

More Technology, Safety and Quality - Less Hunger

From Post-Harvesting to Consumption
in Emerging Countries

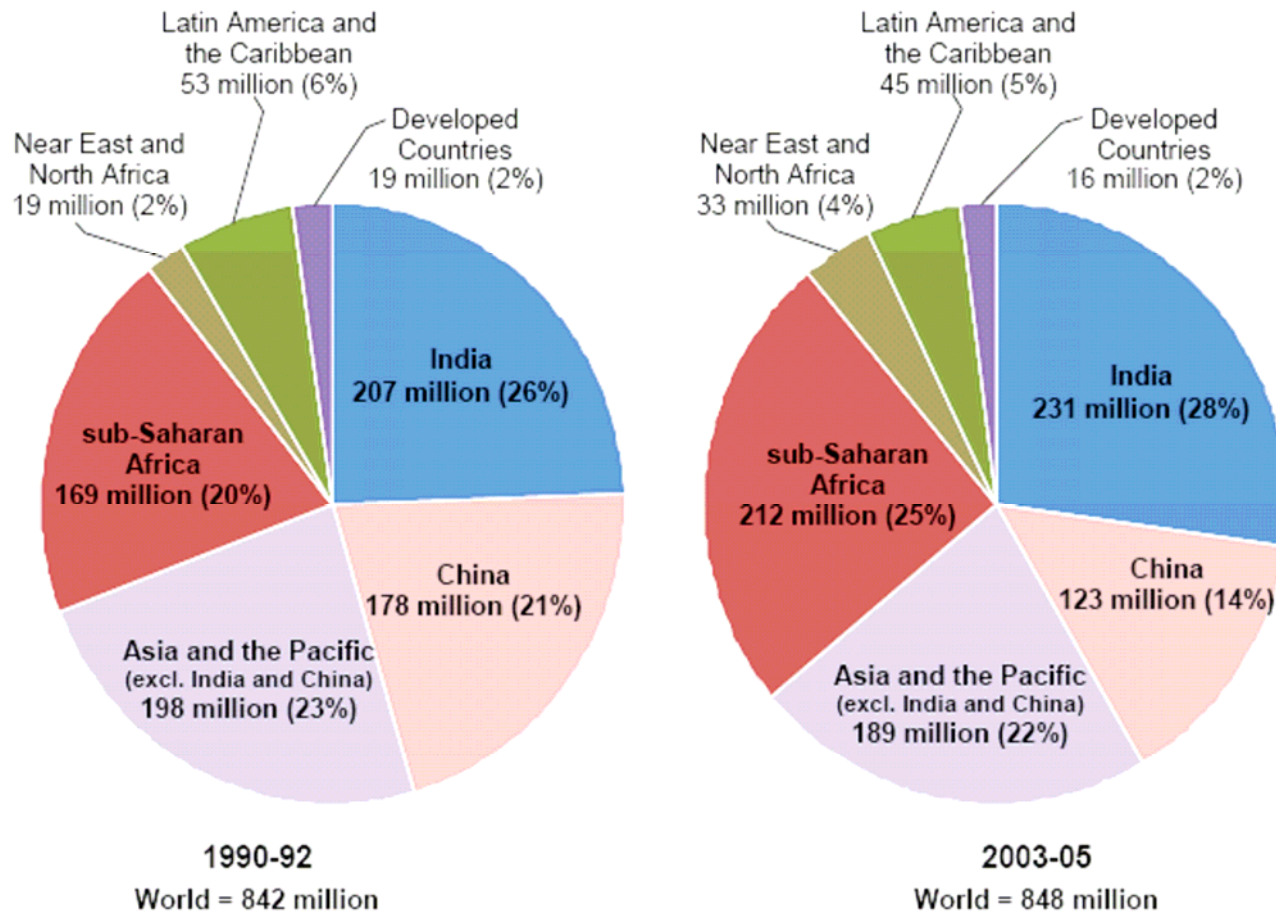
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Progress too slow to meet the MDGs

- **Globally food security has deteriorated**
- **Since 1995 numbers of undernourished have slightly increased (963 million in 2009)**
- **Reductions in child malnutrition too slow to meet MDG 1 target by 2015**
- **178 million children suffer stunting due to chronic undernutrition and poor quality diets**

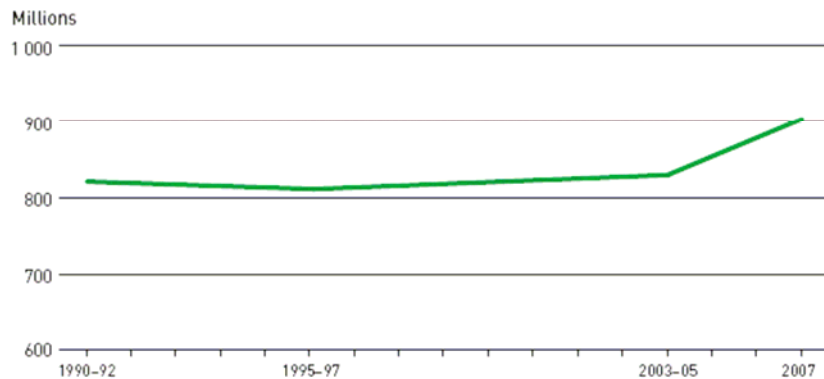
Trends in global undernourishment - by region (1)



