Expert Consultation Meeting on Food Losses and Waste Reduction in the Near East Region: Towards a Regional Comprehensive Strategy

Sharm El Sheikh, (Egypt), 18-19 December 2012

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
2013
Report of the

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EXECUTIVE SUMMARY

The Expert Consultation Meeting (ECM) on Food Losses and Waste Reduction in the Near East Region: Towards a Regional Comprehensive Strategy was held in Sharm ElSheikh, Egypt during 18 and 19 December 2013.

The purpose and aims of the ECM were to:
1. Scan the current situation of food losses and food waste in countries of the region, with a view towards developing a regional strategy to combat the problem within the framework of broader strategies to improve food security,
2. Promote sharing of information on best practices and experiences relating to policies targeting food loss and waste reduction in the different facets of the chain,
3. Develop concrete mechanisms between countries for sharing knowledge on minimizing food losses and waste reduction in the different facets of the chain,
4. In coordination and cooperation between decision makers and experts, identify and disseminate innovative strategies for integrating food losses and waste reduction strategies as a component of food security strategies in countries of the region,
5. Recommend a plan of action to reduce food losses and waste.

The ECM was attended by 27 experts including policymakers dealing with food security issues in the region; academicians, researchers and other experts dealing with the main pillars of food losses and waste; senior officials from Government Ministries and agencies; private-sector, civil society and non-governmental organizations; UN and bilateral agencies.

The main themes discussed during the ECM included:
- The extents, effects and causes of food losses and waste in the region
- Improving food security by reducing food losses and waste
- Technical means to reduce food losses and waste

The ECM also identified 11 priority actions for follow-up, and mechanisms for implementation.

The identified important causes of food losses and waste in the region included:
- Lack of appropriate policy and regulatory framework,
- Institutional weaknesses,
- Inadequate and weak infrastructural base,
- Other factors such as Lack of appropriate raw material in terms of quantity and quality, a weak information and statistics base, and technological deficiencies and lack of innovation.

Some of the identified areas for intervention included:
- Data on losses and waste,
- Policy and regulatory framework,
- Institutional reforms,
- Awareness,
- Organizing producers,
- Innovation and technologies,
- Capacity development.

Some of the identified important causes of food losses and waste in the region included:
- Improving food security by reducing food losses and waste.
- Technical means to reduce food losses and waste.

The ECM also identified 11 priority actions for follow-up, and mechanisms for implementation.
LIST OF ABBREVIATIONS AND SYMBOLS

AAAID: Arab Authority for Agricultural Investment and Development
AOAD: Arab Organization for Agricultural Development
ACSAD: Arab Centre for the Study of Arid Zones and Dry Lands
CEO: Chief Executive Officer
CFS: Committee on Food Security
CPF: Country Priorities Framework
ECM: Expert Consultation Meeting
FAO: Food and Agriculture Organization of the United Nations
GAP: Good Agricultural Practices
GHP: Good Handling Practices
GMP: Good Management Practices
HACCP: Hazard Analysis and Critical control Points
ICARDA: International Centre for Agricultural Research in the Dry Areas
IFAD: International Fund for Agricultural Development
LAS: League of Arab States
MENA: Middle East and North Africa
MDER: Minimum Dietary Energy Requirement
NE: Near East
NERC: Near East Regional Conference
RNE: Near East Region
SME: Small and Medium Enterprises
TCP: Technical Cooperation Programme
UAE: United Arab Emirates
UN: United Nations
USAID: United States Agency for International Development
WFP: World Food Program
1. INTRODUCTION

1.1. FOOD INSECURITY IN THE NEAR EAST REGION
The Near East region is food insecure. According to FAO/WFP/IFAD (2012)¹ a total of about 25 million people or 12.8 percent of the population of Northern Africa and Western Asia² are considered undernourished (in terms of dietary energy supply) in the period 2010–12.

The region does not produce enough food due to several limitations. At the same time, significant amounts of food are lost and wasted during and after production, resulting in high and growing dependence on food imports, and a major food insecurity problem. In addition, losses and waste of food lead to significant losses of other important resources such as land, water, energy, chemicals, among others.

Strategies to improve food security in the region have traditionally focused on increasing food production while putting relatively much less emphasis on measures to reduce food losses and waste. If implemented in an appropriate way, measures to reduce food losses and waste offer the opportunity to increase food security while at the same time reducing further stress on scarce natural resources such as land and water. In addition to increasing the quantity of food that is available to the population, the reduction of food losses and waste would contribute to food security through providing income generation opportunities as well as through improving the quality and safety of food.

