REPORT

High-Level Multi-Stakeholder Consultation on Food Losses and Food Waste in Asia and the Pacific Region

27-28 August 2013 | Bangkok, Thailand

SAVE FOOD
REDUCE FOOD LOSS AND WASTE

Save Food
Asia-Pacific Campaign

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Report

On

The High-Level Multi-Stakeholder Consultation on Food Losses and Food Waste in Asia and the Pacific Region

27-28 August 2013

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Foreword

Approximately one-third of all food produced globally is lost or wasted. Food losses are prevalent in developing countries owing to poor harvesting and post-harvest handling practices which result from limited knowledge and a weak infrastructural support base. Between 15 and 50 percent of fruits and vegetables, and 12 and 37 per cent of grains produced in Asia and the Pacific region are lost between production and the market. Food waste on the other hand relates to food that is thrown away, even when it is still suitable for human consumption. Food waste takes place in the food retail sector, in the food service sector and in the home. Food waste is prevalent in developed countries, but is a growing problem in developing countries.

Food losses and food waste not only have adverse impacts on the region's food security, but also negatively impact on the environment, labour, land, water and other resources used in food production.

The Food and Agriculture Organization of the United Nations (FAO) in 2011, launched the Save Food Initiative, which is a global initiative on food loss and waste reduction. Under the banner of this initiative, the FAO Regional Office for Asia and the Pacific (RAP), in December 2012, established collaboration with the Asian Institute of Technology (AIT), Thailand to launch a region-wide Campaign under the banner, "Save Food Asia-Pacific."

The Save Food Asia-Pacific Campaign was launched on 28 August 2013, during a High-Level Multi-Stakeholder Consultation on Food Losses and Food Waste in Asia and the Pacific Region, convened in Bangkok, Thailand. The Campaign seeks to draw attention to the high levels of post-harvest losses and the growing problem of food waste, and to promote sustainable food consumption in Asia and the Pacific region.

I take this opportunity to express FAO's sincere appreciation to H.E. Dr Yukol Limlamthong, Deputy Prime Minister and Minister for Agriculture and Cooperatives, Thailand for inaugurating the High Level Consultation; to Professor Swaminathan, Chairman of the High Level Panel of Experts on Food and Nutrition Security, UN Committee on Food Security for key delivery of an outstanding keynote speech, and to all of participants, for their contributions to this important High Level Consultation.

Hiroyuki Konuma
Assistant Director-General and Regional Representative
FAO Regional Office for Asia and the Pacific

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Abbreviations and Acronyms

AIT	Asian Institute of Technology
FAO	Food and Agriculture Organization of the United Nations
FAO-RAP	Food and Agriculture Organization of the United Nations – Regional Office for Asia and the Pacific
CFS	UN Committee on Food Security (CFS)
MOAC	Ministry of Agriculture and Cooperatives

Executive Summary

The High-Level Multi-Stakeholder Consultation on Food Losses and Food Waste in Asia and the Pacific Region was convened in Bangkok, Thailand, 27-28 August 2013, by the FAO Regional Office for Asia and the Pacific (FAO-RAP) in collaboration with the Asian Institute of Technology (AIT). The Consultation brought together representatives of the donor community, senior government officials responsible for agriculture, private sector representatives, researchers and academics, school children and teachers, and culminated in the launching of the Save Food Asia-Pacific Campaign, to be implemented by FAO-RAP.

The specific objectives of the Multi-stakeholder Consultation, were:

- To review the status of- and exchange knowledge on food losses and food waste.
- To raise awareness on food losses and food waste in the region.
- To identify the underlying causes of post-harvest losses and food waste and their impacts on food security, nutrition, hunger and the environment.
- To discuss options for joint initiatives and efforts at different levels to reduce post-harvest losses and food waste, including actions to reduce table waste and promote sustainable food consumption.
- To identify and agree on priority actions at the country and at the regional level, to reduce post-harvest losses and food waste.
- Discuss best practices from Asia and the Pacific region for implementation of agro-industrial strategies of relevance to member countries at national and local levels.
- Promote dialogue among the private sector, governments and smallholders.
- To seek consensus on a joint communiqué on food loss and waste issues in the region.

Approximately 115 delegates representing 22 countries of the Asia-Pacific region, participated in the Consultation with the objective of identifying strategic actions required to address food loss and food waste in the region. Participants also reviewed and endorsed a Joint Communiqué on food loss and food waste.

The Consultation was inaugurated on 27 August 2013, by His Excellency Dr Yukol Limlamthong, Deputy Prime Minister and Minister for Agriculture and Cooperatives of Thailand. Presiding over the opening ceremony, along with Dr Yukol Limlamthong, were Professor Worsak Kanok-Nukulcahi, Interim President of AIT, Dr M.S. Swaminathan Chairman of the High Level Panel of Experts on Food and Nutrition Security, UN Committee on Food Security (CFS) and keynote speaker, and Mr Hiroyuki Konuma, Assistant Director-General and Regional Representative of FAO-RAP.

The programme of the Consultation included three technical presentations, country presentations, two parallel round table sessions, four thematic working group sessions, plenary presentations and discussions on strategic issues and actions to address food loss and food waste, and a closing session, wherein a joint communiqué was tabled and endorsed.

H.E. Dr Yukol Limlamthong, in his opening statement highlighted the need to raise global awareness of the critical issue of food losses and particularly post-harvest losses as well as food waste, which currently shows a growth trend globally. He stressed the critical need for a greater level of attention and focus on food losses and food waste in light of their implications for food security, particularly in the context of climate change now affecting the cycle of agricultural production.

Prof. Worsak Kanok-Nukulcahi, in his opening remarks emphasized the cross cutting and multi-disciplinary requirement to address food loss and food waste and highlighted the need for fresh motivation among policy makers in establishing appropriate policies toward addressing these issues.

Mr Hiroyuki Konuma, in his opening remarks, noted that despite the fact that the world currently produces more or less sufficient food to meet the demand of its current global population of 7 billion, 12.5 percent of the global population or one in every 8 persons, goes hungry on a daily basis. He highlighted the negative impacts of food loss and food waste on food security and the environment and stressed the need to urgently address the issue of reducing food loss and food waste to mitigate these impacts. He further underlined the importance of multi-stakeholder input into addressing food loss and food waste and in mapping the way forward to do so, in the Asia-Pacific Region.

Professor Swaminathan highlighted the timeliness of the launch of the Save Food Asia-Pacific Campaign and its importance in reducing food losses and food waste. He recommended that within the context of the Campaign, a network be created that functions as a "coalition of the concerned," with multi-stakeholder involvement, while emphasizing the development and spread of appropriate programmes of education, social mobilization and regulation for the reduction food losses and waste at the level of cultivation, consumption and commerce, with a cadre of "community hunger fighters" well versed in the art and science of food systems and management.

At the introduction of the technical plenary session, a brief presentation titled *Save Food Global Initiative on Food Loss and Waste Reduction*, highlighted the role of the Save Food Global Initiative. The Save Food Global Initiative serves as a "global umbrella" that promotes awareness raising on the impact of- and solutions to address food loss and waste; collaboration and coordination of world-wide initiatives on food loss and waste reduction; and policy, strategy and programme development for food losses and waste reduction. The Global Campaign is hosted at FAO Headquarters, while the Save Food Asia-Pacific Campaign, a Regional Campaign, being implemented under the umbrella of the Global Campaign, is hosted by FAO-RAP.

The plenary presentation titled *Current status and future trends of global and regional food security and hunger,* highlighted the requirement for Government investment in the generation of agricultural public goods, particularly in the area of basic research on production, communication and storage infrastructure. Investments are also required to improve the functioning of markets and price transitions and to reduce food losses and food waste. The follow up presentation titled: *Global and regional status of food losses and food waste and their impacts on food security, hunger and the environment,* highlighted the need to address awareness raising; advocacy to change

consumer and stakeholder attitudes to food loss and food waste; development of post-harvest loss reduction strategies for the region; investment in basic and post-harvest specific infrastructure and capacity building of stakeholders in food supply chains.

Senior Government delegates, in their country presentations, highlighted an urgent need to address food losses and food waste. While initiatives are underway in many countries to address pre- and post-harvest loss reduction, few countries have undertaken studies to assess the magnitude of post-harvest loss. A majority of countries in the region do not have scientific data on food losses due to lack of tools to assess the food losses. India had, however, in the recent past undertaken such studies.

Countries are, in general, aware of food waste issues and their underlying causes. Japan is the only country that has to date, addressed the issue at the policy level.

Lack of trained personnel, a limited knowledge base, a deficient infrastructural support base and the lack of technology are the underlying causes of the high levels of to post-harvest loss sustained in the region. Member countries identified the urgent requirement for: awareness raising; capacity building and multi-disciplinary/multi-sectoral collaboration are key requirement to address food loss and food waste reduction. Countries also highlighted the need to develop national and regional level strategies/policies to address the issues of food losses and food waste in Asia and the Pacific region.

The two thematic roundtables, titled: *Issues and Prospective Measures to Reduce Post-harvest Losses in Food Supply Chains (Round Table A)* and: *Issues and Prospective Measures to Reduce Food Waste in the Region (Round table B)* allowed experts originating from a range of backgrounds – private sector, a consumer organization, research, academia, farmer organizations, international organizations, schools and educators - to share their experiences and learn from each other, on strategies in the region that have contributed to successfully reducing food loss and food waste. These roundtable presentations were also designed to stimulate discussion and thinking, in preparation for the follow up thematic working group sessions.

Four parallel thematic working group sessions were convened to discuss the following:

Theme 1: Awareness raising and advocacy (including knowledge sharing; education).

Theme 2: Strategic approaches to address post-harvest loss reduction across the producer to market chain.

Theme 3: Strategic approaches to addressing food waste and promoting sustainable consumption.

Theme 4: Building partnerships and networking for food loss and waste reduction.

Follow-up plenary discussions on these four themes resulted in a document titled "draft strategic actions." These draft strategic actions were circulated to participants following the Consultation, and their feedback incorporated into a final document.

These strategic actions:

Recognized that

- **Awareness and Advocacy** are critical for reducing food losses and food waste in Asia and the Pacific Region.
- **The private sector** is a key stakeholder and partner in addressing food losses and food waste in Asia and the Pacific region.
- **Support mechanisms** must be put in place by governments in order to facilitate smallholder organization and to support private sector initiatives geared toward reducing food losses and food waste.

Recommended the following actions from Governments:

- *Governments must recognize the strategic importance of reducing food losses and particularly post-harvest losses and food waste as a measure to address food security in the region.*
- *Governments must prioritize the reduction of food losses- particularly post-harvest losses and food waste issues in their country strategic plans for agricultural development.*
- *Governments should work toward the creation of an enabling environment that is supportive of food loss reduction and provide better climate to stimulate private sector to invest in the food industry for food loss reduction. Policy objectives to meet that end must integrate consideration for the development of basic and post-harvest specific infrastructure and food safety and quality regulations.*

Highlighted key roles of the Save Food Asia-Pacific Campaign:

- Providing support in organizing small farmers into a viable enterprise and equip them with the needed skills from production to marketing.
- Documenting success cases on reducing post-harvest losses.
- Promoting, popularizing and replicating good practices and success stories in other areas/ country in the region.
- Investment in human resource development at all levels along the food supply/value chain.
- Collaboration with other like-minded groups at the country and regional level who have the same or similar initiatives or campaigns on reducing postharvest losses and food waste.
- Formation of a regional network for building consensus and to promote speaking with a common voice.
- Serve as a bridge to bring together all the relevant actors (inter-agencies), sectoral stakeholders.
- Quantify food losses and food waste (identifying measurable and practical indicators).
- Set-up various technical working groups.

During the concluding session, a draft joint communiqué was discussed, amended and endorsed by participants to the Consultation. Following endorsement of the Joint Communiqué, the document was read in its entirety and the Save Food Campaign was officially launched by Mr Hiroyuki Konuma, Assistant Director-General and Regional Representative of the FAO Regional Office for Asia and the Pacific.

In summary, a broad range of issues that impact on food losses and food waste were discussed from various perspectives, during the Consultation. Discussions, in general, highlighted major issues, gaps and actions required to address post-harvest loss reduction in the region. Strategic actions to be taken were identified and key roles of the Save Food Campaign were outlined. A joint communiqué showing country and stakeholder commitment to the Campaign was endorsed.

Joint Communiqué on Food loss and Food Waste in Asia and the Pacific

We, delegates to the High Level Multi-stakeholder Consultation on Food Losses and Food Waste in Asia and the Pacific Region, convened by the Food and Agriculture Organization of the United Nations (FAO), on 27 and 28 August 2013, in Bangkok:

Consider food losses, in particular post-harvest losses and food waste as pressing problems for Asia and the Pacific Region.

We want to ensure food security, economic and social development and environmental sustainability in Asia and the Pacific Region for current and future populations by promoting actions to reduce food losses and food waste.

We want to raise awareness in order to reduce food losses and food waste and promote sustainable and responsible consumption in the region.

In cases where valuable food rots on the fields, or is attacked by pests, we support research into more efficient agricultural practices and environmentally sound interventions.

In instances where food is spoiled or fails to meet standards at harvest and along the supply chain, we agree to promote solutions that rely on improving the knowledge base of stakeholders in food supply chains, and on the improvement of infrastructure, development of appropriate farm machinery, bulk packaging, storage, processing, transportation systems and logistics, etc. For those improvements, Governments should create a better enabling environment to stimulate the private sector to invest in the food industry.

Therefore, we encourage the formulation of conducive policies and the creation of an investment climate.

In the event of the retail and food service sectors being able to make a difference, we encourage companies to improve practices of planning, procurement, packaging, marketing and sales. In view of consumers wasting food, we campaign for greater respect for food and behavior change of consumers.

We agree to undertake a campaign, using various tools including communication materials and platforms to advocate against the negative consequences of food losses and food waste, and raise awareness of the importance of saving food.

With the SAVE FOOD ASIA-PACIFIC CAMPAIGN, we pledge to work together and create regional and national multi-stakeholder networks towards reducing food losses – along the food supply chain and fight the growing problem of food waste.

The fight against food loss and food waste concerns everyone – everyone can contribute.

1. Introduction

The world produces more or less sufficient food to meet the demand of its current population of 7 billion. Over 1.3 billion tons of food is lost or wasted globally every year. The highest levels of food loss and waste occur in perishable crops such as fruits and vegetables and roots and tubers. Post-harvest losses in fruits and vegetables across Asia and the Pacific region may be as high as 50 percent, while for rice, they vary between 12 and 37 percent. With growing incomes and changing food consumption habits in urban centres of Asian countries, food waste is an emerging issue. On average, approximately 11 kg of food per capita per year is wasted in developing Asian countries, while an estimated 80 kg of food per capita per year is wasted in developed Asian countries. Food losses and food waste not only have adverse impacts on the region's food security, but also negatively impact on the environment, labour, land, water and other resources used in food production.

FAO in 2011 launched the Global Save Food Initiative in partnership with Messe Dusseldorf, a private sector partner. The Initiative is a shared global platform for reducing food losses and food waste. The Global Initiative seeks to work with public sector, private sector and civil society organisations to raise awareness, and to promote collaboration, knowledge and effective solutions to reduce food losses and waste.

Within the framework of the Global Save Food Initiative, FAO-RAP in December 2012, established collaboration with AIT through a Letter of Agreement to launch a Save Food Asia-Pacific Campaign. The Campaign seeks to raise awareness and draw attention to the high levels of post-harvest losses and the growing problem of food waste in Asia and the Pacific region, while promoting sustainable food consumption. The Campaign will advocate for action and promote partnership and joint efforts to reduce food losses and waste at the regional level. The Save Food Asia-Pacific Campaign was launched at the culmination of a two-day High-Level Multi-stakeholder Consultation on Food Losses and Waste was convened in Bangkok, 27-28 August, 2013.