Source: FAO

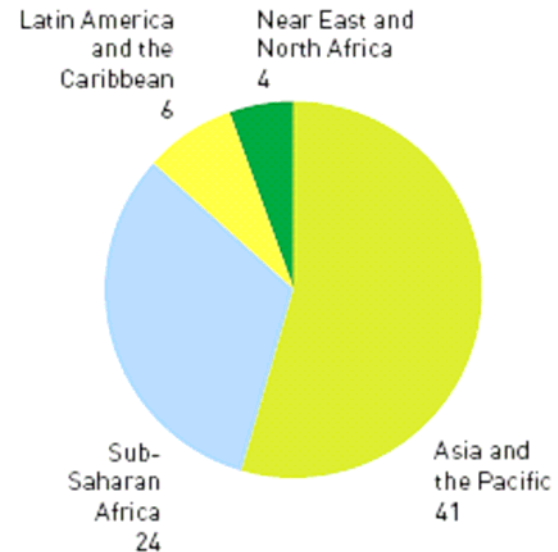
Trends in global undernourishment - by region (2)

Numbers of undernourished people in the developing world, 1990-92 to 2007



Source: FAO.

Regional impacts of high food prices: additional undernourished in 2007 (millions)



Source: FAO.

Food security is affected by...

- climate change
 - need to adapt and mitigate effects
- biofuels
 - R&D needed to produce biofuels from non-food crops
- High and volatile food prices

Agriculture contributes to improved nutrition by..

- producing food for direct consumption
- producing food for sale
- increased production or productivity lowers prices
- increased production/productivity has knock-on effects on the growth of agriculture and the economy in general
- crop diversification improves diets and micro-nutrients
- can empower women as managers and providers of household resources for improving food and nutrition security

To reduce hunger and malnutrition we must reduce losses and enhance food production and food consumption

- reduce food losses – improved technologies in handling, processing and packaging
- increase and diversify food production
- increase dietary diversity
- empower women and raise women's productivity and income