1.2. THE 2011 FAO REGIONAL CONFERENCE FOR THE NEAR EAST REGION
The 31st Session of FAO Regional Conference for the Near East (NERC) was held in May 2011 in Rome, Italy³. The NERC requested FAO to assist member countries to address the key challenges of reducing food waste and losses by conducting comprehensive studies on the impact of food losses and waste on food security in the region and in establishing a plan to reduce food losses and waste in the region by 50 percent within ten years.

The 31st Session of NERC reached the following outcomes with regard to food losses and waste:

i. Considered the implications of the high levels of food losses and waste on food security in terms of food availability, health and nutrition in the region and recognized the need for reducing these losses in terms of quantity and quality, and requested that the topic of food loss and waste be considered for every subsequent Regional Conference in order to report progress on the subject;

ii. Recognized the urgent need for member countries to overcome the limitations of small-scale operations by encouraging consolidation and vertical integration among producers, processors and marketers of each food commodity or group of commodities;

iii. Urged member countries to include “reduction of food loss and waste” in national policies, priorities, and strategies to improve food quality and consumer health and safety;

iv. Encouraged member countries to remove socioeconomic constraints, create incentives for reducing food losses and waste, increase investment in the infrastructure, technical know-how and value chain to increase value addition;

v. Urged member countries to improve partnership, coordination and collaboration with public, private sector as well as Civil Society Organizations (CSOs) to enhance capacities, education and awareness of all the stakeholders, including producers and consumers, on value chain improvement, value addition, quality and safety systems;

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² North Africa is Algeria, Egypt, Morocco, Libya, Tunisia; Western Asia is Iraq, Jordan, Kuwait, Lebanon, Saudi Arabia, Syria, Turkey, United Arab Emirates, Yemen.

vi. Requested FAO support in addressing the key challenges of reducing food waste and losses by assisting member countries in conducting comprehensive studies on impact of food losses and waste on improving food security in the region and in establishing a plan to reduce food losses and waste in the region by 50 percent within ten years.

As a follow-up to a recommendation of the NERC, FAO’s Regional Office for the Near East (RNE), in collaboration with the Committee on World Food Security (CFS), organized the Regional Multi-Stakeholder workshop on Food Security and Nutrition, in Khartoum, Sudan during 17 to 18 September 2012⁴. This Multi-Stakeholder Workshop made several recommendations regarding the food loss and waste issue, including the organization of a consultative forum to refine and consolidate recommendations based on current knowledge.

In response to these recommendations, and realizing the importance of sharing knowledge about the problem of food losses and waste and its impact on food security at the national and regional levels, RNE took the initiative of organizing this regional Expert Consultation Meeting (ECM). The significance of the ECM resides in the fact that it was the first regional meeting which convened key policy actors in the field of food security and related domains with the objective of deliberating on a framework for addressing food losses and waste reduction as part of broader food security strategies for the countries of the region.

1.3. AIMS OF THE ECM

The ECM was organized to provide a platform for reflection on the dimensions of a comprehensive framework for a food losses and waste reduction in the region. In particular, its aims were to:

i. Scan the current situation of food losses and food waste in countries of the region, with a view towards developing a regional strategy to combat the problem within the framework of broader strategies to improve food security,

ii. Promote sharing of information on best practices and experiences relating to policies targeting food loss and waste reduction in the different facets of the chain (agricultural production, post harvest handling and storage, processing, distribution, and consumption),

iii. Develop concrete mechanisms between countries for sharing knowledge on minimizing food losses and waste across the region,

iv. Identify mechanisms to provide incentives and promote investments in the domain of food loss and waste reduction,

v. In coordination and cooperation between decision makers and experts, identify and disseminate innovative strategies for integrating food losses and waste reduction strategies as a component of food security strategies in countries of the region,

vi. Recommend a plan of action to reduce food losses and waste.

1.4. MAIN THEMES, STRUCTURE AND PARTICIPANTS OF THE ECM

Discussions at the ECM were structured around the following 4 main themes:

- The extents, effects and causes of food losses and waste in the region,
- Improving food security by reducing food losses and waste,
- Technical means to reduce food losses and waste,
- Developing effective policies and strategies to reduce food losses and waste.

Each of these themes was addressed in a roundtable session. For each roundtable, a set of pre-selected participants presented the main concepts and issues relevant to the session. The presentations were followed by open and lively discussions. Each session’s rapporteur introduced the main points raised, conclusions and recommendations to the plenary. Following the 4 main sessions, a concluding session was held to identify priority policy issues. The programme is presented in Appendix 1.

The ECM was attended by 27 experts of the following categories: policy makers dealing with food security issues in the countries of the region; academicians, researchers and other experts dealing with the main pillars of the food losses and waste issue; senior officials from Government Ministries and agencies; private-sector, civil society and non-governmental organizations; UN agencies; and bilateral agencies. The list of participants is shown in Appendix 2.

