Government of Egypt, aim to share knowledge and exchange best practices.
- Plans to increase support and technical advice to countries in 2024.

**SUPPORTING WIDER EFFORTS ON FOOD, NUTRITION AND CLIMATE**

- Member of Technical Cooperation Collaborative (TCC) set-up after COP28 to support countries to meet commitments under the COP28 UAE Declaration on Agriculture, Food Systems and Climate Action.
- Support post-UN FSS processes incl. Convergence Initiative on Food Systems and Climate.
Present Scenario of Asia: Climate Change and Food Loss and Wastes

- Asia is the most populous subcontinent in the world comprising 4.5 billion people—about 60% of the total world population.

- Almost 70% of the total population lives in rural areas and 75% of the rural population are poor and most at risk due to climate change, particularly in arid and semi-arid regions (Yadav and Lal, 2018; Population of Asia, 2019).

- The population in Asia is projected to reach up to 5.2 billion by 2050, and it is, therefore, challenging to meet the food demands and ensure food security in Asia (Rao et al., 2019).

- In this context, Asia is the region most likely to be attributed to population growth rate, and more prone to higher temperatures, drought, flooding, and rising sea level (Guo et al., 2018; Hasnat et al., 2019).

- In Asia, over 40% of food loss and waste occurs at the post-harvest level.

- An estimated 19% of cereal grain is lost in Thailand, with the largest loss occurring during handling and storage. In the Philippines, the drying process of rice results in about 33% loss.
Bangladesh produced 39.1 million tons of clean rice which ranks Bangladesh as the third-largest producer of rice globally (BRRI, 2023). Two million of population added each year and expected to reach 215.4 million in 2050 when 44.6 million tons of cleaned rice will be required (Kabir et al., 2016).

The total post-harvest loss of paddy or rice in Bangladesh is 13-14 percent, with a total post-harvest loss of 3.77 million tons.

Due to climate change, winter time is very short in Bangladesh. On the other hand, most of the country's seasonal fruits are grown in the summer season. As a result, the shelf life of these fruits decreases rapidly and spoil due to high temperatures.

Post-harvest loss is 20-25 percent in onion, 30-35 percent in mango, 25-30 percent in banana, papaya, guava and litchi, 6-7 percent in pulses and 22 percent in potato. The total annual loss through these crops is 5.13 million tons, which is worth about $2.4 billion annually.

Jackfruit is the national fruit of Bangladesh; 45-50% of the jackfruit produced every year is lost and wasted in various ways.
CLIMATE CHANGE & FOOD LOSS AND WASTES IN BANGLADESH

- According to an assessment by the Bangladesh government, agricultural yields have decreased 7–10% as a result of climate change causes like flash floods, floods, drought, heat waves and salinity.

- Climate change is not just reducing agricultural yields in Bangladesh; it is also having an impact on food security, nutrition security, safety and quality.

- Pest and disease outbreaks are increasing as a result of warming temperatures and shifting precipitation patterns, which pose a threat to food safety and lower crop quality.

- In a subsequent assessment released in 2020, the UNDP noted that Bangladesh's food systems have been significantly impacted by climate change, which has resulted in food poverty and malnutrition.
Climate changes create stress in livestock and poultry. A high temperature increases body metabolism which causes less growth in livestock.

This leads to less meat, milk and egg production (MoEF, 2009). Conversely, increased ambient temperature and lower feed intake consequences less production (Mack et al., 2013).

Climate change has had a huge influence on Bangladesh's fishing industry as well. According to 2018 research, climate change might significantly reduce the nation's fish supply, which would have an impact on the livelihoods of millions of people who depend on fisheries (FAO 2018).

Fish breeding and survival are impacted by sea level rise and water temperature changes, which lowers fish productivity (Siddique et al. 2022).

In conclusion, Bangladesh is suffering greatly from the effects of climate change, which are only becoming worse.
Reduction of FLW is a global concern and linked with SDGs. Several countries like Australia, China, Japan, Singapore and Thailand developed national strategies to reduce FLW.

According to a UN report titled 'Food Waste Index Report 2024', one billion meals are wasted globally every day, and 1.05 billion tons or more than one trillion dollars' worth of food is thrown away every year around the world when one-third of humanity faces food insecurity and hunger.

According to the “Food Waste Index Report 2024,” households in Bangladesh discard 14.10 million tons of food each year. An estimated 82kg of food is wasted annually by Bangladeshis as released by the United Nations Environment Program (UNEP).

Globally, 1.4 billion hectares of land (28% of the world’s agricultural area) is used to produce food that is lost or wasted.

Food waste not only affects the global economy negatively, but also adversely impacts climate change, bio-diversity, and pollution.