The High Level Multi-Stakeholder Consultation brought together Ministers of Agriculture, from Thailand, the Maldives and Nepal along with senior government officials representing 20 countries from across the region; representatives from the private sector – food retail, processing and food service sectors – academia, primary and secondary school children and their teachers, NGOs and other UN Agencies. One hundred and twenty delegates, representing 22 countries of the Asia-Pacific region (Annex 1) participated in the Consultation and discussed food loss and food waste issues, and their implications for the region. The Consultation also facilitated dialogue among a broad range of stakeholders through working group sessions.

The specific objectives of the Multi-stakeholder Consultation, were:

- To review the status of- and exchange knowledge on food losses and food waste.
- To raise awareness on food losses and food waste in the region.

- To identify the underlying causes of post-harvest losses and food waste and their impacts on food security, nutrition, hunger and the environment.
- To discuss options for joint initiatives and efforts at different levels to reduce post-harvest losses and food waste, including actions to reduce table waste and promote sustainable food consumption.
- To identify and agree on priority actions at the country and at the regional level, to reduce post-harvest losses and food waste.
- Discuss best practices from the Asia and Pacific region for implementation of agro-industrial strategies of relevance to member countries at national and local levels.
- Promote dialogue among the private sector, governments and smallholders.
- To seek consensus on a joint communiqué on food loss and waste issues in the region.

2. Opening Ceremony

The High-Level Multi-Stakeholder Consultation on Food Losses and Food Waste in Asia and the Pacific Region was officially opened by His Excellency Dr Yukol Limlamthong, Deputy Prime Minister and Minister for Agriculture and Cooperatives, Thailand on 27 August 2013. Presiding over the opening ceremony, along with Dr Yukol Limlamthong, were Professor Worsak Kanok-Nukulcahi, Interim President of AIT; Dr M.S. Swaminathan Chairman of the CFS and keynote speaker, and Mr Hiroyuki Konuma, Assistant Director General and Regional Representative of FAO-RAP.

H.E. Dr Yukol Limlamthong, in his opening statement highlighted the need to raise global awareness of the critical issue of food losses and particularly post-harvest losses as well as food waste, which currently shows a growth trend globally. H.E. Dr Yukol stressed the critical need for a greater level of attention and focus on food losses and food waste in light of their implications for food security, especially in the context of climate change now affecting the cycle of agricultural production. He expressed Thailand's deep commitment to work with FAO, other partners and stakeholders in the region to promote the food security in the region and globally.

Professor Worsak Kanok-Nukulcahi, in his opening remarks noted the importance of addressing the issue of food loss and waste in the agenda of AIT. He emphasized the cross cutting and multi-disciplinary requirement to address food loss and food waste and highlighted the need for fresh motivation among policy makers in establishing appropriate policies toward addressing these issues. He also highlighted the key requirement for technological innovations in harvesting and processing of food to address food loss and food waste issues.

Mr Hiroyuki Konuma, in his opening remarks, noted that despite the fact that the world currently produces more or less sufficient food to meet the demand of its current global population of 7 billion, 12.5 percent of the global population or one in every 8 persons, goes hungry on a daily basis. Mr Konuma noted that in 2012, Asia and the Pacific region was home to 536 million hungry people, or 62 percent of the World's hungry population. He underlined the critical need to address food loss and food waste in the context of addressing the region's current and future food security requirements. Within that context, he also highlighted the contribution of food losses and food waste to increasing greenhouse gas emissions which contribute to global warming and the need to mitigate these negative environmental impacts through food loss and waste reduction.

Mr Konuma further underlined the importance of multi-stakeholder input into addressing food loss and food waste and in mapping the way forward in the region. He reminded the audience that in addition to launching the Save Food Asia-Pacific Campaign, key outputs of the consultation were Joint Communiqué and the identification of strategic actions to address food loss and food waste in the region.

Professor M.S. Swaminathan, an eminent geneticist who played a leading role in India's Green Revolution, in his keynote address on reducing post-harvest losses for food security, noted that food waste is also a waste of natural resources like land and water. To a great extent, food losses and waste are symbolic of the inefficiencies of food systems and this explains why food losses and waste are becoming so central to discussions on both food security and sustainable development.

Professor Swaminathan outlined the following as key challenges to food security: food losses and food waste, climate change: scientific checkmating of adverse impacts, shrinking per capita land and water resources, expanding biotic and abiotic stresses, adverse cost-risk-return structure of farming, market volatility and reluctance of youth to take to farming – an issue in most Asian countries.

He noted the existence of major data gaps on food losses and food waste in the region, and highlighted the need for a Quality Literary Movement (QLM) i.e. spread of knowledge through village knowledge centers as one mechanism for generating knowledge on food loss and food waste. He emphasized the importance of developing strategies for ensuring food security, citing the model of the 'Rice Bio-Park' in Nay Pyi Taw, Myanmar. This Park, was the first of its kind in Asia, designed to save and add value to each component of rice biomass - rice straw, husk, and bran. The success of this park was achieved through education and training of a cadre of 'Community Hunger Fighters' so that they were well-versed with the causes and cures for endemic hunger prevailing in their villages and towns, resulting in 'no waste and no loss in food production and consumption.

Finally, Professor Swaminathan highlighted the importance of the Save Food Asia-Pacific Campaign in reducing food losses and food waste. He recommended that within the context of the Campaign, a network be created that functions as a coalition of the concerned, with multi-stakeholder involvement, while emphasizing the development and spread of appropriate programmes of education, social mobilization and regulation for the reduction food losses and waste at the level of cultivation, consumption and commerce, with a cadre of "community hunger fighters" well versed in the art and science of food systems and management.

3. Technical Presentations

Save Food Global Initiative on Food Loss and Waste Reduction

Mr Robert Van Otterdijk, Team Leader of the Save Food Global Initiative on Food Loss and Waste Reduction, of FAO Headquarters, Rome, Italy chaired the technical session, and delivered a brief plenary presentation to introduce the Global Initiative, prior to introducing the speakers. In his presentation, Mr Van Otterdijk highlighted the following:

The Save Food Global Campaign promotes: awareness raising on the impact of- and solutions for food loss and waste; collaboration and coordination of world-wide initiatives on food loss and waste reduction; and policy, strategy and programme development for food losses and waste reduction. He highlighted the importance of private sector involvement and of FAO's role in providing guidance and in creating an effective enabling environment.

He noted that solutions to food waste and loss reduction must be taken into account in the context of sustainability of food supply chain approaches through feasible, cost-effective interventions which are technically, environmentally, socially, culturally, economically, and nutritionally sound and which contribute to food security.

Current status and future trends of global and regional food security and hunger

This plenary presentation titled: *Current status and future trends of global and regional food security and hunger,* was delivered by Dr Sumiter Broca, Policy Officer of FAO-RAP. Highlights of Dr Broca's presentation were as follows:

The four dimensions of food security are: (i) *Availability* i.e. sufficient quantities of food of appropriate quality, supplied through domestic production or imports (including food aid); (ii) Access i.e. access by individuals to adequate resources (entitlements) to acquire appropriate foods for a nutritious diet; (iii) *Utilization* i.e. utilization of food by individuals – adequate diet, clean water, sanitation and health care; and (iv) *Stability* of access i.e. low risk of losing access to food.

Currently, according to FAO estimates, the number of undernourished in terms of food intake (utilization dimension), globally, stands at 852 million of which 530 million live in the Asia-Pacific Region. The prevalence of hunger in Asia and the Pacific region, had shown a declining trend, and is currently approximately 14 percent, approaching the Millennium Development Goal (MDGs) target of 12 percent. The prevalence of stunted children under the age of five in selected Asian countries also shows a declining trend in countries like China, Bangladesh and Viet Nam. Overweight and obesity on the other hand, are currently raising increasing risks of coronary heart disease, ischemic stroke and Type 2 diabetes.

Food prices in international markets has been highly volatile since 2006 in real terms according to the FAO food prices index. While the real term FAO Food price index had shown a declining trend in the previous seven months, food prices had still, not attained the stable level of the past.

According to FAO projections,food production must increased by 60 percent in the developed countries and by 77 percent in developing countries, in the case of developing countries, in order to meet the needs of the world's population by 2050.

Government investment is required to support the development of agricultural public goods, particularly in the area of basic research on production, communication and storage infrastructure. These investments must be linked to social protection. Investments are also required to address child and maternal health which will have high pay offs in the long term. Investments are also required to improve the functioning of markets and price transitions and to reduce food losses and food waste.

Global and regional status of food losses and food waste and their impacts on food security, hunger and the environment

The presentation titled: *Global and regional status of food losses and food waste and their impacts on food security, hunger and the environment*, was delivered by Dr Rosa Rolle, Senior Agro-Industry and Post-harvest Officer of FAO-RAP. Highlights of her presentation were as follows:

In Asia and the Pacific region, two major categories of food supply chains (i) modern, and (ii) traditional operate in parallel. The modern supply chains supply supermarkets and hypermarkets, make use of post-harvest technology and conform to market requirements for volume, safety and quality. Losses in these modern supply chains are comparably low, while wastes takes place mainly in retail, in the food service sector and at the consumer level are comparably high.

Traditional supply chains, on the other hand, make limited use of post-harvest technology with very high levels of post-harvest losses across these chains. Underlying causes of these high levels of losses, include the lack of a market orientation, pest infestations and disease, poor organization and weak integration of supply chains, poor or inadequate infrastructure and market facilities, poor or inadequate bulk packaging, lack of dedicated transport systems for food to move from producers to consumers, limited knowledge base of stakeholders and weak institutional support for post-harvest systems development.

With changing lifestyles, and increased dining away from home, considerable table waste is occurring in urban centers. Cultural norms and practices also contribute to food waste in many countries across the region.

FAO supported studies conducted in the Philippines and in Thailand determined that consumer level waste in fruits and vegetables was largely due to consumers "forgetting to cook," "forgetting to eat," poor quality and over-buying.

Food loss and food waste represent a waste of nutrients and could negatively impact on hunger, given the number of calories produced that are not consumed. They are also a source of greenhouse gas emission that impact climate change, and represent a waste of resources i.e. land, water, energy and labour. Food loss and food waste also have negative economic consequences for stakeholders in the food chain and increase the cost of food for consumers.

Key issues to be addressed include: awareness raising; advocacy to change consumer and stakeholder attitudes to food loss and food waste; development of post-harvest loss reduction strategies for the region; investment in infrastructure i.e. basic and post-harvest specific; and capacity building of stakeholders in food supply chains.

4. Country Presentations

Nineteen member countries (Afghanistan, Bangladesh, Bhutan, Brunei Darussalam, Cambodia, India, Indonesia, Japan, Lao PDR, Maldives, Mongolia, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka, Thailand, Timor Leste and Vietnam) presented their country experiences and perspectives on post-harvest losses and food waste in line with a document outline provided by FAO. Highlights of country presentations in alphabetical order, are outlined below.

Afghanistan – Dr Ahmad Bariz Sahabzadah, Nutrition Technical Officer, Ministry of Public Health, delivered a presentation titled: *Food loss and food waste in Afghanistan*. Highlights of his presentation are summarized as follows:

The infant mortality rate in Afghanistan is high and currently stands at the rate of 77 per 1 000 live births. In addition, there is a high level of stunting (>60 percent) and wasting (7.8 percent) among children under the age of five. Micronutrient deficiency, in particular iron and iodine is also prevalent.

No reliable data on food losses and food waste is available in the country. Underlying causes of food loss and waste include: low level of awareness and knowledge of farmers and the general public on post harvest management; poor storage capacity, transportation and marketing facilities; managerial and technical limitations, and weak coordination among different government and non government organizations, few farmer cooperatives in the country, lack of legal documents and proper data/systems, and little attention is paid by government authorities and the donor community to post harvest management and post-harvest loss reduction.

Steps to reduce food loss and food waste in Afghanistan, include the establishment and strengthening of agricultural cooperatives; the provision of chemical fertilizers and agriculture seeds to farmers; increased veterinary services; the establishment of storage facilities for farmers in a number of areas; the establishment of a food and medicine national board; and the development of a draft food law which addresses food losses and waste.

Bangladesh – Mr Khandoker Atiar Rahman, Joint Secretary (Procurement), Ministry of Food, delivered a presentation titled *Food Losses and Food Waste in Asia and the Pacific Region: Bangladesh*. Highlights of his presentation are summarized as follows:

Food losses and waste in Bangladesh result largely from inadequate marketing systems, inefficient and faulty transportation, inadequate regulations, the absence of quality standards, unavailability of post-harvest technology, inadequate extension of information, inadequate initiatives from NGO's and the high temperature and relative humidity conditions. At least 12 percent of rice produced, and approximately 16 percent of wheat is lost during post-harvest operations.

Bangladesh has achieved success in reducing post-harvest losses in potatoes, by establishing cold stores through public-private partnerships. Government initiatives have strengthened the storage capacity for cereals across the country. Storage facilities for other perishables and particularly fruits and vegetables are almost absent. Interventions are, therefore, urgently required to reduce losses and maintain quality and safety in fruit and vegetable supply chains.

Improvements are required in the areas of packaging, ripening technology, cool chain development, the development, of grades and standards for agricultural-produce, research and extension to prolong shelf life, processing activities for diversification, initiatives for fresh cut and minimal-processing and research and training.

Goals must be set at the country and regional levels through policy development, capacity building through training and education, infrastructure for storage capacity, market infrastructure development, the establishment of cold storage facilities and improvement of transportation systems.

Bhutan – Mr Tenzin Drugyel, Senior Agriculture Officer, Department of Agriculture, Ministry of Agriculture and Forests, delivered a presentation titled: *Country perspectives on food losses and food waste*. Highlights of his presentation are summarized as follows:

Bhutan has an area of 30 000 square km and a population of 745 000, of which 69 percent of the population is dependent on agricultural industry. The government promotes moving toward 100 organic farming practices. Bhutan is not completely self-sufficient in food production and imports most of its food requirements.

Approximately 55 percent of crop damage in Bhutan is attributed to wild animals (elephants, tigers, etc.), while post-harvest losses occur mainly during storage. Several steps have been taken by the government to reduce food loss. These include electricity fencing, the construction of silos to store grains and the use of sound and light alarm systems to scare away animals.

Brunei Darussalam – Hjh. Siti Raihani bt Haji Abdul Hamid, Agri-food Industry Division, Department of Agriculture and Agri-food, Ministry of Industry and Primary Resources, delivered a presentation titled: *Experience and perspectives on post-harvest loss in Brunei Darussalam*. Highlights of his presentation are summarized as follows:

Improper pre- and post-harvest handling practices contribute to excessive losses - as high as 50 percent for local fruits and vegetables and particularly the leafy green vegetables- in Brunei Darussalam. Post-harvest losses in Brunei Darussalam result from oversupply during periods of surplus, failure to meet international post-harvest standards, adverse environmental conditions, damage during handling and limited investment in post-harvest handling equipment.

A number of strategies are being put in place in Brunei Darussalam to reduce post-harvest losses from 19 percent to 10 percent. These include: the use of genotypes that enhance post-

harvest characteristics including disease resistance and increased shelf life; use of integrated crop management systems and good agricultural practices that enhance post-harvest quality such as good farm hygiene; use of appropriate post-harvest procedures and treatments and the implementation of supply chain management systems that involve everyone in the supply chain i.e. farmers, workers, transporters, wholesalers, and retailers.

Cambodia – Dr Chan Saruth, Director of the Department of Agricultural Engineering, General Directorate of Agriculture, Ministry of Agriculture, Forestry and Fisheries, delivered a presentation titled: *The importance of reducing food losses and waste in Cambodia*. Highlights of his presentation are summarized as follows:

No research has been conducted in Cambodia to estimate the magnitude of food losses and food waste. Post-harvest losses in Cambodia occur during harvesting, transportation, storage, packaging, and marketing of rice, fruits and vegetables. It is estimated that post-harvest losses for rice range between 14 percent in the dry season and 28 percent during the wet season.