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2. PRESENTATIONS AND DISCUSSIONS

2.1. INTRODUCTION TO THE ECM
The ECM kicked off with introductory remarks by Mr Elhadi Yahia Kazuz, Regional Agro industry and Infrastructure Officer, RNE.

Mr Yahia noted that the Near East region is food insecure, indicating that the major reasons for this are that not enough food is produced, there is low access to food and huge amounts of food are lost and wasted. This situation leads to a high dependence on imports. All countries of the region import food, especially the basic commodities such as grains and meat, with the quantity ranging from 40% to up to close to 100% of the needed food, depending on each country. There are also marked fluctuations in prices, with projections showing that prices will rise 15-40% this decade in the region. Furthermore, this situation leads to hardship in nutrition, economic and social terms.

Mr Yahia identified the reasons for the low availability/low accessibility of quality food. He noted that levels of losses and wastes in the region are high, and gave some reasons for these high levels. He also noted that these losses have consequences in terms of nutrition and health of consumers, and that in addition to their environmental impacts, they constitute a waste of embedded resources such as fertilizers, seeds and water. Food losses cause safety/health problems and economic hardship, and can lead to socio-political upheavals such as unrest due to food price volatility.

To address food insecurity in the region, he noted that sustainable increase of food production and the reduction of food losses and waste should go hand-in-hand. He then outlined the request by NERC for FAO support in addressing food losses and waste. He concluded his introductory remarks by presenting the expected outcomes of the ECM and each of the 5 sessions of the event.

2.2. SESSION PRESENTATIONS

2.2.1. Session I: Extent, Effects, and Causes of Food Losses and Waste
Session 1 had four presentations. Mr Abdullah Alhamdan of King Saud University made a presentation on "Food Losses and Waste in the Gulf". He started by noting that Gulf countries contribute part of the 1.3 billion tonnes of food that is estimated to be either lost or wasted globally, noting that very limited data is available on food losses and waste in the Gulf countries, and presented data given in some research articles. One of these studies investigated postharvest losses and wastage at the supermarket retail level in the Muscat (Oman) municipality, another examined food losses from a sample of stakeholders in Saudi Arabia which included vegetables and fruit farms, palm tree farms, wholesalers and retailers, while a third investigated fruits and vegetables losses in retail and wholesale markets in Riyadh, Saudi Arabia.

Mr Mohamed Barre, Statistician/RNE, discussed "Statistics on Food Loss in the Region". He started his presentation with a definition of the terms "loss" and "waste" and the scope of their application in the major food commodity groups (crops; meat; milk; and fish (aquaculture and wild). Mr Barre discussed the Minimum Dietary Energy Requirement (MDER), and made a comparison of the calorie equivalent of food losses to the food deficit (i.e. the number calories needed to lift the undernourished from this status, everything else being constant) for a selection of countries of the region. He then went on to explain the computation of the food balance sheet, incorporation of food losses in the food balance sheet calculations, and the impact of the food loss factor on estimates of the number of undernourished people.

Ms Akila Saleh, Coordinator of the Food Security Information Centre of Egypt, made a presentation on "Food Losses and Waste in Egypt". Using the example of wheat, she noted that the extent of waste is partly a reflection of prices. She also noted the importance of consumer habits on food losses. She also discussed
obesity and overweight, as well as food consumption above dietary requirements. Her presentation also discussed farm and food processing waste.

Mr Hussein Jabir, Agricultural Advisor to Prime Minister of Iraq, made a presentation on “The Impact of Food Losses and Waste on Water Shortage in Iraq”. He examined the causes of losses of food in the food chain and also the loss of water from ground- and surface-water sources. In addition he discussed the issue of food consumption above dietary requirements. Mr Jabir suggested some mechanisms to reduce waste and water resources during transportation and storage, as well as during irrigation. He proposed a strategy for water resources in Iraq and made proposals on how the facets of the value chain from farm to fork can ensure that water is not used for irrigation in vain.

2.2.2. Session II: Improving Food Security by Reducing Food Losses and Waste

Three presentations were made during this session. Mr Hesham Allam, Director of Horticulture Research Institute, Egypt made a presentation on “Food Security and Nutrition as affected by Food Losses in Horticulture Crops”. In his presentation, Mr Allam noted the high population in the region, the low productivity of the lands due to the lack of water, and the high level of food imports. He gave the reasons why losses in horticultural crops have led to a deterioration of food security in countries of the region, and then presented specific recommendations on how to reduce losses in horticultural crops with a view towards enhancing food security and nutrition.