The Enormous Scale of Global Food Waste

<table>
<thead>
<tr>
<th>Country</th>
<th>Total food waste per year (tonnes)</th>
<th>Estimated food waste per capita (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>91,646,213</td>
<td>64</td>
</tr>
<tr>
<td>India</td>
<td>68,760,163</td>
<td>50</td>
</tr>
<tr>
<td>United States</td>
<td>19,359,951</td>
<td>59</td>
</tr>
<tr>
<td>Japan</td>
<td>8,159,891</td>
<td>64</td>
</tr>
<tr>
<td>Germany</td>
<td>6,263,775</td>
<td>75</td>
</tr>
<tr>
<td>France</td>
<td>5,522,358</td>
<td>85</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>5,199,825</td>
<td>77</td>
</tr>
<tr>
<td>Russia</td>
<td>4,868,564</td>
<td>33</td>
</tr>
<tr>
<td>Spain</td>
<td>3,613,954</td>
<td>77</td>
</tr>
<tr>
<td>Australia</td>
<td>2,563,110</td>
<td>102</td>
</tr>
</tbody>
</table>

* UNEP estimates with high or medium confidence
Source: UNEP Food Waste Index Report 2021
REDUCE FLW IN CONTEXT OF CLIMATE CHANGE IN BANGLADESH: BENEFITS

- If food loss and waste can be reduced, it will be easier to ensure food and nutrition security at the smallholder farm family level of the country.

- The amount of food that is lost and wasted every year in various ways increases the cost of fertilizers, pesticides, energy, water, etc. associated with production and the emission of greenhouse gases due to this.

- If food loss and waste can be reduced, greenhouse gas emissions caused by this will be reduced. In the U.S. alone, approximately 40% of food goes uneaten - about 80 million acres are used to grow food that ends up as waste.
Increase diversified, safe, nutritious and demand-driven agricultural produce by improving knowledge, and practices and strengthening the capacities of farmers through the adoption of climate-resilient agricultural (CRA) practices considering different climate hotspots.

At the farmer level in Bangladesh, 3.8 percent of staple food rice is wasted in storage and can be reduced by expanding hermetic storage technology. Promote cost-effective hermetic storage at smallholder household levels reducing post-harvest loss of cereals because of insects and disease pest attack.

To ensure the nutritional security of the people of the country in the context of climate change, it is necessary to expand the cultivation of biofortified crops developed in the country.

By setting up multi-purpose cold storage and cooling chain development, post-harvest losses can be reduced to a great extent by extending the shelf life of perishable agricultural produce such as vegetables, various fruits, onions, ginger etc.

Due to excessive polishing of rice, various vitamins and mineral nutrients on the surface of the rice are lost. Also, for every 100 tons of rice polishing, 5 tons of rice is wasted. For this, millers, and processors need to conduct awareness-raising activities.

Increased use efficiency of combined organic and synthetic fertilizers, renewable energy, irrigation water and conservation of soil biodiversity and soil health.
REDUCE FLW TO IMPROVE NUTRITION SECURITY IN CONTEXT OF CLIMATE CHANGE IN BANGLADESH: OPPORTUNITIES

- Improve modern practices for livestock and fisheries enhancing productivity, income and nutrition of smallholder farm households in different climate hotspots in Bangladesh.

- Strengthen the capacity of SMEs, local government institutions (Union), service providers and farm dwellers on micro-enterprise, farmers’ health, safety & nutrition, high-value crop production by controlled environment, input suppliers, supply and value chain actors.

- Establish linkages with climate resilience infrastructures on agriculture, water and value chain

- Through the COP-21 conference, developed countries pledged an additional $100 billion annually to developing countries under the Green Climate Fund (GCF) by 2020, although as of June 2021, this amount was only $20.3 billion.
ACTIONABLE RECOMMENDATIONS FOR POLICY

- The Government of Bangladesh needs to develop and implement a national strategy to reduce FLW towards achieving SDG target 12.3.
- Adoption of improved pre-harvest practices at the producers’ level and modern storage technology (hermetic storage) at the producers, middlemen and millers’ levels.
- Fruits and vegetables, animal and fish products play a vital role in human nutrition, especially for vitamins, minerals dietary fiber, antioxidants and phytonutrients. Significant improvements may occur by creating modern harvesting (mechanical harvesting) and postharvest facilities (sorting, grading, storage, packaging, cooling, refrigeration, transportation, slaughterhouses and abattoirs).
- Adoption of improved pre-and postharvest practices, namely GAP, GAqP, GHP, GMP and HACCP across the food value chains and adopt good food handling and cooking practices are needed to improve food quality and safety, retain micronutrients and reduce food losses.
- Food waste occurs at the tail end of the food value chain. Significant waste of food is observed in middle and high-income households, as well as in restaurants and community centers.

To deal with food waste, several actions can be taken:

- Create mass awareness; encourage civil society dialogues and promote public-private partnerships.
- Capacity building in education, research and human resource development;
- Improvement of cooking and consumption habits of consumers enhanced food and nutrition literacy;
- Creation of guidelines and code of practices (CoPs) for the value chain including consumers; promulgation of legislations especially to stop food waste;
- Increase in capacity of waste recycling; promotion of public and private sector food rescue and food banking services; and engagement of civil society.
THANK YOU