Cambodia has initiated several steps to reduce food losses and waste. Food losses and waste are recognized by all relevant public institutions and policies on food losses and waste are being considered. The issues are linked to poverty reduction through awareness raising and capacity building of various stakeholders in cities and in remote areas.

Pilot projects on awareness raising and capacity building on food losses and waste have been initiated by the Government, NGOs and private sector, but mainly to address rice post-harvest loss. Agricultural crops must be harvested at optimum maturity using appropriate harvesting technology to reduce loss and waste; technologies must be available to farmers; farmer-level storage and drying facilities must be improved to ensure improved quality of agricultural produce to meet market demand and for their own consumption and storage; awareness programmes on appropriate post-harvest storage and packaging should be considered for farmers; market information systems should be introduced and be made available at the farmer level, and rural infrastructure such as roads and irrigation systems must be developed to reduce production cost and damage to produce, while facilitating improved access to the market.

Cambodia routinely seeks assistance from international development organizations such as UNIDO, the International Rice Research Institute (IRRI) to conduct surveys and assessments etc. However, Cambodia would require more reliable data for their policy makers to address the issue of food losses and food waste.

India: Dr S. K. Nanda – Project Coordinator and Principal Scientist of the Central Institute of Post-Harvest Engineering and Technology, Ministry of Agriculture and Cooperation, delivered a presentation titled: *Assessment of post-harvest losses of major crops and livestock produced in India.* Highlights of his presentation are summarized as follows:

Post-harvest losses in Indian agriculture have been of great concern owing to the enormity of the problem. In the absence of an accurate scenario, the Parliamentary Standing Committee on Agriculture (PSCA) advised the Indian Council of Agricultural Research (ICAR) to undertake the task

of collecting authentic data on post-harvest losses in agrarian and allied sectors across India. This study was undertaken by the national network of centres under an All India Coordinated Research Project on Post-Harvest Technology (ICAR). Within the context of the study, scientific methodologies i.e. statistically sound sampling techniques were used to conduct assessments, using 46 items/commodities.

Results of the study highlighted the fact that a major underlying cause of post-harvest loss in the country is the lack of infrastructure for handling and for short term storage, particularly at the farm level, as well as the lack of intermediate processing in the production catchments. These results also revealed that efforts of the government to reduce post-harvest losses have resulted in the significant reduction of losses across the country.

The study identified the need to intensify efforts to reduce losses through: continued and increased investment in research and development on technological interventions; awareness raising on available post-harvest loss reducing measures; public investment in supporting critical infrastructure such as roads, power, warehouses; public and private investment in post-harvest infrastructure such as cold chains, and specialized storage structures. India would also be willing to partner with other countries for capacity building on post-harvest loss assessment methodologies.

Indonesia – Ms Sri Sulihanti, Director of the Center for Consumption Diversification and Food Safety of the Ministry of Agriculture, delivered a presentation titled: *Food losses and food waste in Indonesia*. Highlights of her presentation are summarized as follows:

Increasing food availability in Indonesia is focused on food production. Major challenges to food availability are land conversion, climate change and food price volatility. Food losses and food waste are relatively high and food waste is increasing.

Underlying causes of food losses include the lack of appropriate harvest and post-harvest equipment, poor storage facilities, lack of infrastructure for transportation, cooling etc, premature harvesting due to the need for cash, lack of food processing industries with 70 to 80 percent of produce consumed in the fresh form; inadequate and overcrowded marketing facilities, the lack of cooling equipment in wholeshale and retail markets, limited knowledge on post-harvest handling and the lack of incentives for quality improvement.

Underlying causes of food waste include growing incomes, changing food consumption patterns – restaurants serve buffets at fixed prices, oversized ready to eat meals, etc. and the lack of awareness of the negative impact of food waste on food security, the environment and on resources.

The Government has established a number of programmes to address food loss and food waste issues. These include: the development of small and medium food-processing industry; improving quality and standarization of agricultural producte; promoting the development of effective and efficient food supply chains (FSC); improving post-harvest facilities, storage facilities, technologies and marketing systems, as well as developing knowledge and capacity on post-

harvest handling practices; developing flour agro-industry based on the use of indigenous food starches; developing small/medium agro-business; developing by-product agro-business; improving food packaging etc. Actions to reduce food waste at the consumption level are, however, limited.

Japan – Mr Eietsu Sakuraba, Counselor (Deputy Director-General) of the Food Industry Affairs Bureau, Ministry of Agriculture, Forestry and Fisheries, delivered a presentation, titled: *The control of food waste generation and food recycling systems in Japan*. Highlights of her presentation are summarized as follows:

The food self-sufficiency rate (calories) in Japan is the lowest among the developed countries. Japan imports approximately 60 percent of its total food requirements.

In 2010, 17 million tons of food waste was produced in Japan, of which 37 percent was produced by industry i.e. at the level of manufacturers, retailers and restaurants, and 63 percent were produced at the household level. To address the issue of food waste, Japan has developed Food Recycling Laws that involve food-related business operators (manufacturers, distributors, and restaurants), consumers and national and local governments. The government has fixed targets for the control of food waste generation at the manufacturing, retail and wholesale levels.

Japanese food banks promote the effective utilization of food by donating food that is close to its "*best before date*" or food that is "*out of specification*," but which does not have food sanitation issues, by donating it to welfare facilities.

Food waste reduction must be understood at the consumer level. The Ministry of Agriculture, Forestry and Fisheries in collaboration with relevant ministries and agencies provides information on food losses and promotes improved practice among stakeholders, including the dissemination and awareness of good practice in food labeling etc. The public and private sectors are currently working together to promote a national campaign aimed at reducing food losses. Household food losses and food waste must be taken into account in planning actions.

Lao PDR – Mr Bouthsakone Inthalangsee, Deputy Director of the Clean Agriculture Development Center, Department of Agriculture, Ministry of Agriculture and Forestry delivered a presentation, titled: *Food losses and food waste in Lao PDR*. Highlights of his presentation are summarized as follows:

Lao PDR is a landlocked country that is largely agrarian, with 80 percent of the population living in rural areas. The agriculture sector accounts for over 27.8 percent of GDP and employed over 78 percent of the country's labor force in 2011. Rice is the most important agricultural crop.

Currently no data exists on food losses and food waste in the country, and food losses and food waste issues are yet to be addressed adequately. Key issues include constraints in harvesting, storage, cooling, packaging and transportation, market systems. The country also lacks appropriate programmes and policies and limited research is conducted to address food loss and food waste.

The government and development partners are currently focused on conducting research on commodities, capacity building and is raising awareness on food losses and food waste. Pilot projects designed to strengthen post-harvest capacity, create plant protection networks, promote private investment in storage and transport facilities, promote vegetable value chain development, strengthen the clean agriculture development, and learn from other countries are in progress.

Maldives – H.E. Mr Ahmed Shafeeu, Minister for Fisheries and Agriculture, Ministry of Fisheries and Agriculture, in his statement provided an overview of food losses and waste in the Maldives. Highlights of his statement are summarized as follows:

The Maldives imports approximately ninety percent of its food requirements. Growth is currently taking place in the agricultural sector with huge potential to move forward. This growth is, however, constrained by the limited availability of cultivable land, shortages of domestic labor and the leasing of uninhabited islands by the Government.

The Maldives has developed key sectoral policies to: strengthen commercial agriculture as a measure to reduce reliance on imported food; promote access to appropriate technology; develop networks and physical infrastructure to strengthen the marketing and trade of agriculture produce; strengthen institutional capacity and strengthen legal frameworks. The country is also working on strengthening agricultural statistics.

Constraints and limitations to minimizing food losses and food waste in the Maldives, include natural calamities such as sea-level rise and improper practices such as the use of chemicals. The main issue, however, is the geographical distribution of islands. There are approximately 1,000 inhabitant islands which are separated by oceans. Transportation has been a main issue in delivering produce to consumers in a timely manner. Losses in agricultural produce are sustained during transportation.

At the household level, changes in lifestyles have exacerbated the problem of food loss and food waste. Awareness must be raised to properly recycle and manage fresh produce. The government currently promotes the consumption of crops that are indigenous to the Maldives.

A number of initiatives have been undertaken by the government to offer financial assistance to remedy the crop losses incurred by heavy rains etc. These include the promotion of agro-forestry; value-addition programs; capacity building; working together with farmers' cooperatives and retail chains in order to improve the marketing system; the development of standards, and infrastructure development through focusing on a decentralized market system due to geographic characteristics in the country.

Mongolia – Ms Davaa Tungalag, Director-General of the Department of Coordination for Food Production Policy Implementation, Ministry of Industry and Agriculture, delivered a presentation titled: *Food loss and waste situation in Mongolia*. Highlights of her presentation are summarized as follows:

The agricultural sector is the main traditional economic sector in Mongolia and continues to show a growth trend. A number of regulations that govern the food and agriculture sector have

been passed in Mongolia over the years. These include Food Law, 2012; Food Safety Law, 2012; Law on Quarantine and Inspection of animals, plants and raw materials and products of their origin during border transmission, 2002; Law on Agriculture Commodity Exchange, 2010; Mongolian Livestock National Program, 2010; National Food Security Program, 2009; State Policy and Strategy for Food and Agriculture, 2003; National Program on "Sea buckthorn", 2010.

The major livestock products produced in the country for food, are meat including meat products, and milk including dairy products, and the major crops are cereals, potatoes and vegetables.

Post-harvest losses in cereals, potatoes and vegetables result largely from poor storage facilities, inappropriate and inadequate packaging and transportation systems, lack of technology, lack of a market orientation, over production of food items, and the lack of consumer awareness. Losses are also sustained in meat products, milk and other dairy products.

The government is currently implementing a series of programs to increase domestic production of food and food products.

Myanmar – Ms Khin Mar Oo, Programme Officer of the Department of Agricultural Planning, Ministry of Agriculture and Irrigation delivered a presentation titled: *Food losses and waste in Myanmar*. Highlights of her presentation are summarized as follows:

Major crops produced in Myanmar, include paddy, maize, pulses, ground nuts, onions, potatoes, mangoes, oranges and pineapples. Food losses result mainly from the lack of post-harvest technology and occur both pre- and post-harvest. Underlying causes of post-harvest loss include: poor pest and disease control, mechanical damage, lack of knowledge, inadequate extension support for horticultural crops, limited use of chemicals owing to high cost and limited knowledge about crop varieties.

Research on pre- and post-harvest technology has been initiated in the country. More research is required to improve equipment, facilities and food processing systems by making them more efficient and less costly. New technology is urgently needed to control post-harvest diseases. Post-harvest management of agricultural commodities is still weak and growers and retailers continue to apply traditional post-harvest handling practices, based on their knowledge and experience. Some growers make use of chemicals without having the knowledge of chemical hazards resulting in adverse impacts on consumer health.

Other constraints to address post-harvest losses in Myanmar include: the shortage of expertise in post-harvest systems management, the lack of access to finance, poor understanding of technical know-how, and poor systematic marketing systems. Post-harvest development remains at a low level in terms of research and investments in Myanmar. Reduction of post-harvest losses is one of the best ways to increase food production. Improvement of post-harvest systems management is an urgent need in Myanmar.

Nepal – H.E. Mr Tek Bahadur Thapa Gharti, Minister for Agricultural Development, Forestry and Soil Conservation, in his statement provided an overview of food losses and waste in Nepal. Highlights of his presentation are summarized as follows:

Food losses and food waste are critical issues in Nepal, and have not received adequate attention in policies, programmes and dialogue. This lack of attention has negatively impacted on efforts to reduce hunger, poverty and malnutrition. Food losses and food waste are associated with limited knowledge among stakeholders in the food chain and inadequate infrastructure for the distribution, processing and marketing of food. Food habits and associated consumer behavior also add to the complexity of the problem of food losses and food waste.

Thirty-three out of 70 districts in Nepal are still in a food deficit status. The Nepalese government is currently investing in raising awareness of the issues through education, and infrastructure development. Currently, 13 development partners in Nepal, including FAO, are engaged in the design of a 20-year agricultural development strategy which integrates consideration for food loss and food waste management. There is a need for financial and technical assistance. A multi-pronged approach is required to address food loss and food waste in Nepal. It must integrate consideration for policy development, awareness and education, infrastructure development and behavioral change among actors.

FAO's assistance is required in capacitating the human resource base to access, analyze and utilize data on food losses and waste, formulate policies that address the challenges effectively and mobilize institutions to put policies into action.

Pakistan – Dr Muhammad Azeem Khan, Director-General of the National Agricultural Research Centre (NARC), Ministry of National Food Security and Research delivered a presentation titled: *Pakistan experiences and perspective on post-harvest loss and food waste*. In his presentation, Mr Azeem highlighted the following:

The Constitution of Pakistan ensures the provision of basic necessities of life including food for the citizens of Pakistan. Progress has been made since the attainment of independence in 1947 i.e. from food shortages and import to self-sufficiency and exports; from subsistence farming to intensive and technology led cultivation, and from the green revolution to white and gene revolutions.

Pakistan is ranked 11th, globally, among countries that face the risk of food insecurity. One third of Pakistan's population is currently living below the food poverty line. One third of children under the age of 5 are underweight. Food insecurity is higher among females when compared to males, and micronutrient deficiencies i.e. iron, calcium, and vitamin A deficiencies are prevalent.

Food insecurity challenges in the country include low productivity, high land use intensification, high levels of post harvest losses, land degradation and water scarcity, high levels of food contamination and high levels of food losses and waste. Several studies conducted across the country have concluded that post-harvest losses in cereals and pulses, fruits and vegetables are particularly significant. Factors that contribute these high levels of loss include the use of local

or auto-propagated seeds, excessive use of fertilizers, poor irrigation systems, poor harvesting, handling, transport and storage practices, and crop infestation by insects and fungi. Several laws on food safety have been enforced in the country to safeguard the interest of consumers.

Measures required to minimize post-harvest losses in Pakistan: include education of producers and distributors, improvements in harvesting, storage, processing, distribution and transportation techniques for cereals, fruits and vegetables; appropriate use of sorting and grading systems in the distribution system; consumer awareness on appropriate methodologies for the household storage of fruits and vegetables; employment of skilled personnel in the fruit and vegetable processing sector, and building a suitably integrated fruit and vegetable chain for cooling, transportation, sorting, grading, storage, packaging and marketing of fruits and vegetables.

Philippines – Dr Renita de la Cruz, Chief Science Research Specialist of the Philippine Center for Post-harvest Development and Mechanization, delivered a presentation titled: *Experiences and perspectives on post-harvest loss and food waste in the Philippines.* During her presentation, she highlighted the following:

Food losses take place across the post-harvest chain at the farm, during harvesting, threshing, drying, and marketing as well as during storage and milling. Post-harvest losses result largely from the inadequacy of post-harvest technologies and poor post-harvest practice, inefficient equipment and /or the lack of skills of machine operators, inadequate information among concerned stakeholders, inadequate infrastructure such as farm-to-market roads, poor quality cold chain facilities and transport systems, and unfavorable weather conditions.

In 2010, wasted rice in the Philippines was valued at PhP6.2B, equivalent to 13 percent of the total rice imports for that year, or enough to feed some 2.6M Filipinos. While a campaign was launched to promote responsible rice consumption, no policies have been put in place to address the issue of responsible rice consumption.

A number of strategies and approaches have been initiated in the Philippines to address food loss and food waste issue. These include: research, development and extension of appropriate post-harvest technologies for the food supply chain; provision of access to improved technologies through government support; enhancing knowledge and skills of agricultural extension services through training, and symposia, including the establishment of post-harvest specialist networks in local government units; education campaigns among stakeholders through television, print, radio and electronic media; introduction or enhancement of value-adding activities in the rural areas to make use of available supplies for home consumption and/or for sale; facilitating market access by collaborating with other agencies concerned with market development; provision of infrastructure support by the national government, and policy and advocacy (national and local government units).