Ms Gülden Pekcan, Hacettepe University Faculty of Health Sciences Department of Nutrition and Dietetics, Turkey made a presentation entitled “Food Losses at the Household Level and their Contribution to Food and Nutrition Insecurity”. Noting that losses and waste have repercussions on food security, she provided a definition of food security and explained its causes. She presented the results of a survey conducted in 2006 in Turkey to estimate food wastage between food acquisition and home preparation, during home preparation and serving and after serving (plate waste), and discussed the wide range of causes of food waste.

Mr Moez El Shohdi, Co-founder and CEO of the Egyptian Food Bank, Cairo, Egypt made a presentation on “Consumer Behaviour and How Voluntary Initiatives can Contribute to Increasing Food Availability and Quality”. Mr El Shohdi presented the Egyptian Food Bank, giving the not-for-profit organisation’s vision and mission. One of the Bank’s 6 main pillars involves collecting ‘excess’ food from hotels, restaurants, food factories and individuals and distributing it to the needy. Mr El Shohdi also discussed awareness campaigns being implemented and food banks initiative in other countries of the region.

2.2.3. Session III: Means to Reduce Food Losses and Waste

Mr Douglas Anderson, Regional Director of ACDI-VOCA made a presentation on “Organized Market-Led Value Chain”. He described two USAID funded projects in Egypt in which ACDI-VOCA was involved, and identified the success factors of these projects. Using these projects he explained how market-led value chain development can contribute to the reduction of food losses.

Mr Atef Elansari, Alexandria University, Egypt presented “Status Report (Technical Approach) of the Cold Chain in the MENA Countries.” In his presentation, Mr Elansari defined the cold chain and its scope in different perishable products sub-sectors. He also discussed challenges to establishing the cold chain in the MENA region, and intervention areas to promote utilization of the cold chain in the region.

Dr Mustapha Jouili, Faculty of Economics and Management of Nabeul, University of Carthage, Tunisia made a presentation on “Food Value Addition in the MENA Region”. He used two case studies - olive oil in Tunisia and fishery in Morocco – to examine the issue of low value-addition in the region’s food processing sector.

Mr Adel Cortas, Former Minister of Agriculture and Former FAO Chief, Lebanon, made a presentation on “Markets Infrastructure and Marketing Systems and Information”. He provided a historical perspective on the issue of losses in the region, noting a regional project which FAO conducted in the mid-seventies. With a view of analysing their role in reducing losses and waste of agricultural commodities and food products, Mr Cortas reviewed and assessed the situation of the region’s market infrastructure, marketing systems and strategies, and market information. He also made recommendations on policies and programs dealing with agricultural marketing.

Mr Ahmed Ait-Oubahou, IAV Hassan II, Agadir, Morocco made a presentation on “Capacity Building for Reduction of Food Losses and Waste”. It highlighted some of the most relevant areas where capacity needs to be built to address postharvest losses at farm level,
in the supply chain, at market level, at consumer level, as well as the extension services and research and development.

2.2.4. Session IV: Policies and Strategies to Reduce Food Losses and Waste
This session had two presentations. Mr Dyaa Abdou, FAO Consultant made a presentation on “Positioning the Reduction of Food Losses and Waste in the Mainstream of Food Security and Sustainable Agricultural and Rural Development in the Near East Region”. The presentation reviewed the status of agriculture and food losses in the national and regional strategies and policies. Mr Abdou also discussed the policy issues and challenges related to agriculture and food waste and losses in the region, as well as considerations for including the food losses issue in the strategies and policies of food security and sustainable rural and agricultural development in the region.

Messrs Carlos Melendez and Abraham Abatneh of the World Food Programme made a presentation on the “International Experience on Strategies for Reducing Food Losses and Waste” with a view towards examining lessons from other regions such as Latin America. Using the Balady bread supply chain in Egypt as a case study, they showed how losses and waste can be reduced through effective end-to-end supply chain management and the application of international best practices during processing.

2.2.5. Session V: Priority Policy Issues
During this session a panel of senior officials and decision makers discussed the priority policy issues to be addressed, the mechanisms to be employed and the role and responsibilities of the main stakeholders (Government, private sector, UN, etc). The panel comprised the following: Mr Adel Cortas, Former Minister of Agriculture of Lebanon and President of Lebanese Association of Nutrition and Development (LAND); Mr Mohamed Fattah, Director for International Specialized Agencies, Ministry of Foreign Affairs, Egypt; Mr Ahmed Abuzakhar, Deputy Minister of Agriculture, Libya; and Mr Hussein Jabir, Agricultural Advisor, Prime Minister Office, Iraq.
Waste of Vegetables in local markets

Unsafe marketing of meat in local markets
3. Major Issues and Objectives

3.1. Extent of Losses and Waste in the Region

This section addresses the presentations and discussions at the ECM in relation to the extent of losses and waste in the region. The ECM did not limit itself only to losses and waste of food, but also addressed the following related issues:

- Loss and waste of productive resources such as water which is a crucial issue for the region because of the limited quantities available;
- Food consumption above dietary requirements; and
- The missed opportunity to add value to agricultural and food processing wastes.