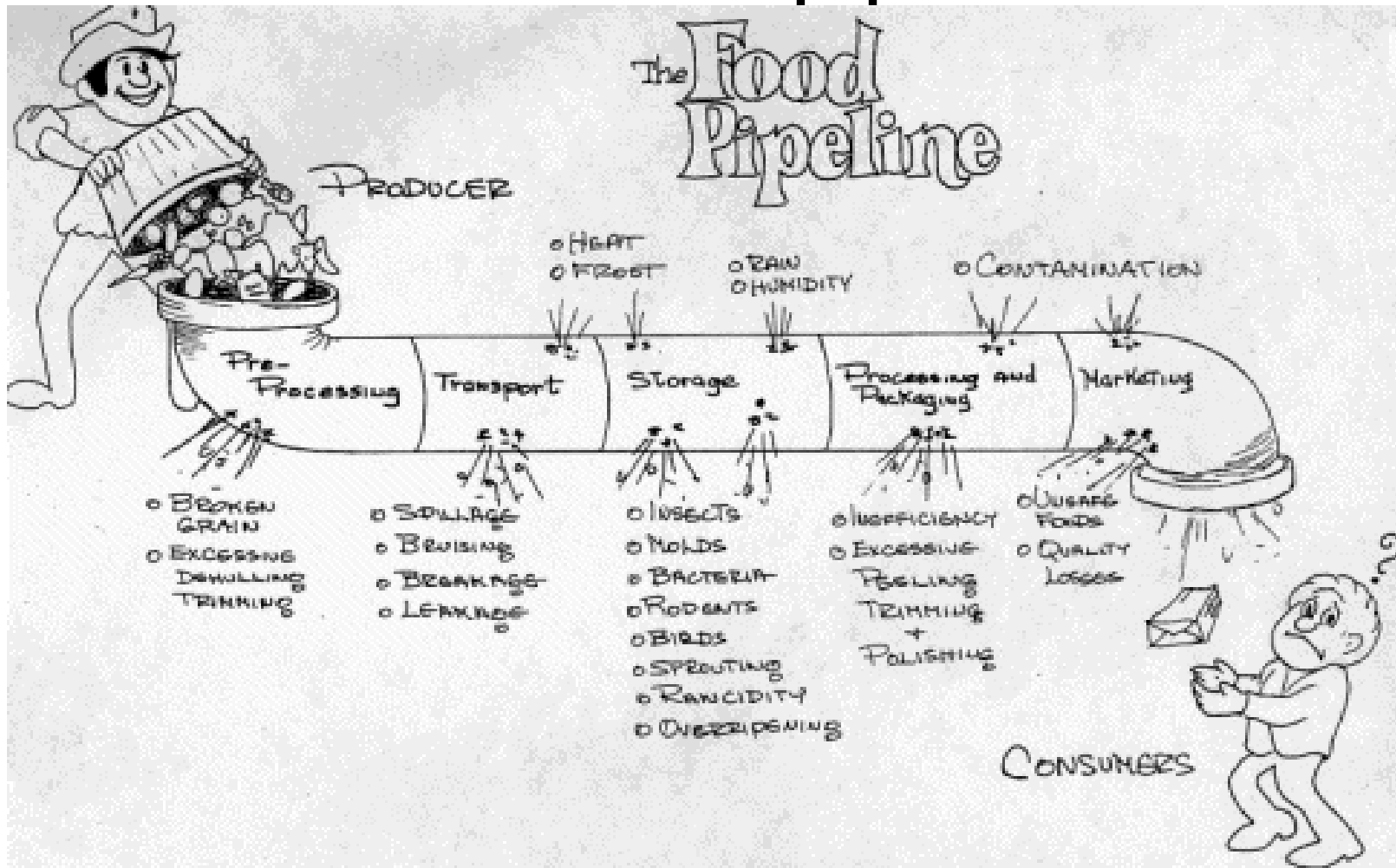
Type of post-harvest food losses

- At field and household level; during handling, storage, processing and distribution;
- Quantity - physical loss
 - loss in weight from drying, spillage, consumption by pests, water and other damage - poor packaging
- Quality – appearance, texture, flavour and nutritional quality of food and its reproductive value
 - loss in edible food (pests, weevils etc), contamination, seed viability
- Safety – naturally-occurring toxicants, natural contaminants e.g fungal toxins (mycotoxins) and bacterial toxins, heavy metals, environmental pollutants, pesticide residues and microbial contamination
- Commercial – when the consumer refuses to purchase e.g. due to lack of cleanliness or quality of product

Post-harvest handling- sources of losses

- harvesting, field drying, threshing, cleaning, additional drying, storing, processing
- transporting, marketing
- quality control, nutrition, extension, information and communication are required to address these

Losses from field to fork - the food pipeline



Estimates of Food Losses

- FAO "Prevention of Food Losses" programme set up in 1978
- post-harvest losses 15% and up depending on the crop
- estimates depend on perishability of product and on what to measure
- higher in developing countries and in hot humid climates – insect pests, parasites, yeasts and moulds

Prevention of food losses

- A 20% loss means a 20% loss of all the elements in the value chain - labour, inputs, water, transport, handling costs and time
- Identify the major responsible factors through all phases of the post-harvest chain in order to identify priority points for prevention
- Adopt Good Agricultural Practices
- Agricultural research on improved varieties and on improved techniques in post-harvest handling both play an important part in reducing post harvest losses

Improved practices

- Need improved pre and post-harvest management practices throughout the food chain as harvesting, handling and marketing of fresh produce are sources of highest losses
- Attention needed to quality and safety of fresh produce
- Adopt Good Agricultural, Hygiene and Sanitation Practices
- Improving post-harvest management practices in LDCs can improve quality and safety

Costs

- Efficiency gains may focus on processing, especially to improve farm-level techniques used by women
- However, need cost -benefit analyses
- Storage losses can be 12% of grain value
- Technical improvements in granaries make storage a profitable operation

Changing environment

- increase in urbanization- 70% urban population by 2050
- Increased reliance on purchased food products
- increase in incomes and % of women in work force
- leads to change in consumption habits and food choices
- increase in demand for convenience, easy to prepare, less labour and time requiring processed foods and products with longer shelf life (refrigeration)
- growth in informal street food sector, good for employment but food safety hazards

Packaging and Processing

- High cost of packaging and limited availability of appropriate packaging material and small scale processing equipment affect feasibility of establishing local processing enterprises
- India/China have well developed processing factories and are suppliers of such equipment
- target countries for appropriate small scale equipment include SSA, Central America and Caribbean, South East Asia

Packaging

- Small scale enterprises largely women producers with big potential for nutrition benefits
- low labour and raw material costs
- But packaging costs often $>$ raw materials
- SSA poor packaging line facilities - few can, glass jar, plastic bag production units – a major obstacle for the development of small scale agro-industries
- Also production volumes often too small for machine processing capacities so uncompetitive

Processing

- Inappropriate fruit and vegetable varieties for processing:
 - Nigeria - tomato varieties not adapted for paste processing
 - Guinea –high fibre content of mango varieties reduces juice potential
- Available processing technologies don't match small scale production volumes

Nutrition is priority

- **Focus on people-centred policies and invest in agriculture for better nutrition**
- **Improve the productivity of smallholders and include them as a priority in efforts to boost and diversify food production, and reduce post-harvest losses**
- **Diversify into non-farm activities and strengthen agro-processing micro-enterprises to support dynamic rural growth**
- **R+D in appropriate packaging and processing technologies for uptake by small scale producers**