Sri Lanka – Mr L.K. Hathurusinghe, Director of Projects of the Ministry of Agriculture, delivered a presentation titled *'Food losses and food waste.'* During his presentation, he highlighted the following:

Food losses and food waste are mainly caused by (i) pre-harvest losses owing to extreme weather conditions, diseases, and damage due to pest, (ii) premature harvesting, (iii) harvesting losses due to mechanization and other production practices, (iv) over production, (v) insect infestations, (vi) poor storage facilities and the lack of infrastructure, (vii) lack of processing facilities, (viii) discarding produce owing to its appearance and unusual shapes, (ix) poor handling, packaging, and transportation techniques, (x) inadequate market systems, (xi) sorting of fresh produce for high quality appearance at supermarkets, and (xii) wastage during consumption at household level.

The impacts of food losses and food waste include the waste of resources such as water, land, money and labor; environmental problems such as air pollution, and water pollution; social and health issues that cause a nuisance by flies and other Insects, spreading diseases and emitting unpleasant odors.

Preventative activities initiated in Sri Lanka, include. (i) training on Correct Agronomic Practices and Pest and Disease Control; Identification of maturity stages for harvesting, proper mechanization and correct production practices, and proper management of storage facilities, (ii) education on market oriented supply and off season cultivation, (iii) encouragement of private sector investment for the establishment of storage facilities and processing, (iv) education on food safety and training on the preparation of safe food, and (v) education on the prevention of food waste in households and home gardening for own food.

Thailand – Ms Rangsit Poosiripinyo, Director of the Bureau of International Agriculture Economics, Ministry of Agriculture and Cooperatives (MOAC) delivered a presentation titled: *Food losses in Thailand*. During her presentation, she highlighted the following:

Approximately 46.6 percent of the total population of Thailand is engaged in agriculture. The country is self sufficient in food production and is also engaged in export.

Relatively little research has been conducted to quantify the levels of post-harvest loss in the country. Estimates, however, show that more than 30 percent post harvest loss is sustained in agricultural production mainly during transport and storage owing to the lack of infrastructure and technologies.

The main challenges faced by Thailand in terms of food losses and food waste are (i) lack of knowledge and technology transfer to farmers, (ii) costly post-harvest infrastructure and technologies, (iii) lack of funds for research and development, (iv) lack of investment and the involvement of local manufacturers in constructing small scale need based post-harvest infrastructure; (vi) lack of awareness among policy makers and the general public about the need to reduce food losses after harvest, (vii) low price of food commodities in the local market which discourages farmers from using proper packaging and transportation, and (viii) high cost of packaging and transportation.

The Thai MOAC launched its Food Security Strategic Framework (2013-2016) which includes four strategic thrusts. Strategic thrust number three, addresses the reduction of food

losses in agricultural food production, through supporting research and development and through the promotion of food processing technologies and post-harvest technologies; support to food waste reduction owing to unnecessary consumption, by raising awareness of the impact on food security through campaigns at the local and national level; and development of agricultural information systems and promoting access to information.

Potential areas for cooperation include: (i) strengthening information system projects within the framework of international cooperation, (ii) supporting joint research on food losses and food waste, (iii) providing a forum for discussion on knowledge, best practice and technologies to reduce post-harvest loss in region, and (iv) developing joint initiatives and efforts to reduce food losses.

Timor-Leste – Dr Acacio Cardoso Amaral, Dean of Agriculture of the Faculty of Agriculture, National University of Timor-Leste, Avenida Cidade de Lisboa delivered a presentation titled: *Experiences and perspective on food losses and food waste in Timor-Leste*, and Mr Gil Rangel da Cruz, National Director of Agriculture and Horticulture, Ministry of Agriculture and Fisheries delivered a second presentation, titled '*Timor-Leste – Country experiences*'.

During his presentation, Dr Amaral highlighted the following:

Approximately seventy percent of the population in Timor Leste is dependent on agriculture for food or livelihoods. A majority of farmers grow rice, which constitutes 75 percent of the Timorese diet. Other crops produced include corn, cassava and sweet potatoes. Food losses and food waste occur at the farmer-producer end of the supply chain owing to poor storage facilities and the use of traditional methods of food storage.

Steps and actions are being taken in the country to address food losses and waste. The in collaboration with donor and development agencies, the Government of Timor Leste has assisted farmer groups by providing over 5 000 airtight silos between 2007 and 2011 for grain storage. The Government has also accorded high priority to reducing post-harvest losses as a measure to improve the food security situation of the majority of its rural population. With a view to shifting to long-term sustainable development initiatives in the post-harvest sector, FAO has provided support to the Ministry of Agriculture and Fisheries in preparing a strategic framework for post-harvest development.

Several agencies currently provide support to the country to address food loss reduction. Since 2002, the FAO emergency and rehabilitation program in Timor-Leste has focused on reducing post-harvest losses largely through improving storage capacity by introducing locally manufactured metallic silos; the on-going CARE (East Timor) programme and 'Drums on Farms' programme funded by the International Fund for Agricultural Development (IFAD 2011) have also been involved with the distribution of drums to store maize grain. Research into storage and reduction of the high levels of post-harvest losses including the extensive deployment of airtight containers and drums is needed.

During his presentation, **Mr Cruz** highlighted the following:

The Strategic Development Plan 2011-2030 of the Ministry of Agriculture and Fisheries, seeks to improve rural incomes and livelihoods and reduce poverty; improve household food and nutrition security; support the transition from subsistence farming to commercial farming; and promote environmental sustainability and the conservation of natural resources.

Approximately 50 percent of Timorese live below the poverty line, and food and nutrition insecurity is prevalent. Underlying causes of food loss include low productivity, high levels of post-harvest losses, failure to apply good agriculture practices, improper harvest and post harvest management, improper agricultural machinery, poor storage systems; subsistence farming and low levels of agricultural knowledge and skill of farmers; environmental degradation and climate change effect; and low investment in agriculture sector.

Rodents and wild animals are the major causes of crop damage and losses in Timor Leste. Efforts required to reduce food losses, include improved farming techniques through good agriculture practices (GAP), technical assistance to extensions workers, training and capacity building, advocacy and awareness raising, and the introduction of agricultural mechanization such as power threshers, corn shellers, silos, drums, etc.

Viet Nam – Mr Nguyen Manh Dung, Head of the Food Processing Division, Department of Processing and Trade for Agro-Forestry-Fishery Products and Salt Production, Ministry of Agriculture and Rural Development delivered a presentation titled: *Experiences and perspectives on post-harvest losses and food waste in Viet Nam*. Highlights of his presentation are summarized as follows:

Between 80 and 90 percent of the output of agricultural commodities in Viet Nam is produced in Southern Viet Nam i.e. mainly in the Mekong River Delta. The main crop outputs include corn, cassava, sweet potato, vegetables and fruits. Post-harvest losses are high in some categories of agricultural produce. The highest level of losses occur in fishery products. While no specific studies have been conducted on food waste, it is estimated that food waste is increasing and over 20 percent of food produced is not used for the correct purpose.

Post-harvest losses in Viet Nam are largely due to small and scattered production, the production of wide range of rice varieties, improper drying of rice, poor storage and milling of rice under unacceptably high humid conditions, and the inappropriate use of post-harvest technology. Food waste is largely due to oversized portions, inappropriate packaging at the distribution and retail levels, inappropriate food storage in supermarkets - or at the household level, poor shopping habits of consumers - buying more food than is required and the dependence on food storage in the refrigerator, and reliance on the shelf-life of the products, rather than paying attention to actual quality.

Actions initiated in Viet Nam to reduce post-harvest losses and food waste include the deployment of research projects on harvesting, drying and preserving agricultural products; the establishment of extension systems to guide farmers to adopt effective post-harvest technologies; development of pilots and the construction of storehouses having a capacity of 4 million tons of rice; support to interest-free loans to farmers to purchase equipment for harvesting, processing, drying and storage of agricultural products; and strengthening cooperation in post-harvest technology transfer with countries across the globe.

5. Presentations by Regional Bodies

The South Asian Association for Regional Cooperation (SAARC) presented its perspective on food losses and food waste, while the Secretariat for the Pacific Community (SPC) contributed a summary paper highlighting critical issues in the Pacific region.

SAARC – Mr M. Ibrahim Ghafoori, Director of the Human Resources Development and Tourism Division of SAARC thanked FAO for organizing the High Level Consultation. During his presentation, he highlighted the following:

The consultation is timely, and issues of food losses and food waste are critical for the SAARC secretariat. The SAARC Secretariat has identified agriculture and food security as priority areas for fostering regional cooperation. SAARC has adopted several policy documents that address food loss and particularly post-harvest loss reduction.

Food losses and food waste are prevalent at every stage of the supply and value chain, from production to consumption at household level. In lower income countries, food losses and food waste occur due to inefficiencies in production and post-harvest management systems. They occur in industrialized countries as well, particularly at the consumption stage.

Food losses and food waste in the SAARC region, have been largely attributed to financial, managerial and technical inefficiencies and inadequacies in harvesting, storage and cooling facilities, challenges of climate conditions, infrastructure, packaging and marketing systems. Smallholder farmers in the SAARC region live on the margins of food insecurity. A reduction in food losses could have a significant impact on their livelihoods.

Food supply chains in SAARC countries need to be strengthened by encouraging small farmers to organize, diversify and up-scale their production and marketing systems. In addition, investment in infrastructure, transportation, food industries, and packaging industries is a must. Both public and private sector partners have a role to play.

In order to achieve the priorities of food security and address concerns of food losses and food waste, SAARC has been working with several established mechanisms and institutions such as SAARC Agriculture centre, SAARC Development Fund, SAARC Food Bank etc. and is collaborating with UN FAO and other relevant UN bolides, ADB and WB. Higher bodies of SAARC, recently commissioned the preparation of a number of priority food security projects, one of which addressed "Post-harvest Management and Value Chain Development in South Asia". SAARC is committed to continue to engage with FAO in this important pursuit.

Secretariat for the Pacific Community (SPC). A short paper was submitted by the Secretariat for the Pacific Community (SPC) in view of the inability of that Organization to physically participate in the Consultation. This paper highlighted the following:

The major causes of food loss and food waste at the production or pre-harvest level, are natural disasters and pests and diseases. Losses also occur during harvesting, post-harvest handling, distribution and in the home. Tackling food loss and food waste effectively, requires a range of activities, including the introduction of post-harvest handling treatments and technologies, improving access to markets, providing better storage facilities and educating consumers on the issue of food waste.

6. *Tackling Food Losses and Food Waste – Stakeholder Perspectives*

Two parallel round table discussions were convened to discuss food loss and food waste in the region.

Round Table A: Issues and Prospective Measures to Reduce Post-harvest Losses in Food Supply Chains

The round table titled: *Issues and prospective measures to reduce post-harvest losses in food supply chains*, was chaired by Ms Darunee Edwards, President of the Food Science and Technology Association of Thailand. Six technical presentations were delivered during this round-table session, followed by a plenary discussion.

Issues and Prospective Measures to Reduce Post-harvest Losses in Food Supply Chains: A Small Farmer Perspective

Ms Victoria Serrato, Enterprise and Marketing Officer of the Asian Farmers Association (AFA), delivered a presentation, titled: *Issues and prospective measures to reduce post-harvest losses in food supply chains: A small farmers perspective*. During her presentation, she highlighted the following:

AFA is an alliance of farmer organizations consisting of 13 national farmers organizations in 10 countries. The Organization focuses on ensuring food security in the context of sustainable agricultural and agro-ecological technologies, enterprise development and markets. Farmers of AFA's member organizations are faced with the challenges of production loss and poor quality – owing to the impact of climate change. Lack of access to post-harvest facilities and limited knowledge of post-harvest techniques such as harvesting, handling, processing and marketing are the challenges further faced by farmers in the region.

Issues and concerns of farmers such as low rice milling recovery (due to early harvesting, delays in drying and low grade milling facilities) result in low income;losses due to non-compliance with quality requirements in terms of produce consistency, quality, grading standards, product packaging; lack of capital to invest in post-harvest facilities; and inability to access credit owing to the small scale of their operations also pose a challenge for many small farmers.

Farmers have engaged in initiatives such as the promotion and adoption of sustainable agricultural practices e.g. farm diversification: crop-livestock integration and multi-cropping. Farmers have also invested in flatbed dryers that make use of rice hull as fuel for drying paddy rice in order to reduce biomass waste. They also apply indigenous knowledge and practices to food preservation, such as the use of charcoal in the storage area for paddy rice, stored at 13 percent moisture to preserve quality; and the maintenance of cleanliness and orderliness in storage facilities. Farmers are organized into commodity clusters, cooperatives, etc. to engage in

direct marketing, processing and value adding and make use of vacuum packaging to prolong shelf-life and reduce spoilage.

Reducing food losses and food waste in the region, necessitates the following: (i) support farmer organizations engaged in marketing as a mechanism for consolidating produce, adding value and marketing of produce; (ii) government must invest in the innovative design of facilities and equipment, and common service facilities (community-based production and post-harvest facilities); (iii) capacity building support is required on post-harvest technologies and post-harvest systems management; (iv) the need to document indigenous knowledge, good practices and innovative ways of reducing post-harvest losses; (v) the need to promote local/indigenous knowledge and practices that are effective in reducing post-harvest losses; and (vi) the need to promote and support knowledge sharing and learning exchange at the local, national and regional levels as a mechanism for sharing experiences, good practices and innovations.

Managing Losses in the Supply Chain

Mr Paichayon Uathaveekul of the Swift Company, Thailand, delivered a presentation titled: *Managing losses in the supply chain from the perspective of a fresh produce consolidator.* His presentation highlighted the following:

The agricultural sector of most developing countries consists of smallholder farmers. Multi-tiered supply chains in these countries create huge volumes of waste. The main cause of post-harvest losses, include the multi-layering in supply chains; the lack of control in the post-harvest chain; poor logistics and poor handling in the value chain; inefficiency in processing poor government policies and practices; and waste at the consumption level.

The Swift Company's supply chain begins with organized farmer groups. Outputs of these farmers is collected at the Swift pack house and is subsequently transported to importers, retailers and finally, to consumers. The process i.e. direct supply from farms to pack houses minimizes losses due to handling. In terms of farm operations, groups of growers are organized in selected areas, and packing houses are established in different regions to minimize logistics costs. Processing lines are set to fully utilize all inputs and thus minimize possible waste/losses.

Key recommendations for reducing food losses and food waste, include: (i) the establishment of farmer cooperatives that supply directly to end-users; (ii) establishment of training centers to train managers of cooperatives and leaders of farmer groups on a longer-term basis; (iii) training programs designed to enable farmer groups to efficiently manage cooperative practices, manage waste, and to link farm produce to markets; (iv) establishment of follow-up and monitoring systems; and (v) access to credit/funding for initial operation of cooperatives over a 3-5 year period.

Hermetic Storage Technology – Perspective of a Supplier

Mr Jonathan Quintos, Regional Manager, of Grainpro Inc., Philippines delivered a presentation titled, Hermetic Storage Technology – Perspective of a Supplier. His presentation highlighted the following:

Grain Pro has developed a storage system referred to as cocoon hermetic storage, wherein air and water vapor (moisture) is reduced to a minimum level that allows the safe storage of grains. Hermetically sealed grain storage systems preserve grain quality and seed viability because they maintain the original storage moisture content and reduce pest damage without the need for pesticide and/or chemical use. These systems is also used for the export of Thai rice in order to retain the moisture and humidity level. The system is also promoted and used by NGOs in the region.

The advantages and benefits of hermetic storage technology include the fact that the grain can be stored for longer periods of time; grain can be stored outdoors (plastic is weather resistant for over 10 years); losses are reduced to 0.25 percent per annum; rodent damage is eliminated; the quality of the commodity is preserved and the production of toxins is prevented. In the case of seed: germination is preserved; there is no need for chemical treatment (green technology); and no electricity is required.