3.1.1. Selected Evidences on the Increasing Trend of Food Losses and Waste

In Egypt, annual losses of wheat (both locally produced and imported) are valued at 6.6 billion Egyptian Pounds (over $1 billion), while the value of maize losses is estimated to be 1.5 billion Egyptian Pounds. It is estimated that if wheat and maize losses are reduced by half, this would lead to savings of some 4.0 billion Egyptian Pounds annually.

According to the presentation by Messrs Melendez and Abatneh during the ECM, the existing Balady bread supply chain in Egypt suffers from many inter-dependent inefficiencies and 43% of the purchased wheat is not turned into bread. Figure 1 shows the main points where “leakage” occurs in this supply chain.

The studies conducted in Oman which were presented by Mr. Abdullah Alhamdan during Session 1 revealed that estimates of average total waste ranged from 3 to 19% across supermarkets; while the amount of loss directly associated with handling damage (including bruising) was approximately 2%. All fresh produce managers consistently identified tomato and banana as the two most important contributors to total wastage.

Figure 1. Loss and Wastage Points in the Balady Bread Supply Chain in Egypt

Source: From the presentation by Mr. Melendez and Abatneh during Session 4

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5 i.e. food that is lost (during its process in the food supply chain gets spilled, spoiled or otherwise lost, or incurs reduction of quality and value, before it reaches its final product stage) and food that is wasted (completes the food supply chain up to a final product, of good quality and fit for consumption, but still does not get consumed because it is discarded, whether or not after it is left to spoil.)
with significant contributions also from grapes and lettuce. Data from the study are presented in Table 1. The levels of losses are in agreement with those in other countries which were given in the presentation of Mr Allam (Table 2).

**TABLE 1. Losses of Horticultural Products in Saudi Arabia.**

<table>
<thead>
<tr>
<th>Product</th>
<th>Losses (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tomatoes</td>
<td>14</td>
</tr>
<tr>
<td>Cucumber</td>
<td>12.1</td>
</tr>
<tr>
<td>Potato</td>
<td>10</td>
</tr>
<tr>
<td>Onions</td>
<td>5.2</td>
</tr>
<tr>
<td>Watermelon</td>
<td>5</td>
</tr>
<tr>
<td>Melon</td>
<td>5</td>
</tr>
<tr>
<td>Grape</td>
<td>5</td>
</tr>
<tr>
<td>Dates</td>
<td>13.8</td>
</tr>
</tbody>
</table>

Source: From the Presentation by Mr Abdullah Alhamdan during Session 1

**TABLE 2. Losses of Horticultural Products in Selected Countries of the Near East.**

<table>
<thead>
<tr>
<th>Country</th>
<th>Commodity</th>
<th>Estimated Mean Losses (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Egypt</td>
<td>Fresh fruit</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>Fresh vegetables</td>
<td>29</td>
</tr>
<tr>
<td></td>
<td>Orange</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Tomatoes</td>
<td>15</td>
</tr>
<tr>
<td>Iran</td>
<td>Grapes</td>
<td>13</td>
</tr>
<tr>
<td>Jordan</td>
<td>Eggplants</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>Tomatoes</td>
<td>18</td>
</tr>
<tr>
<td>Oman</td>
<td>Fruits and</td>
<td>3-19</td>
</tr>
<tr>
<td></td>
<td>Cucumber, Date,</td>
<td>15-23</td>
</tr>
<tr>
<td></td>
<td>Fig, Grape, Tomato</td>
<td></td>
</tr>
</tbody>
</table>

Source: From the Presentation by Mr Abdullah Alhamdan during Session 1

Losses of fruits in some retail and wholesale market in Riyadh as given by Mr Alhamdan presentation indicated in Figure 2.

**Figure 2. Losses of Fruits in Some Retail and Wholesale Markets in Riyadh.**

Source: From the Presentation by Mr Abdullah Alhamdan during Session 1
Alongside the high levels of losses which are noted in the region is the fact that there are very low levels of value addition. The presentation by Mr. Jouili during Session 3 indicated that the main part of food products do not undergo any value addition, with the rate being less than 30% across the region (Figure 3).

The presentation by Ms. Peckan during Session 2 indicated that a total of some 318.8 grams of food were discarded per capita in Turkey and the mean daily energy loss was about 215.7 kcal/person/day (Table 3). The study in Turkey also revealed that wastage accounted on average for 9.8% of the daily energy intake per person, and that wastage of cereals, bread, fats and oils in the household was the most significant contribution.

![Figure 3. Value Added Output Ratio of Agro-Industries in Selected Countries of the Region](image)

**Source:** From the Presentation by Mr. Mustafa Jouili during Session 3

<table>
<thead>
<tr>
<th>Country</th>
<th>Value Added Output Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tunisia</td>
<td>27%</td>
</tr>
<tr>
<td>Syria</td>
<td>27.50%</td>
</tr>
<tr>
<td>Algeria</td>
<td>28.10%</td>
</tr>
<tr>
<td>Qatar</td>
<td>28.20%</td>
</tr>
<tr>
<td>Yemen</td>
<td>29.60%</td>
</tr>
<tr>
<td>Jordan</td>
<td>29.70%</td>
</tr>
</tbody>
</table>

**Figure 3. Value Added Output Ratio of Agro-Industries in Selected Countries of the Region**

**Source:** From the Presentation by Mr. Mustafa Jouili during Session 3

**TABLE 3. Average Amounts of Discarded Food in Turkey**

<table>
<thead>
<tr>
<th>Category</th>
<th>Quantity discarded per household (g/day)</th>
<th>Quantity discarded per person (g/day)</th>
<th>Mean daily energy loss (kcal/household/day)</th>
<th>Mean daily energy loss (kcal/person/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acquisition/Preparation</td>
<td>218.8</td>
<td>85.4</td>
<td>481.7</td>
<td>215.7</td>
</tr>
<tr>
<td>Preparation/Service</td>
<td>311.2</td>
<td>121.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plate waste</td>
<td>286.4</td>
<td>111.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>816.4</td>
<td>318.8</td>
<td>481.7</td>
<td>215.7</td>
</tr>
</tbody>
</table>

**Source:** From the Presentation by Ms. Peckan during Session 2

3.1.2. Food Consumption above Dietary Requirements

According to the study presented by Ms. Akila Saleh, the percentage of obese and overweight people in Egypt is estimated to exceed 50%. The study indicated that the amount of food “lost” by eating above the dietary requirements is 1.7 Million tons. The study noted that this causes obesity and other illness such as diabetes, hypertension and heart diseases, and led to loss of resources in terms of increased medical costs.

The presentation by Mr. Barre indicated that the calorie content of food losses is enough to offset the food deficit (the number of calories needed to lift the undernourished from this status, everything else being constant) in a majority of the countries in the region (Figure 4). This shows that there is a high potential to address food security in the region through a reduction of losses.
3.1.3. Farm and Food Processing Waste

Data on the farm and food processing waste in Egypt reveals that the total amount of farm and food processing waste is found to be approximately 28 million tons. Only about 5% is used, and the remaining 95% is not put into any use. Apart from the lost opportunity in not adding value on this material, it contributes to environmental pollution.

3.1.4. Loss of Production Resources

Means through which water resources are lost include infiltration through the soil layers to groundwater during storage, transport and use in irrigation, evaporation of water from static and moving bodies. According to experiments conducted in central and southern Iraq, 182 m^3 of irrigation water is lost per hectare of summer vegetables, while for rice 538 m^3 of irrigation water is wasted.

### TABLE 4. Losses of Horticultural Products and Associated Production Resources in Saudi Arabia.

<table>
<thead>
<tr>
<th>Product</th>
<th>Farmland losses (1000 ha)</th>
<th>Water losses (Million m^3)</th>
<th>Chemical fertilizers losses 1000 ton</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tomatoes</td>
<td>2.56</td>
<td>21.54</td>
<td>1.79</td>
</tr>
<tr>
<td>Cucumber</td>
<td>0.35</td>
<td>2.63</td>
<td>0.24</td>
</tr>
<tr>
<td>Potato</td>
<td>1.37</td>
<td>10.74</td>
<td>2.26</td>
</tr>
<tr>
<td>Onions</td>
<td>0.21</td>
<td>1.62</td>
<td>0.09</td>
</tr>
<tr>
<td>Watermelon</td>
<td>0.82</td>
<td>7.4</td>
<td>0.55</td>
</tr>
<tr>
<td>Melon</td>
<td>0.73</td>
<td>6.56</td>
<td>0.49</td>
</tr>
<tr>
<td>Grape</td>
<td>0.38</td>
<td>8.99</td>
<td>0.11</td>
</tr>
<tr>
<td>Dates</td>
<td>19.52</td>
<td>539.92</td>
<td>3.9</td>
</tr>
</tbody>
</table>

Source: From the Presentation by Mr Abdullah Alhamdan during Session 1
3.2. CAUSES OF FOOD LOSSES AND WASTE IN THE REGION

The ECM addressed the issue of the causes of losses and points raised are presented in this section. It should be noted that this is not an exhaustive list of all the causes of food losses and waste in the region. It only focuses on those presented and discussed.