Reducing Post-harvest Loss and Food Waste from the Perspective of a Food Processor

Mr Lai Kit Mun, Director of Tetrapak South East Asia, Ltd., Singapore, delivered a presentation titled: *Reducing post-harvest loss and food waste from the perspective of a food processor*. His presentation highlighted the following:

Milk is utilized at all steps of the value chain from production to consumption. Juice is also utilized across the value chain. Coconuts in Southeast Asia are used in various sectors for the production of a range of end-products such as coconut milk, cosmetics, etc, with considerable levels of waste which include mature coconut water.

The Tetrapak Company has, however, developed a processing system, to reduce this waste, by adding value to mature coconut water through processing it into a beverage.

The key challenges to be addressed are obtaining good quality raw materials and applying good practice across the production to consumption chain to assure product quality. Solutions for coconut water collection such as through the application of the basic principles applied in dairy collection systems have been and proven in different parts of the world.

Post-harvest Losses – Perspective of the Retail Sector

Ms Jutarat Pattanatorn, Senior Manager of Quality Assurance at Siam Makro Public Company Limited, Thailand delivered a presentation, titled *Post-harvest losses – Perspective of the retail sector*. Her presentation highlighted the following:

Food quality and food safety are controlled by Makro in order to serve clients with quality produce. The company has been working on the implementation of safety control systems since 2008. In 2009, the company developed GMP codes for produce and products. The company has received global recognition for its standard and quality control. The company is also concerned about the environment and the place of origin of fresh produce, and has established a trace-back

system to monitor the fresh produce supply chain. The company has also developed a packing house to implement good manufacturing practice to meet the needs of consumers. Agricultural produce sold in Makro stores is delivered based on contract-farming and farmers are trained to produce crops in a way that can allow them to meet the standard of quality required by consumers.

In collaboration with FAO and universities in Thailand, Makro continuously improves its quality and farming practices. Makro has launched a global certification system for farmers, on order to accredit their sustainable practices. The company is taking measures to reduce chemical contamination and to supply consumers with safe and healthy produce. Currently more than 500 farmers supply their produce to Makro.

Post-harvest Research, Education and Extension – An Academic Perspective

Dr Elda Esguerra, Associate Professor, University of the Philippines, Los Baños, delivered a presentation, titled: *Post-harvest research, education and extension – An academic perspective*. Her presentation highlighted the following:

Post-harvest losses vary between 10 and 50 percent across the region. Some of the factors that contribute to losses include the general lack of awareness which results in negative attitudes of stakeholders (fatalism and tolerance); increasing urbanization and industrialization leading to longer supply chains; the lack of programmes on post-harvest management in institutions across the region; limited research on the post-harvest handling of tropical perishable crops in Universities across the region; and the high cost of conducting basic or fundamental research. Less than 10 percent of the 24 000 extension workers in the Philippines have received training on post-harvest handling.

Efforts undertaken to reduce post-harvest losses include: education i.e. development of a pool of skilled professionals for undergraduate and graduate programs who can share knowledge and practices within the ASEAN region; extension i.e. training of trainers as well as training of supply chain stakeholders; and research i.e. strengthening basic research as a basis for technology generation.

Successes have been achieved where participatory approaches involving stakeholders and researchers have been implemented, toward improving post-harvest systems development.

There is a need to strengthen tertiary and postgraduate education on the issues of food waste/losses in the region; strengthen basic research and promote a paradigm shift in technology; the need to continue the on-going efforts of FAO and various institutions on capacity development; different modalities i.e. training, information dissemination etc.; strengthening the linkage of extension workers to research and academic institutions; and provision of an enabling environment in terms of infrastructure (e.g. roads, etc.) to support post-harvest systems development.

Closing Statement of the Session Chair

Many farmers in the region are smallholder farmers. Policy makers are key players in implementing frameworks to reduce waste and losses. Within the Japanese government system, between 5 and 6 ministries work together to minimize food waste and losses. Cultural, social and economic factors that contribute to food losses must be considered. Technological improvements are required for improvements in handling, processing and packaging. Innovations in productivity and competitiveness are also necessary to maintain food quality. Training, capacity building, and knowledge and practice sharing through partnership amongst developed and developing countries is necessary. Further, education and communication are keys to raise awareness on reducing food waste and losses from farming to household to consumption. "A better tomorrow comes from today. "

Round Table B: Issues and Prospective Measures to Reduce Food Waste in the Region

The round table titled: Issues and prospective measures to reduce post-harvest losses in food supply chains, was chaired by **Dr Muhammad Azeem Khan** of the National Agricultural Research Centre. Six technical presentations were delivered during this round-table session, followed by a plenary discussion.

Food Waste – Perspective of a CSO

Mr Masa Kogure, Executive Director, Table-for-Two (TFT), Japan, delivered a presentation titled: Food Waste – Perspective of a CSO. Highlights of his presentation were as follows:

The TFT concept seeks to right the imbalance between over-nutrition and under-nutrition. By partnering with over 600 corporations, government offices, schools, restaurants, and convenience store chains, this NGO implements its program in cafeterias and establishments across the globe. TFT has served over 40 million healthy meals to both sides of the "table." TFT partners include over 130 schools, universities, and the more than 1,000 members of the TFT University Association.

Food Waste – Perspective of a Consumer Association

Dr Anni Mitin of Consumers International, Office for Asia-Pacific and the Middle East, delivered a presentation titled: Food waste – perspective of a consumer association. Highlights of her presentation were as follows:

The membership of Consumers International currently includes 240 organizations in 120 countries who advocate for consumer rights on the global stage and help national consumer groups advance their campaigns and capacity.

Consumer level food waste is linked to factors such as eating habits and food culture; shopping and food preparation; cost of food; lack of facilities/incentives to minimize food waste; and consumer detachment from reality and knowledge of food.

Consumers in countries such as South Korea are charged for the disposal of Food Waste and Restaurants in Japan, levy charges for buffet leftovers. Emphasis must be placed on education in order to bring about a change in consumer behaviour.

Food Waste – Perspective of the Retail Sector

Ms Salinla Seehaphan, Corporate Affairs Director of Tesco Lotus, Bangkok, Thailand delivered a presentation titled: *Food waste – perspective of the retail sector*. Highlights of her presentation were as follows:

Tesco Lotus provides food to approximately 50 million customers from around the world, and sources food from thousands of suppliers in over 70 countries. Tesco is leading in reducing food waste globally by working with its producers and suppliers and helping consumers to find ways of reducing food waste, and improving its operations. Tesco is tackling food waste from farm to fork through its involvement in agriculture and supply chain development.

Through direct sourcing and support to farmers in production planning, Tesco has achieved success in reducing post-harvest loss and waste in the Morning Glory Supply Chain in Thailand.

Why Consumers in Bangkok Waste Fruits and Vegetables

Dr Lerpong Jarupan of Kasetsart University, Bangkok, Thailand delivered a presentation, titled: *Why consumers in Bangkok waste fruits and vegetables*. Dr Jaurpan shared results of a study funded by FAO, and conducted in supermarkets and fresh markets in Bangkok. Highlights of Dr Lerpong's presentation were as follows:

Consumers in Bangkok, show a preference for purchasing fruits and vegetables in the vicinity of the their residence and work place. Consumer level fruit and vegetable waste is largely linked to quantities purchased; poor storage practices by consumers and post-purchase behavior of consumers – such as forgot to cook/eat; excessive purchase, and poor quality. Awareness raising is the key to reducing consumer level waste in fruits and vegetables.

Education and Awareness to Reduce Food Waste in the Region

Dr Lalitha Bhattacharjee, of the National Food Policy Capacity Strengthening Programme, being implemented by FAO in Bangladesh, delivered a presentation titled: *Education and awareness to reduce food waste in the region.* Highlights of her presentation were as follows:

Child under nutrition (which includes underweight, stunting and wasting), is notably high in a number of Asia countries. South Asia has the highest prevalence of under-nutrition globally.

The organization of training in communities, schools, hospitals and canteens can contribute greatly to the reduction of food losses and food waste. Demonstrations and media campaigns could provide a good mechanism for reducing food waste at the household and community levels. Cooking classes for women, community leaders, school teachers, students and consumer groups,

through formal and non-formal channels would also provide a useful mechanism for food waste reduction. Education and awareness is also required in hospitals and canteens to reduce portion size according to nutritional requirements and needs (standardized, plated service for consumers).

Key requirements across the region include: the creation of an enabling policy environment; quantifying food losses and food waste; integration of post-harvest loss science and education in extension and academic curricula; strengthening training and extension for women farmers; and the incorporation of explicit nutrition goals and approaches in the value chain.

Environmental Issues and Sustainable Consumption

Dr Stefanos Fotiou, Senior Regional Coordinator, Resource Efficiency, UNEP, Bangkok, Thailand delivered a presentation titled, Environmental issues and sustainable consumption. Highlights of his presentation were as follows:

Out of 1.3 billion tons of food loss and wasted globally on an annual basis, 44 percent are fruits and vegetables, and 19 percent are cereals. Food losses and food waste represent a loss of water, energy, labour and other inputs. Approximately, 822 litres of water is required to grow 1 kg of apple; 255 litres of water is required to produce 250 ml of milk; and 4 325 litres of water is required to produce 1 kg of chicken meat, and 15 415 litres for 1 kg of beef. It therefore follows that consumers should purchase only what they consume, store it under optimum conditions and consume it.

Closing Statement of the Session Chair

Food waste in the region is of a diverse nature. Everyone needs to be involved in the supply chain especially at the market and consumer level.

7. Thematic Working Group Discussions

Four parallel thematic working group sessions were convened with the objective of proposing strategic actions to reduce food loss and waste. The topics of thematic discussions were as follows:

Theme 1: Awareness raising and advocacy (including knowledge sharing; education).

Theme 2: Strategic approaches to address post-harvest loss reduction across the producer to market chain.

Theme 3: Strategic approaches to addressing food waste and promoting sustainable consumption.

Theme 4: Building partnerships and networking for food loss and waste reduction.

A listing of working group members is attached as Annex 4. Each thematic working group was provided with a list of questions to guide the discussions (Annex 4).

The plenary reporting session on working group discussions, was co-chaired by **Mr Lai Kit Mun**, Director Tetra Pak South East Asia Pte., and Mr Hiroyuki Konuma, Assistant Director General and Regional Representative, FAO-RAP. One representative of each group presented a summary of group discussions. These were subsequently discussed in plenary.

Following these discussions, plenary presentations were compiled in plenary, into a document titled *Draft Strategic Actions*. These draft strategic actions were circulated to participants following the Consultation and further contributions of participants were incorporated. The final listing of strategic actions agreed to, is presented below.

Plenary Presentation of Thematic Working Groups

Theme 1: Awareness raising and advocacy (including knowledge sharing; education)

The plenary presentation under this theme, highlighted the following:

Awareness raising on reducing food losses and waste requires collective and collaborative actions of stakeholders at all levels, and on this basis, recommended roles for each stakeholder i.e. (i) government and policy makers as decision makers on food loss and food waste issues; regulation and resource allocation for the enabling environment (infrastructure, etc.); (ii) farmers to be aware of the issues and learn ways to minimize food losses and waste; (iii) academia/research institutes to implement training/education and develop materials to support farmers to increase awareness on the issue; quantitative and qualitative assessment of food waste and losses; evidence-based research to bring information and data to multi-stakeholders, education for students and different parties; (iv) private sector to introduce proper contract farming to help farmers to plan from planting stage to control over supply to markets; (v) media/consumer groups/

NGOs to collectively promote communication; and (vi) at the household consumer level to be aware of the issues and put efforts to reduce waste.

It was highly recommended that similar consultations should be convene at the country level.

Plenary Feedback

- Farmers, in general have a low level of awareness of food waste and losses, and often do not have technologies required to reduce waste. Minimizing food waste in the food industry, means reducing costs and increasing profits. The industry needs personnel and guidelines to take necessary steps to minimize the losses.
- Farmers must be aware of what is happening with their produce between the farm and the consumption level. Produce goes through many layers in the value chain and starts to deteriorate during transporting, processing, and packaging processes.
- Evidence-based research and information is important in helping farmers to understand, for average consumers to be aware, and for policy makers to consider this information in decision making.
- Farmers do not have capacity to understand the complex and complicated value chain and consequences in the market prices and often focus on increasing production/harvest only. Thus it is important to increase awareness of farmers.
- Theory-based teachings do not directly help increase awareness. Therefore, experience and practical case studies would help to understand and visualize the consequences.
- It is also important to target younger groups and educate primary and kindergarten school students as senior students might not listen to others.
- There is no clear curriculum for the specific topics on food waste and losses; These topics, can, however, be integrated into health and physical education curricula.

Theme 2. Strategic approaches to address post-harvest loss reduction across the producer to market chain

The plenary presentation on this theme highlighted the following:

Causes and critical issues in addressing post-harvest loss reduction across the producer to market chain i.e. both technical and non-technical causes and critical issues include: post-harvest specific infrastructure – storage should be proportionate to scale of production, handling, and transport; lack of knowledge; simple technologies that can be easily understood by farmers; pest and disease infestations; harvesting due to adverse weather condition; preparation for commodity markets, e.g. availability of facilities for sorting are inaccessible and costly.

Measures that could be taken to address these deficiencies, include: technology sharing and adoption; education; research and extension services; government financial support through subsidies, the establishment of post-harvest facilities and the development of organized farmer, networks.

Strategic approaches to address post-harvest loss reduction across the producer to market chain at the technical level include: promotion of GAP, GMP and other food safety standards; sustained research and development efforts; standardized methodology on loss assessment, causes of post-harvest losses and food safety compliance, identification of critical areas/steps where losses occur and actions; capacity building on technical research on post-harvest loss assessments; technology should be simple and cost-effective for wider adaption.

At the policy level: enforcement of food safety standards; investment in research and development; creation of an enabling environment for infrastructure and other support services; investment in human resource development; participatory research; investment in climate smart strategies and improved research-extension delivery systems.

At the CSO/donor organization level: facilitate organizing farmers; awareness and technology dissemination; tri – media promotion -PRINT, BROADCAST and TELECAST; and changing mind-set and attitude through farmer exchange visits, knowledge sharing.

The Save Food Campaign should provide support: in organizing small farmers into viable enterprises and equip them with the needed skills from production to marketing; documentation of success cases on reducing post-harvest losses; promoting, popularizing and replicating in other areas/countries in the region; and human resource development at all levels along the food supply/value chain.

Plenary Feedback

- Many actions and strategies could be undertaken by farmers and it is important that farmers participate in the process of raising awareness for food losses and waste reduction.
- Consider ways to utilize unconsumed/unutilized foods including indigenous ones, and proper technologies.
- Set targets to reduce food waste and help to use indicators to monitor situations at a country level such as MDG1.

Theme 3: Strategic approaches to addressing food waste and promoting sustainable consumption

The plenary presentation on this theme highlighted the following:

The underlying causes of food waste in the region include: the lack of awareness of the issues; lack of knowledge; cultural practices; high urbanization rates and industrialization; food marketing; and food subsidies. The Group also noted that consumer attitudes vary from country to country, with socio-economic status, education and literacy levels and with traditional beliefs.

Strategic approaches to address food waste and promote sustainable consumption, identified by the Group, were as follows:

Academia

- Research and knowledge-base to inform policy and decision-makers
- Integration of food waste, responsible and sustainable consumption in national education systems (all levels)

Food retail

- Encourage best practices (incentives for small producers)
- Supply-chain approach to reduce waste (farm-to-table)

Food Service

- Portion size/plate servings
- Nutritional labelling (calorie values)
- Demand-based preparation
- Strengthening dietetic and food service training (canteen, cafeteria, hospitals)
- Align businesses with social causes and development issues
- Consider charging for food/plate waste

Food processors

- Guidelines to stimulate best practice to comply with standards
- Strict food safety, processing, manufacturing audits
- Use of underutilized and indigenous foods for better nutrition and to reduce waste

Food consolidators

- Training and capacity building, standards and protocols (ISO 26000)
- Balancing profit and food integrity

Food CSOs

- Sensitization on food waste across
- Strengthening training and extension for farmers (women)
- Media advocacy

The Save Food Asia-Pacific Campaign should form a regional network for building consensus and speaking with a common voice; serve as a bridge to bring all the relevant actors (inter-agencies), sectoral stakeholders, etc. together; quantify food losses and food waste (identifying measurable and practical indicators); and set-up various technical working groups.