Lack of appropriate policy and regulatory framework

There is a lack of evidence-based strategic plans and policies for the agricultural sector in general and more particularly those dealing with food losses and wastes. Where they exist the policies are inappropriate and sometimes may inadvertently lead to unwanted consequences including inadvertently encouraging attitudes and actions that promote losses and wastes. For example, the subsidies on bread in Egypt are believed to be a driver of the wasting attitude of consumers of this commodity. As another example, intra-regional trade regulations which are inappropriately designed or implemented lead to perishable products being held under conditions that lead to breaks in the cold chain and to the products being subjected to poor handling. Another issue is that there is a lack of harmonization among regional/sub-regional food subsidies, food safety policies and regulations. This impedes competitiveness, reduce intra-regional trade and increase losses.

The presentation by Mr Dyaa Abdou gave an overall review of the degree of coverage for food losses and waste in the national and regional strategic frameworks for food security and agricultural and rural development. The results are summarised in Table 5. As shown, although agriculture and food losses and waste is mentioned as a challenge in some national strategic planning frameworks in the region, it is not considered in the mainstream of national and regional strategic planning for food security and agricultural development. In most cases, there are no cost- and time-bounded plans/programmes for reducing food losses, and few national plans incorporate monitoring benchmarks for reducing losses within a specific time frame. Meanwhile, almost all countries adopt policies that lead indirectly to increase losses and waste such as non-targeted subsidies and piece meal reform measures.

There are also policy issues that are related to the use of natural resources. With regards to water, inappropriate demand management policies (pricing; metering; enforcement of regulations; price premium on using modern irrigation methods) lead to greater losses in water use. With regards to land, lower subsidized prices and low profitability of agriculture lead to land encroachment, urbanization; desertification. In general there are inadequate prevention measures and programmes to deal with weather related losses.

Institutional weaknesses

There is a lack of clarity in the institutional responsibility for food security, market management and monitoring and evaluation. In several countries, municipal governments and Ministries in charge of

<table>
<thead>
<tr>
<th>TABLE 5. Food Losses in National and Regional Strategic Frameworks in the Region</th>
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<tbody>
<tr>
<td>Food Losses in National Strategies</td>
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<tr>
<td>-----------------------------</td>
</tr>
<tr>
<td>Listed as a Challenge</td>
</tr>
<tr>
<td>Listed as a Priority</td>
</tr>
<tr>
<td>Within Mainstream Policies</td>
</tr>
<tr>
<td>Direct Specific Programme</td>
</tr>
<tr>
<td>Indirect Policy Measures Leading to Reducing Losses (through Availability - Competitiveness - Market Efficiency - Export Promotion - etc.)</td>
</tr>
<tr>
<td>Indirect Policy Measures Leading to Specific M&amp;E Criterion/Benchmark</td>
</tr>
<tr>
<td>Few [Egypt; Saudi Arabia; UAE (Abu Dhabi), Morocco, Oman, Iran]</td>
</tr>
</tbody>
</table>

6 This has been the case for example with refrigerated trucks transporting fruits and vegetables from Lebanon to Saudi Arabia and other Gulf States.
Agriculture, Supply, Industry and Health are all involved in managing food handling, processing, retailing and wholesaling with no demarcation of authority and responsibilities. For example, five Ministries and 16 separate authorities are responsible for various sub-components, regulations and inspections of the Balady bread supply chain in Egypt. The institutional framework at national and regional level is usually short-lived and unsustainable as it is dependent on the government in place. Furthermore, there is usually a lack of a framework to foster strong partnership among government line ministries at various administrative levels as well as donors and international organisations.

**Inadequate and weak infrastructural base**

Lack of adequate infrastructure is a key contributing factor to high food losses and waste in the region. The region suffers from very low cold chain capacity, even though studies have proved the feasibility of the investment in the cold chain, especially due to the hot climate of the region. Refrigerated storage capacity in Egypt and Saudi Arabia is 0.0144 m³/capita and 0.096 m³/capita, respectively, in comparison to 0.21 m³/capita in Japan, 0.141 m³/capita in France and 0.313 m³/capita in the USA, indicating that it is very low although the hot climate in the region requires a much higher capacity. Furthermore, although existing capacity is small, it is not completely utilized. It is estimated that less than 50% of the available capacity in the region is utilized and this level is declining. The lack of and unreliability of power supply is a key challenge to establishing the cold chain in the region. Poor maintenance and management practices are another major factor concerning the infrastructure in the region. For example, reliability is a major concern for the components of the cold chain in the region and many facilities are currently “out of order” or not functioning properly because of lack of maintenance and unavailability of spare parts, and technical expertise. Other types of infrastructure face similar major constraints. Wholesale and retail markets in the region are often small, overcrowded, unsanitary and lacking cooling equipment, and adequate facilities for loading, unloading, ripening, consumer packaging and temporary storage.