Theme 4. Building partnerships and networking for food loss and waste reduction

The plenary presentation on this theme highlighted the following:

Networks exist at the international level – networks created FAO and by other agencies, e.g. Consumer International. Networks also exist at the regional level. These include: the Asia-Pacific

Economic Cooperation (APEC), Association of South-East Asian Nation (ASEAN), SAARC, Pacific Islands Forum (PIF), Japan International Research Center for Agricultural Sciences (JIRCAS), researchers' network, Regional Retailer Associations, etc. At the national level private sector networks do exist; national mechanisms to promote food losses and food waste exist in some countries (Japan, Thailand, the Philippines, Maldives, etc.).

Consideration must be given to creating a Regional Save Food Asia-Pacific Network, and to explore the possibility of having a full time network moderator within the FAO office; The proposed Save Food A-P Network should seek to: bring together different existing networks i.e. APEC, ASEAN, SAARC, PIF, farmer groups, manufacturers, retailers, consumers, caterings, academics and other associations); leverage knowledge of the private sector (under CSR) on Save Food; promote concrete and fruitful partnerships with retailers at the national and regional levels; and support implementation of the strategic plan of action on Food Loss and Food Waste. The Save Food Asia-Pacific Save Network must be fully compatible with the Global Save Food Network.

The purpose of a regional Save Food Asia-Pacific Network would be to: provide a platform for sharing experiences, good practices, information, innovative technologies; encourage formal public-private partnership; promote South-South cooperation between and among countries in the region; raise awareness and advocate for reduction of food loss and food waste in the region; jointly mobilize financial resources; and discuss regular updates on implementation of Save Food actions (at least once per year) using different communication methods (e-mails, e-discussion, face-to-face meetings).

Plenary Feedback

A suggestion was made to commemorate 28 August as the 'World Save Food Day'. It was, however, recommended the issues of food losses and food waste can be appropriately addressed on World Food Day, which is celebrated on 16 October.

Strategic Actions

The Consultation **recognized that**

- Awareness and Advocacy are critical for reducing food losses and food waste in Asia and the Pacific Region.
- The private sector is a key stakeholder and partner in addressing food losses and food waste in Asia and the Pacific region.
- Support mechanisms must be put in place by governments in order to facilitate smallholder organization and to support private sector initiatives geared toward reducing food losses and food waste.

To meet this end, the Consultation **recommended the following actions from Governments**:

- *Governments must recognise the strategic importance of reducing food losses and particularly post-harvest losses and food waste as a measure to address food security in the region.*
- *Governments must prioritise the reduction of food losses – particularly post-harvest losses and food waste issues in their country strategic plans for agricultural development.*
- *Governments should work toward the creation of an enabling environment that is supportive of food loss reduction and provide better climate to stimulate private sector to invest in the food industry for food loss reduction. Policy objectives to meet that end must integrate consideration for the development of basic and post-harvest specific infrastructure and food safety and quality regulations.*

Strategic Areas to be Addressed

Awareness Raising and Advocacy

Increasing awareness for reducing food waste and losses requires collective and collaborative actions of stakeholders at all levels.

Recommended Actions for Different Stakeholders

- *Government and policy makers*
  - Food waste and losses must be considered in decision making processes
  - Regulations and resources are required to provide and support an enabling environment (infrastructure, etc.)
  - Must prioritize food loss and food waste in their agenda and take responsibility for the issues

- *Farmers*
  - Be aware of the issues and learn of innovative ways to minimize food losses and waste

- *Academia/research institutes*
  - Provide training/education and develop materials to increase farmer awareness on the issue
  - Quantitative and qualitative assessments of food losses and waste
  - Evidence-based research to bring information and data to multi-stakeholders
  - Education for students and different stakeholders

- *Private sector*
    - ❍ Proper contract farming to help farmers to plan from planting stage to control over supply to markets
    - ❍ Efficiency and effectiveness in reducing food waste and losses
- *Media/Consumer groups/NGOs*
    - ❍ Collective -promote communication
- *Household/consumer*
    - ❍ Be aware of the issues and make efforts to reduce waste

Addressing Post-harvest Loss Reduction Across the Producer to Market Chain

Recommended Actions

Technical

- Promotion of GAP, GMP and other food safety standards
- Sustained research and development efforts
- Standardized methodologies for loss assessment, causes of post-harvest losses, food safety compliance, identification of critical areas/steps where losses occur and actions
- Capacity building on technical research for the assessment of post-harvest losses
- Technology should be simple and cost-effective for wider adaption

Policy

- Enforcement of food safety standards
- Investment in research and development
- Enabling environment for infrastructure and other support services
- Investment in human resources development
- Research should be participatory where all stakeholders specifically small farmers are involved from research design, preparation up to implementation
- Investment in climate smart strategy
- Improved research-extension delivery system

CSOs/Development Agencies and Donors

- Facilitate organizing and strengthening of small scale farmers and farmer organizations
- Awareness and technology dissemination
- Tri – media promotion: PRINT, BROADCAST and TELECAST
- Changing mindset and attitude through farmers exchange visits, knowledge sharing and learning activities

Stakeholders to be addressed

- Farmer, farmer organizations and other key stakeholders along the chain
- Producers
- Processors/manufacturers
- Wholesale/retail markets
- Consumer
- Government, academe, Civil Society Organization

Role of the Save Food Asia-Pacific Campaign

- Support in organizing small farmers into a viable enterprise and equip them with the needed skills from production to marketing
- Documentation of success cases on reducing post-harvest losses
- Promoting, popularizing and replicating good practices and success stories in other areas/ country in the region
- Investment in human resource development at all levels along the food supply/value chain
- Collaboration with other like-minded groups at the country and regional level who have the same or similar initiatives or campaigns on reducing postharvest losses and food waste

Strategic Approaches to Addressing Food Waste and Promoting Sustainable Consumption

Technical Level

- Information and research on food waste
- Technical aspects associated with food (types, quality, safety, handling, processing, packaging, labelling, etc.)
- Development and integration of post-harvest loss science and education in academic and extension curricula
- Development of standards and compliance with standards
- Infrastructure development
- Food life-cycle analysis across the supply-chain
- Development of measurable indicators

Policy Level

Academia

- Research and knowledge-base to inform policy and decision-makers
- Integration of food waste, responsible and sustainable consumption in national education systems (all levels)

Food retail

- Encourage best practices (incentives for small producers)
- Supply-chain approach to reduce waste (farm-to-table)

Food Service

- Portion size/plate servings
- Nutritional labelling (calorie values)
- Demand-based preparation
- Strengthening dietetic and food service training (canteen, cafeteria, hospitals)
- Align businesses with social causes and development issues
- Consider charging for food/plate waste

Food processors

- Guidelines to stimulate best practice to comply with standards
- Strict food safety, processing, manufacturing audits
- Use of underutilized and indigenous foods for better nutrition and to reduce waste

Food consolidators

- Training and capacity building, standards and protocols (ISO 26000)
- Balancing profit and food integrity

Food CSOs

- Sensitization on food waste across
- Strengthening training and extension for farmers (women)
- Media advocacy

Role of The Save Food Asia-Pacific Campaign

- Formation of a regional network for building consensus and speaking with a common voice
- Serve as a bridge to bring all the relevant actors (inter-agencies), sectoral stakeholders, etc. together
- Qantify food losses and food waste (identifying measurable and practical indicators)
- Set-up various technical working groups

Building Partnerships and Networking

At the International Level

- Expand the existing Save Food Global Network by linking with Asia and the Pacific Regional network and initiatives
- Save Food A-P Network to be fully compatible with the Global Save Food Network

At the Regional Level

- Consider creating an Asia and the Pacific Save Food Network
- Explore the possibility of having a full time network moderator within the FAO office
- The Save Food Network is to bring together different existing networks (APEC APIP, ASEAN, SAARC, PIF, farmer groups, manufacturers, retailers, consumers, caterings, academics and other associations)
- Leveraging knowledge of the private sector (under CSR) on Save Food
- Promote concrete and fruitful partnership of retailers at national and regional level
- Support implementation of the strategic plan of actions coming out on Food Loss and Food Waste

Purpose of a Regional Save Food A-P Network

- To provide a platform for sharing experiences, good practices, information, innovative technologies and encourage formal public-private partnership
- To promote South-South cooperation between and among countries in the region
- To raise awareness and advocate for reduction of food loss and food waste in the region
- To jointly mobilize financial resources
- To discuss regularly updates on implementation of Save Food actions (at least once per year) using different communication means (e-mail, e-discussion, face-to-face meetings)

Recommendations at the National Level

- To promote multi-stakeholder and inter-ministerial national working groups to elaborate/ improve legal frameworks and related policies (bringing specially the private sector)
- To identify national focal points for Save Food networks at the national level to link with regional and global network
- To implement national campaigns and promote public awareness, education on Save Food
- Establish partnerships within the networks

Recommendations from FAO

- **Institutional strengthening through collaborative research and capacity building**
    - Action research geared toward piloting and disseminating post-harvest technology suited to small holders in the region
    - Capacity building of small holders
    - Waste reduction strategies
    - Improving the quality and safety of food from smallholder producers and small/ medium-scale agro-enterprises
- **Enhancing the environmental sustainability of food supply chains in the region**
- **Fostering knowledge sharing and networking on food loss and food waste issues in the region**
    - Regional post-harvest network, communication and further program development

8. Closing Session and Official Campaign Launch

The concluding session of the Consultation was chaired by Mr Hiroyuki Konuma, Assistant Director-General and Regional Representative. During this session, a draft joint communiqué was discussed, amended and endorsed by participants to the Consultation. Following endorsement of the Joint Communiqué, the document was read in its entirety and Save Food Campaign was officially launched by Mr Hiroyuki Konuma, Assistant Director General and Regional Representative of the FAO Regional Office for Asia and the Pacific.

Joint Communiqué on Food loss and Food Waste in Asia and the Pacific

We, delegates to the High Level Multi-stakeholder Consultation on Food Losses and Food Waste in Asia and the Pacific Region, convened by the Food and Agriculture Organization of the United Nations (FAO), on 27 and 28 August 2013, in Bangkok:

Consider food losses, in particular post-harvest losses and food waste as pressing problems for Asia and the Pacific Region.

We want to ensure food security, economic and social development and environmental sustainability in Asia and the Pacific Region for current and future populations by promoting actions to reduce food losses and food waste.

We want to raise awareness in order to reduce food losses and food waste and promote sustainable and responsible consumption in the region.

In cases where valuable food rots on the fields, or is attacked by pests, we support research into more efficient agricultural practices and environmentally sound interventions. In instances where food is spoiled or fails to meet standards at harvest and along the supply chain, we agree to promote solutions that rely on improving the knowledge base of stakeholders in food supply chains, and on the improvement of infrastructure, development of appropriate farm machinery, bulk packaging, storage, processing, transportation systems and logistics, etc. For those improvements, Governments should create a better enabling environment to stimulate the private sector to invest in the food industry. Therefore, we encourage the formulation of conducive policies and the creation of an investment climate. In the event of the retail and food service sectors being able to make a difference, we encourage companies to improve practices of planning, procurement, packaging, marketing and sales. In view of consumers wasting food, we campaign for greater respect for food and behavior change of consumers.

We agree to undertake a campaign, using various tools including communication materials and platforms to advocate against the negative consequences of food losses and food waste, and raise awareness of the importance of saving food.

With the SAVE FOOD ASIA-PACIFIC CAMPAIGN, we pledge to work together and create regional and national multi-stakeholder networks towards reducing food losses– along the food supply chain and fight the growing problem of food waste.

The fight against food loss and food waste concerns everyone – everyone can contribute.

Annex 1

Agenda

Agenda

Time		
Day 1:		
07:00 – 08:30	Registration	
Opening Ceremony		
08:30 – 08:45	Opening statement **H.E. Yukol Limlamthong**, Deputy Prime Minister and Minister for Agriculture and Cooperatives, Thailand	**Chair: Dr Rosa Rolle**, SeniorAgro-Industry and Post-harvest Officer, FAO Regional Office for Asia and the Pacific
08:45 – 09:00	Opening remarks Professor **Worsak Kanok-Nukulcahi**, Interim President, Asian Institute of Technology	
09:00 – 09:15	Welcome remarks **Mr Hiroyuki Konuma**, Assistant Director-General and Regional Representative, FAO Regional Office for Asia and the Pacific	
09:15 – 09:45	**Keynote Presentation** *Reducing post-harvest losses for food security* – **Dr M.S. Swaminathan**	
09:45 – 10:00	**Photo Session with Heads of Delegation**	
10:00 – 10:30	Coffee Break	Press Briefing
	Technical Presentations **Chair: Mr Robert VanOtterdijk**, Team Leader Save Food Global Initiative on Food Loss and Waste Reduction, FAO HQ, Rome, Italy	**Rapporteur: Dr Arun Mallik**, FAO-RAP Consultant
10:30 – 11:05	**Technical Presentation** *Current status and future trends of global and regional food security and hunger* – **Dr Sumiter Broca**, Policy Officer, FAO Regional Office for Asia and the Pacific	

Time		
	Technical Presentation *Global and regional status of food losses and food waste and their impacts on food security, hunger and the environment* – **Dr Rosa Rolle**, Senior Agro-Industry and Post-harvest Officer, FAO Regional Office for Asia and the Pacific	
Session : 1 Country Experiences and Perspectives on Post-harvest Loss and Food Waste		
11:05 – 12:00	**Sharing Country Experiences** **Chair: Mr Hiroyuki Konuma**, Assistant Director-General and Regional Representative, FAO Regional Office for Asia and the Pacific **India, Maldives, Nepal** • Comments from the Chair • **Afghanistan, Bangladesh, Bhutan,** Comments from the Chair	**Rapporteur: Dr Arun Mallik,** FAO-RAP Consultant
12:00 – 13:00	**Lunch**	
13:00 – 14:00	**Sharing Country Experiences** **Chair: Dr Prabhat Kumar**, Director Asian Centre of Innovation for Sustainable Agriculture Intensification, Asian Institute of Technology **Brunei Darussalam , Cambodia, Indonesia, Japan** • Comments from the Chair **Chair: H.E. Ted Bahadpur Thapa Garti**, Minister for Agricultural Development, Forestry and Soil Conservation, Nepal **Lao PDR, Mongolia, Myanmar, Pakistan** • Comments from the Chair	**Rapporteur: Dr Aurn Mallik,** FAO-RAP Consultant
14:00 – 14:30	**Coffee Break**	

Time		
14:30 – 15:00	**Chair: H.E. Mr Ahmed Shafeeu,** Minister for Fisheries and Agriculture, Maldives **Sri Lanka, Thailand, Timor Leste, Viet Nam** • Comments from the Chair	**Rapporteur: Dr Aurn Mallik,** FAO-RAP Consultant
15:00 – 15:30	**Sharing Experiences of Regional Organisations** **Chair: Mr Vili Fuavao,** Deputy Regional Representative, FAO Regional Office for Asia and the Pacific Perspectives from the SAARC Secretariat – **Mr M. Ibrahim Ghafoori,** Director, Human Resources Development and Tourism Division, SAARC Perspectives from the SPC – Statement/ paper from the SPC	**Rapporteur: Dr Aurn Mallik,** FAO-RAP Consultant
15:30 – 16:00	**Chair: Mr Vili Fuavao,** Deputy Regional Representative, FAO Regional Office for Asia and the Pacific Discussion and wrap up Short summary and closing remarks	**Rapporteur: Dr Aurn Mallik,** FAO-RAP Consultant
18:30 – 20:00	Welcome cocktail reception	

Time		
Day 2:		
Session 2: Tackling Food Losses and Food Waste – Stakeholder Perspectives		
	Round Table A. Issues and prospective measures to reduce post-harvest losses in food supply chains	**Round Table B. Issues and prospective measures to reduce food waste in the region**
08:30 – 10:30	**Chair: Associate Professor, Dr Vichian Hengsawad,** Director, Post-harvest Technology Innovation Centre, Chiang Mai, Thailand **Rapporteur:** Rosa Rolle, Senior Agro-Industries and Post-harvest Officer, FAO Regional Office for Asia and the Pacific • **Small farmer issues as they relate to post-harvest losses** – Miss Victoria Serrato, Enterprise and Marketing Officer, Asian Farmers Association • **Perspectives of a fresh produce consolidator** – Mr Paichayon Uathaveekul, Swift Company, Thailand • **Storage technologies – Perspective of a supplier** – Mr Jonathan Quintos, Regional Manager, Grainpro Inc., Philippines • **Post-harvest losses From the perspective of a food processor** – Mr Lai Kit Mun, Director, Tetrapak South East Asia, Ltd., Singapore • **Post-harvest losses – Perspective of the retail sector** – Ms Jutarat Pattanatorn, Senior Manager, Quality Assurance, Siam Makro Public Company Limited, Thailand • **Post-harvest research, education and extension** – Dr Elda Esguerra, Associate Professor, University of the Philippines, Los Baños	**Chair: Dr Muhammad Azeem Khan,** National Agricultural Research Centre, Pakistan **Rapporteur:** Ms. Nomindelger Bayasgalanbat, Nutrition Officer, FAO Regional Office for Asia and the Pacific • **Food Waste – Perspective of a CSO** – Mr Masa Kogure, Executive Director, Table-for-Two, Japan • **Food Waste – Perspective of a consumer association** – Ms. Anni Mitin, Consumers International, Office for Asia-Pacific and the Middle East, Malaysia • **Food Waste** – Perspective of the Retail Sector – Ms. Salinla Seehaphan, Corporate Affairs Director, Tesco Lotus, Bangkok, Thailand • **Why consumers in Bangkok waste fruits and vegetables** – Dr Lerpong Jarupan, Kasetsart University, Bangkok, Thailand • **Education and awareness to reduce food waste in the region** – Dr Lalitha Bhattacharjee, National Food Policy Capacity Strengthening Programme, FAOBangladesh • **Environmental issues and sustainable consumption** – Dr Stefanos Fotiou, Senior Regional Coordinator, Resource Efficiency, UNEP, Bangkok, Thailand

Time		
10:30 - 11:00	**Coffee Break**	
Session 3 : Strategic Actions to Reduce Food Losses and Food Waste (Country and Regional)		
11:00 – 12:30	**Breakout group discussions on selected themes:** **Theme 1.** Awareness raising and advocacy (including knowledge sharing; education) **Theme 2.** Strategic approaches to addressing post-harvest loss reduction across the producer to market chain **Theme 3.** Strategic approaches to addressing food waste and promoting sustainable consumption **Theme 4.** Building partnerships and networking for food loss and food waste reduction **Theme 5.** School-based campaigns to Save Food	Each thematic group will appoint a chair and a rapporteur
12:30 – 13:30	**Lunch**	
Session 4: Plenary Feedback on Strategic Actions		
13:30 – 15:00	**Chair: H.E. Mr Tariq Anwar,** Minister of State for Agriculture and Food Processing Industries, India Plenary presentation by a representative of each thematic group Discussion	**Rapporteur – Dr Arun Mallik,** FAO-RAP Consultant
15:00 – 15:30	**Coffee Break**	

Time		
Session 5: Concluding Session		
15:30 – 16:30	**Chair: Mr Hiroyuki Konuma,** Assistant Director-General and Regional Representative, FAO Regional Office for Asia and the Pacific Presentation of draft strategic actions • Joint communiqué on post-harvest loss and food waste in Asia and the Pacific Region • Conclusions **Launch of the Save Food Asia and the Pacific Campaign with agreed strategic actions**	

Annex 2

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Annex 3

Opening Speeches

OPENING REMARKS
by
His Excellency Yukol Limlamthong
Deputy Prime Minister and Minister for Agriculture and Cooperatives
of Thailand

delivered at the

SAVE FOOD ASIA-PACIFIC CAMPAIGN
High-Level Multi-Stakeholder Consultation on Food Losses and Food Waste in Asia and the Pacific Region

Plaza Athénée, Bangkok, Thailand
27 to 28 August 2013

Eminent speaker, Professor Swaminathan
His Excellency, **Mr Tariq Anwar**, Minister of State for Agriculture and Food Processing Industries, of **India**

His Excellency, **Mr Tek Bahadur Thapa Gharti,** Minister for Agricultural Development, Forestry and Soil Conservation of **Nepal**

His Excellency, **Mr Ahmed Shafeeu**, Minister for Fisheries and Agriculture of the **Maldives**

Professor Worsak Kanok-Nukulcahi, Interim President, Asian Institute of Technology

Mr Hiroyuki Konuma, Assistant Director-General and Regional Representative, FAO Regional Office for Asia and the Pacific

Excellencies, Ladies and Gentlemen

It is a great pleasure and privilege for me to be here at the opening of the High Level Multi-stakeholder Consultation on Food Losses and Food Waste in Asia and the Pacific Region. I would like to take this opportunity to express my heartfelt gratitude to FAO for organizing this important meeting which gathering in collaboration with AIT and other partners.

Excellencies, Ladies and Gentlemen

The 2011 FAO report on Global Food Losses and Food Waste, heightened attention and brought in an international focus on the magnitude and causes of food losses and food waste, and their impacts on food security and the environment.

Within the context of Asia and the Pacific Region, more efforts are needed to raise to global awareness on the critical issue of food losses and particularly post-harvest losses as well as food waste which is increasing nowadays.

By saying this, I would like to urge all member countries to highlight the negative impacts of food losses and food waste in order to raise awareness of this issue.

Food losses and food waste are very important in term of food security especially within the context of climate change that impacts on the cycle of agricultural production. It is timely to organize this consultation to address this issues.

The Government of Thailand is deeply committed to work with FAO and with other partners and stakeholders in the region to promote the security of the region and also of the world.

Excellencies, Ladies and Gentlemen

I wish you every success in your deliberations and a very pleasant stay in Thailand. Now I declare "the High Level Multi-stakeholder Consultation on Food Losses and Food Waste in Asia and the Pacific Region" open.

Thank you.

منظمة الأغذية والزراعة للأمم المتحدة | 联合国粮食及农业组织 | Food and Agriculture Organization of the United Nations | Organisation des Nations Unies pour l'alimentation et l'agriculture | Продовольственная и сельскохозяйственная организация Объединенных Наций | Organización de las Naciones Unidas para la Agricultura y la Alimentación

OPENING REMARKS

by

Hiroyuki Konuma

Assistant Director-General and

Regional Representative for Asia and the Pacific

delivered at the

SAVE FOOD ASIA-PACIFIC CAMPAIGN

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H.E. Yukol Limlamthong, Deputy Prime Minister and Minister for Agriculture and Cooperatives, Thailand,

Eminent speaker, Professor Swaminathan,

Professor Worsak Kanok-Nukulcahi, Interim President, Asian Institute of Technology,

Excellencies,

Distinguished Delegates

Good morning.

First of all, it is my pleasure to welcome you all, and to express my sincere gratitude to Dr Yukol , Deputy Prime Minister of Thailand for his acceptance to deliver the opening speech. I also wish to convey our special appreciation to Professor Swaminathan, the Chair of High-Level Panel of Expert on Food Security and Nutrition (HLPE) and the Father of Green Revolution who accepted our invitation to deliver a key note speech today. We value the partnership with Asia Institute of Technology (AIT) which has played an important role in organizing this event as a co-organizer. I wish to acknowledge the participation of 20 countries in the region with over 130 participants including four Ministers. I wish to thank all of you for taking time off your busy schedules to participate in this High-Level Multi-Stakeholder Consultation on Food Losses and Food Waste in Asia and the Pacific Region.

This Consultation is very special and historic, as today, we mark the launch of the Save Food Asia-Pacific Campaign. The Campaign seeks to raise awareness of the high levels of food losses and waste during whole supply chain– particularly post-harvest losses – and the growing problem of food waste ,especially at our dining table.

Ladies and Gentlemen,

The world produces more or less sufficient food to meet the demand of its current population of 7 billion. However, 12.5 percent of the global population, or 868 million people, equivalent to one in eight people, go hungry every day. In 2012, the Asia-Pacific region was home to 536 million hungry people, or 62 percent of the world's chronic hunger.

While the region has shown rapid economic growth in the first decade of this century, the successes achieved in economic growth have not resulted in alleviating hunger. Rather, they have resulted in the inequitable distribution of the benefits of economic growth, and widening income disparity and inequality in many least developed countries and in middle income countries of the region.

Nevertheless, it facilitated robust increases in per capita food consumption. Indeed, it increased from 2 370 kcal/day/person in 1970 to 2 770 kcal/day/person in 2005, and expected to exceed 3 000 kcal/day/person by year 2050. Along with rapid urbanization and changes in food consumption patterns, people are increasingly shopping for foods in hyper and supermarkets and storing them in their home. Considerable growth is also taking place in the food service sector including restaurants across the region – another area where substantial quantities of food are wasted.

Indeed, Food became easily available without much effort for search or cooking. Significant quantities of food procured by households are often wasted due to over-buying, poor storage, failure to consume or lack of seriousness to over expiration dates. At our dining table, nearly 15-20 percent of foods cooked are left over, thrown away and wasted in Europe, North America and Industrialized Asia. Indeed, food became less respected in recent past despite of its fundamental value that influences our life and basic human needs.

Ladies and gentlemen,

The region's rural labor force is declining and more food must travel over longer distances to markets in order to feed urban consumers – on poor quality roads, under hot and humid conditions, in packaging of poor quality. Considerable quantities of food for these urban markets is lost in transit. Not only do these food losses increase the cost of food for consumers and reduce incomes for producers, they threaten food security as a whole.

An estimated 42 percent of the fruits and vegetables grown in this region, and up to 20 percent of the grains produced, never reach the tables of consumers owing to these losses.

At the global level, a staggering 1.3 billion tonnes – enough to feed 3 billion people – is lost or wasted every year. FAO estimates that if the food wasted or lost globally could be reduced by just one quarter, this would be sufficient to feed the 870 million people suffering from chronic hunger in the world.

Moreover, we are facing new challenges to cope with rapidly growing world population which would reach over 9 billion by 2050. To feed these growing future population, FAO estimates that the world needs to increase food production by 60 percent by 2050, or by 77 percent in developing countries alone where the majority of population increase would occur. This challenge has to be met under existing constraints such as stagnation of productivity growth of major staple food such as wheat and rice, decline of arable lands, increasing scarcity of water resources, negative impact of climate changes and natural disasters, and completion on the use of land and water between food crops and bio-energy crops. We have to attain this goal and produce and supply sufficient food to meet the needs of our future generation.

Otherwise, social and political stability and world peace and stability would be compromised as we already witnessed in recent past.

There is no room to entertain food losses and food waste any more in the future.

Ladies and Gentlemen,

Environmental challenges across the region are also fuelling concern for the food security of current and future generations which warrants a greater focus on resource efficiency in the region.

Loss or waste of foods is not just a simple implication to itself. It involves loss or waste in labor, fertilizer, seeds, transport, storage, packaging and all other resources and energy used to produce the foods.

Greenhouse gas emissions from food losses and food waste contribute to global warming. As populations in the region grow, these impacts are likely to increase. Action must be taken to urgently curb and manage losses and waste to mitigate these negative environmental impacts.

Ladies and Gentlemen,

FAO has long recognized the importance of concerted action on food loss reduction and has been working in this area for over 40 years. FAO's systematic involvement in the reduction of food losses dates back to the late 1960s with the Freedom from Hunger Campaign. Following the first UN World Food Conference in Rome in 1974, FAO established the Action Programme for the Prevention of Food Losses in 1978, which ran until the early 1990s. The purpose of the programme was to assist developing countries implement programmes for the reduction of food losses at national levels through direct action projects which were implemented worldwide.

FAO recognizes the critical importance of a multi-stakeholder platform in discussing food loss and food waste issues, and in mapping the way forward in terms of strategic actions to be taken at country and regional levels to reduce food loss and food waste. This is why we are here today. We strongly believe that only through the joint efforts of all stakeholders involved will we be able to raise awareness and make the changes required to reduce post-harvest losses and food waste in the region. We are, therefore seeking commitment from you as key stakeholders, to develop joint initiatives and efforts at different levels to reduce post-harvest losses and food waste and to promote sustainable food consumption.

Some of the key expected outputs we are looking to from this Consultation, are: An improved understanding of the causes of food loss and food waste in the region; Agreement on priority actions to reduce post-harvest losses and food waste in the region, and the formation of a regional network.

As a follow up to this consultation, FAO would be able to provide support to the countries for country level actions as necessary .

Tomorrow afternoon, during the closing ceremony, the draft joint communiqué which is in your bag will be discussed and we welcome your comments suggestions by closing time today to Dr Rolle. Subsequently, the Campaign will be officially launched tomorrow afternoon before closing. Before closing, I wish to invite you all to join us under the Save Food Asia-Pacific Campaign. Together, students, teachers, researchers, policy makers, those from government and non-governmental sectors, public and private entities, friends, man and women, let's work as a partner of strong will and solidarity.

We need every one. We need a strong public support and participation in this extremely important undertaking which can only be achieved if everyone contributes, if we gain a strong political will, and if we succeed in mobilizing concerted efforts and partnership.

Ladies and Gentlemen,

I look forward to a very fruitful deliberations and outcomes.

Thank you.

High-Level Multi-Stakeholder Consultation on
Food Losses and Food Waste in Asia and the Pacific Region

Bangkok, 27 August 2013

Reducing Post-harvest Losses for Food Security

Prof M S Swaminathan
Chairman, High Level Panel of Experts on Food and Nutrition Security
UN Committee on Food Security (CFS)

Food losses and waste have recently been given very high visibility, since FAO estimates that about 1.3 billion tonnes or a third of all food produced are lost (Gustavsson et al, 2011). Recent reports (Foresight 2011, FAO 2011) have highlighted the need to reduce them globally to improve food security (HLPE 2011, FAO 2012ab) and to reduce the environmental impact of food systems (HLPE 2012, FAO 2012ab, UNEP 2012ab). An estimated 1.3 billion tonnes of wasted food can help to meet the food needs of over 3 billion persons. FAO launched the Save Food initiative in 2011 to accelerate progress in ending avoidable waste. Food losses and waste were much talked about during the preparation for the Rio+20 Conference (FAO, 2012ab), which linked the reduction of food losses and waste to the issue of more sustainable food systems and food security.

The **zero hunger challenge** launched in 2012 by the Secretary-General of the United Nations during the Rio conference integrates a zero-food-loss-and-waste challenge and a 100%-sustainable-food-systems challenge. The Committee on World Food Security has requested its High Level Panel of Experts (HLPE) for Food Security and Nutrition, which I have the privilege to chair, to prepare, for 2014, a report on Food losses and waste in the context of sustainable food systems.

Therefore, I welcome this timely conference and consultation, whose results will certainly be of importance for achieving the goal of zero hunger. For those who are working for a long time on food security issues the need for eliminating food losses and waste is an old topic. Why then there is such widespread interest now?

I think there are many reasons for this.

The first is probably that with the food price crisis in 2008 the whole world has realized that there are still almost a billion hungry people and 2 billion malnourished, many of them being pregnant women. Maternal and foetal under nutrition leads to the new born child having a low birth weight and such LBW children suffer from several handicaps in later life, including impaired cognitive ability.

With the onset of the era of climate change, there are concerns regarding our capacity to sustain a growing demand for food, driven by population and income growth and by a shift towards diets richer in animal products. FAO estimates that food production will have to increase

by 60 percent towards 2050 to satisfy the growing demand (Alexandratos and Bruinsma, 2012). According to these estimates there will still be 450 million hungry in 2050, too poor to be part of the demand. Concerns for the capacity of food systems to produce enough are grounded on the realization that they rely on natural resources, which are now used in an increasingly unsustainable way.

Food waste is also a waste of natural resources like land and water. To a great extent, food losses and waste are symbolic of the inefficiencies of food systems. All these reasons explain why Food losses and waste are becoming so central to discussions on both food security and sustainable development. In our first report on price volatility and food security (HLPE 2011), we urged greater attention to food losses and waste in order to mitigate price increase and reduce price volatility. In our third report on climate change and food security, we have again stressed this point as a way to mitigate climate change (HLPE 2012).

Everybody agrees on the importance of the issue and on the need to do something urgently about it. However, action requires a better understanding of food losses and waste, of their causes, and of trends affecting them, from a scientific and social view point.

Definitions of what **food losses and waste are still a matter of debate**. The main approach, and for which data are easily available, refers to the "*loss and waste of food measured along the food chain, intended as the edible part of produce initially meant for human consumption. In practice, food losses and waste are often measured by comparison of actual sales to the original marketing volume*." (Gustavson et al 2011).

"Food" waste or loss is measured only for products that are directed to human consumption, excluding feed and parts of products which are not edible. As per this definition, food losses or waste are the masses of food lost or wasted in the part of food chains leading to "edible products going to human consumption". **Little is thus known about the final use of discarded produce**. In other words, food discarded from the food value chain is counted as a loss, whatever its final use, even if it is used as animal feed or energy feed or even, sometimes even for human food. In my view, the concept of waste should cover every part of the biomass. To illustrate this, I am helping to set-up on behalf of the Government of India a Rice BioPark at Nay Pi Taw in Myanmar.

This definition is enlarged by some authors (see Parfitt et al, 2010) to include edible material fed to animals (Stuart 2009) or even further to include over-nutrition (Smil, 2004, Lundqvist, 2008).

The distinction between food losses, often also denominated post-harvest losses (Gustavson et al, 2011), and food waste also gives way to various definitions. Most of the authors distinguish them based on stages in the food chain and importance of behavioural causes (Parfitt et al, 2010). **Food losses happen at the earlier stage of food chains; Food waste happens at retailing and consumption stages**. Some authors tend to use "food waste" as a generic for food losses and waste. Others tend to consider that food losses which are at the end used for other purposes than human food, such as feed or energy, are not waste, since they are used for utter economic purposes.

Interestingly these differences in definition is often linked to different points of view, disciplines or even political context. For FAO, food security being the priority concern, the notion of food losses and waste is centred on "**edibility**". In Europe, many studies were originally grounded on the need to **reduce waste** as whole (not only food), of which food related waste is an important component.

Losses and waste differ widely between products and between regions for the same type of products (Gustavsson et al. 2011, Kummu 2012). In its 2011 global study, (Gustavson et al 2011) FAO draws some striking comparisons.

In Europe, cereal losses and waste are twice as high as in sub-Saharan Africa. On the other hand, in sub-Saharan Africa, milk losses and waste are twice as high as in Europe.

Depending on the products and the regions, the distribution of the losses along the food chain is very different. For instance, in India cereals are lost in the first stages of the food chain. In Europe, they are lost mostly at the consumer stage. For fruits and vegetables, the differences between regions are also striking. In Africa, processing and distribution are the weak links (Gustavson et al 2011). This highlights the need for investments in these stages of the food chain. In Europe, it is at the production and consumption stages where most losses occur. Due to poor post-harvest infrastructure losses are high in India after harvest.

Globally (Gustavsson et al 2011, Kummu et al 2012, Parfitt et al 2010, Hodgs et al 2010), in middle and high income countries most of the food losses and waste occur as waste at distribution and consumption level; in low income countries, the main losses occur during agricultural and post harvest steps.

Major causes of food losses and waste have been described and some ways to reduce them explored (Parfitt et al 2010, Gustavsson et al 2011, Hodges et al 2010). They usually distinguish between food losses, mainly due to technological, logistical or organizational causes and food waste most of which are linked to behavioural causes (including marketing induced).

The regional differences have caused several authors to discern margins of improvement (Gustavsson et al, 2011). Some authors (Kummu et al, 2012) have gone further, in calculating a global potential for improvement by applying to the whole production the lowest loss and waste percentage achieved in any region in each step of food chains. Such studies reveal that approximately half of food losses and waste could be prevented compared to the current situation.

According to this analysis (Kummu et al, 2012), the largest global potential for improvement is in agricultural losses and in consumption waste. Global agricultural losses could be reduced by 47 percent and global consumption waste by 86 percent. **They note that the global potential for improvement is largest in regions where there is lowest need for extra food supply**.

There is a difference in the very nature of topics, in disciplines to be mobilized to tackle them, in the maturity of the reflection, and in the amount of studies and references available for the two different topics of food losses, versus the issue of food waste.

Post-harvest losses have given way to various studies and projects, mainly using agronomic or engineering knowledge, addressing their various causes at each stage of production, (see for instance the African Postharvest Losses Information System, APHLIS, available at www.aphlis.net), including in FAO.

Food waste in developed countries is a more recent topic of interest, often driven by environmental concerns and particularly by the ethical need to reduce the volume of waste. This explains why some studies particularly in Europe refer to all food related waste, including non edible parts, as "avoidable waste".

Understanding and reducing food losses and waste require the mobilisation of a diverse range of disciplines ranging from business approaches, behavioural economics, and socio-psychology. The Waste and Resources Action Programme (WRAP) of the United Kingdom, is a leader in this field with some successful actions at retail and consumer levels.

A key issue, often underestimated, is the loss of nutritional quality. A recent report by the World Resources Institute (Lipinski et al, 2013) transformed FAO figures into calories. We should however remember that we fail to take into account the contributions of fish, fruits and vegetables to overcoming hidden hunger caused by the deficiency of micronutrients like Vitamin A, Vitamin B12, iron, zinc, iodine, etc.

For instance, ascorbic acid begins to degrade immediately after harvest and degrades steadily during storage. Some experiments on fresh spinach showed a 100% loss in 4 days. (eg. Lee and Kader, 2000). Refrigeration can slow the process but it continues to degrade during prolonged storage of frozen products. On the other hand, ascorbic acid losses during storage of canned goods tend to be small.

Such considerations call for an extension of the mere notion of "quantity" of loss towards integrating **quality** aspects in the measure and in the problem of reduction of food losses and waste.

And this is of particular importance as consumption of fruits and vegetables products is increasing particularly rapidly and especially as fresh. It has also to be considered with changing modes of buying food, less often. It calls also for considering food losses and waste, and their reduction, in a holistic way, all along food chains, and inside food systems, from production to consumption.

Causes of food losses and of food waste are very different in different countries and call for very different solutions. Most food losses can be traced back to biophysical (including biosafety aspects) or technical causes. Food wastes are often linked to behavioural causes. The economic costs of technological improvements have to be taken into account and compared to the economic costs of losses, both of which are very context dependent.

Actions to reduce food losses shall also take into account sanitary issues, for instance as regards the development of cold chains. Reducing losses for fresh products could also have

environmental impacts as it they often require either refrigeration or quicker means of transport, or both.

There is the need to deepen the understanding of the relations between the price of food and the amount of food lost and wasted. Policies to reduce food losses and waste might, everything else being equal, lead to a reduction of the overall effective demand, and thus to less pressure on the price system, with different consequences for producers and consumers. Other advantages could also be offered in terms of food price and the use of agro-resources for non-food uses, among others. Such considerations show how food losses and waste and the ways to reduce them have to be considered holistically in their specific context.

They have to be considered in changing contexts. Changes in consumption patterns, in the way we shop, and globalisation have implications for the way food losses have to be managed and reduced. At the same time with income increase and food becoming cheaper the part being wasted increases; particularly in the area of animal food.

To a great extent understanding and preventing food losses and waste, because they go all along from to production to consumption, because they are driven by technological, economic, social, institutional, cultural and behavioural causes, requires a deep understanding of food systems (Ericsen 2008, Ingram 2011) as a whole, including their context and specificities.

In a world of limited resources and with people hungry food losses and waste are unacceptable not only from an ethical point of view, but also from an "economic" point of view.

This is why the CFS was wise enough to request HLPE to organise our study on food losses and waste "**in the context of sustainable food systems**". The main question underlying all the above-mentioned aspects is "*what can be the contributions of a reduction in food losses and waste to improving food and nutrition security in the context of climate change and the other threats to sustainable food system*."

To address this question, the HLPE has decided to look at the following issues:

1. **Concept/definitions (state of art and debates):** existing definitions; taking into account quantities and quality of food lost and wasted; other uses of food (livestock, energy); "overuse" of food (natural resources and over-nutrition/obesity); actual uses of food losses and waste as feed for livestock and feedstock for energy production; food losses and waste circulating through informal circuits, food banks or food charity.
2. **Measuring and data availability (indicators, extension and trends):** adequate indicators to be used; extent of food losses and waste; expected trends; lack of data and monitoring systems.
3. **Impacts:** impacts of food losses and of food waste on the different dimensions of food and nutrition security, such as food availability, access and absorption in the body.
4. **Sustainable food systems:** causes of food losses and of food waste; economic, social and environmental dimensions; economic constraints and social and environmental

consequences of reducing losses and waste or of better valorisation; connections with poverty and social inequalities; food production and consumption patterns.

5. **Public policies:** present state of public policies; either leading to or underestimating related food losses and waste; programmes aimed at reducing food losses and/or food waste.
6. **Recommendations:** The HLPE envisages to look at the following areas for possible recommendations:
    - potential for reduction of food losses, and by what means (technical and policy tools, information etc), taking into account regional and product specificities, as well as actions at different levels,
    - potential for reduction for food waste, and by what means (technical and policy tools, information etc), taking into account regional and product specificities, as well as actions at different levels,
    - potential for better valorisation of food waste and food related waste, including modifications of current systems, and
    - appropriate programmes and instruments for reducing food losses and food waste.

Inadequate drying of grains before storage could lead to infection with aspergillus and consequently development of mycotoxins in food. Aflatoxins constitute a serious threat to food safety. The *codex alimentarius* standards of food safety are not known in rural areas, both among farmers and consumers. Hence, a **Quality Literacy Movement (QLM)** is urgently needed. The Codex standards for food safety should be translated into local languages. Computer aided Village Knowledge Centres should be used for familiarising farm families with the safety aspects of food production and consumption.

Control of food losses and waste can make an important contribution to achieving the goal of a hunger-free world. Developing countries are losing income in international trade to inadequate attention to safety, as for example, *salmonella* infection in fish and *aspergillus* infection leading to aflatoxin production in groundnut and the grains stored with a high moisture control.

Industrialized countries should cut down in waste at the consumption level, while developing countries should pay greater attention to reducing food losses and waste at the production and post-harvest management stages.

A strategy for eliminating food losses and waste should involve education, social mobilisation and regulation. Education and social mobilisation can be achieved by training a cadre of **Community Hunger Fighters (CHF)**. Such CHFs should be well trained in the science and art of eliminating wastes at both the production and post-harvest managements end of the food system.

By minimizing food losses and wastes, food security as well as health and income security will become vastly strengthened. This is the pathway for achieving the goals of FAO's Save Food Initiative.

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ANNEX 4

Thematic Working Groups

Thematic Working Groups

Theme 1	Theme 2	Theme 3	Theme 4
Awareness and advocacy	**Food Losses**	**Food waste and sustainable consumption**	**Building partnerships and networking**
Dr A. Kumar Anal Dr Acacio Amaral Ms Lu Bu Mr Saranyu Bulang Dr Chaleeda Borompichaichartkul Mr Charkrit Direkwattanachai Ms Darunee Edwards Mr Hussain Faisal Mr Martin Guaglioni Dr Vichian Hengsawad Dr Lerpong Jarupan Dr Sutrisno Mardjan Prof Seng Mon Mr V. Khansouvannong Dr Binayak Rajbhandari Mr S. Ramaswamy Mr T. Srisombut Mr Pongthai Thaiyotin	Mr Chusak Chuenprayote Mr Gil Rangel da Cruz Mr Nguyen M. Dung Dr Tenzin Drugyel Ms Hajah Hanifah Mr L.K. Hathurusinghe Mr B. Inthalangsee Ms Vinda Leumsombut Mr Tej Subedi Khan Mr Muhammed Dr S.K. Nada Dr Abha Mishra Ms Khin Mar Oo Dr Pauzia Muda Ms Salinla Seehaphan Ms Idit Shamir Ms V. Serrato Dr Ahmad Sahabzadah Dr Chan Saruth Mr Paichayon Uathaveekul Ms S. Zorya	Dr Ahmad Wali Aminee Dr Lalita Bhattacharjee Ms K. Dangrungroj Mr Martin Faist Dr Stefanos Fotiou Ms Hajah Hamid Mr Uday Singh Kumawat Ms A. Mitin Mr Amer Mumtaz Ms Asako Nagano Dr Nattapol Tangsuphoom Ms Ediana Rahim Dr Khandoker Rahman Ms U. Roffler Ms V. Senoulivong Ms Sri Sulihanti Ms Battulga Udanbor Ms Makiko Uemoto	Ms N. Bayasgalanbat Mr Martin Clutterbuck Ms Julia Fraser Mr D. Goldstein Dr P. Kumar Mr Lai Kit Mun Mr Khalid Mirza Mr Tetsuya Murakami Mr Robert Van Otterdijk Mr J. Quintos Ms Jutarat Pattanatron Ms Rangsit Poosiripinyo Mr Ingill Ra Mr Eietsu Sakuraba Dr Tomohide Sugino Ms Suwanich Patmayothin Mr Idi Fazlul Zainuddin
H.E. Mr Ahmed Shafeeu, Chair	**Dr Elda Esguerra, Chair**	**Dr Renita de la Cruz, Chair**	**Ms Davana Tungalag, Chair**

Working Group Sessions – Guiding Questions

1. Awareness Raising and Advocacy

Level of Awareness on Food Loss, particularly post-harvest loss at the country level and in the region
Level of awareness of Food Waste in urban centers/vs rural centers
Types of Actions/strategies that would be useful for raising awareness on food loss and food waste
How these actions should be implemented by different Partners? Government Private Sector Academia Research Institutions Consumer Associations
Identify key stakeholders and their roles in awareness raising
What role can/should the SAVE FOOD CAMPAIGN play?

2. Strategic Approaches to Addressing Post-harvest Losses

Outline Causes of losses and critical issues
What has been done in the past to address post-harvest losses?
Where have successes been achieved and why?
Where have failures occurred and why?
What strategic actions need to be taken to address post-harvest losses in the region? At the technical level? At the policy level? By academia By the food retail sector By the food service sector By food processors By food consolidators By Civil Society • NGOs • Farmer organisations • Consumer organisations
Who should be the major stakeholders?
What role should the SAVE FOOD CAMPAIGN play?

3. Strategic Approaches to Addressing Food Waste and Sustainable Consumption

Level of awareness of food waste in the region
What are the underlying causes of food waste in the region?
What are consumer attitudes to food waste in the region?
What strategic actions need to be taken to address food waste in the region? At the technical level? At the policy level? By academia By the food retail sector By the food service sector By food processors By food consolidators By Civil Society • NGOs • Farmer organisations • Consumer Associations
What role should the SAVE FOOD A-P CAMPAIGN play?

4. Building Partnerships and Networking to Reduce Food Loss and Food Waste

Do networks exist in the region to address food losses and food waste?
What types of networks need to be developed? Regional level? Sub-regional level? Multi-stakeholder? Consortia of institutions and academia?
What types of strategic partnerships must be developed to take the Save Food Initiative forward in the region?
What strategic actions need to be taken to promote and sustain these partnerships?

For further information on the Save Food Asia-Pacific Campaign, please contact:

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