**Other factors**

Other factors which were mentioned in the discussions as contributing to food losses and waste include the following:

- Lack of appropriate raw materials in terms of quantity and quality. This in turn is related to lack of land and water resources in the region and financial constraints which limit the ability of producers to expand their production.
- A weak information and statistics base on food and agricultural waste and losses to inform policy, decision making and technical interventions.
- Technological deficiencies and lack of innovation contribute to losses directly and reduce value addition.

![Inadequate grains storage](image-url)
4. IDENTIFIED INTERVENTION AREAS

Data on losses and waste
Initiatives are required for obtaining reliable data on food loss and waste. These should employ technically robust methodologies and harmonised approaches to facilitate cross comparison of the data. In this regard, it is important to establish baseline and benchmark statistics, and tracking systems to monitor food loss and waste over time. There is scope to undertake some assessments as part of activities planned by FAO’s statistics division within the framework of the Global Strategy to Improve Agriculture and Rural Development Statistics. In addition, when countries in the region collect production statistics for inclusion in FAO’s statistical database, they should use the opportunity to also include the food/waste factor. In order to better serve the countries of the region and to enhance coordination with FAO Headquarters, an observatory should be set up in RNE. A food loss and waste virtual information network system should be set up to provide estimates and causes of losses along the chain and solutions to address them.

In addition to data on the levels of food losses and waste, there is also a need to fill the data gap on a wide range of technical matters. For example, there is a need for comprehensive information on the existing capacity and types of systems in use for cold chains in each country of the region.

Policy and regulatory framework
Strategic plans should be developed for the agricultural sector and it should be ensured that they incorporate dimensions relevant to food loss and waste reduction. Policies should also be designed to discourage wasteful use of limited resources such as water and land in view of the importance of sustainable use of natural resources in the region. In all cases the policies should be time- and cost-bound and should build in appropriate results-based monitoring and evaluation systems. Steps should be taken to enhance harmonization of policies and strategies at sub-regional and regional levels.

Policy and regulatory instruments should be put in place as required to facilitate public sector investments in infrastructure (roads, energy, etc), research and other public goods. The accompanying policies and regulatory instruments needed to ensure maintenance and rehabilitation of all investments should also be put in place. With regards to roads, for example, well designed food-for-work or cash-for-work rehabilitation and maintenance programmes can be put in place. Success stories where regulations put in place and assistance provided by the government played a major part include: the Office du Commerce Exterieur (OCE) and the good investment and management of wholesale markets for fruits and vegetables and fishery in Morocco; and the Silos for Cereals in Lebanon.

Investments by the government in public goods go hand in hand with measures to encourage the private sector to adequately invest for reducing losses and wastes and adding value in the post-production chain. For example, in order to encourage investments in the cold chain, steps could be taken to reduce the cost of electrical energy.

Policies and regulations put in place should always take the needs of small producers into consideration, and it should be ensured that as a stakeholder group they gain from the reduction of losses and wastes. For this to happen there is a need for advising them to understand the issues and solutions from their point of view.

Existing regulations should be reviewed, and where their implementation favours food losses and waste they should be revised. The infrastructure and personnel required for inspection, control of quality and enforcement of compliance should be put into place.

Efforts should be made to develop and facilitate the use of relevant standards. In addition to the well known standards such as those dealing with food quality, other standards should be developed and made operational. Examples include: (i) standards for sub-optimal food entering the Food Bank channels; (ii) standards for the diameter of serving plates used by restaurants and...
hotels as a way of controlling excessive portion sizes; (iii) standards related to the environmental dimensions of food losses and wastes.

**Institutional Reform**

There is need to streamline responsibilities among relevant agencies such as municipal governments and Government Ministries (Agriculture, Local Government, etc.). For example, a total of five Ministries and 16 separate authorities are responsible for various sub-components, regulations and inspections of the Balady bread supply chain in Egypt. There is also a need to improve partnership, coordination and collaboration among government line ministries at various administrative levels, the private sector, civil society organisations and other relevant stakeholders.

The institutional framework should be strengthened to adequately address food losses and waste issues. For example, national food observatories can be established with the responsibility of obtaining data and information on losses and waste, while a “Food Losses and Waste Auditing System/Institute” can be established to monitor and inspect food losses at all stages of the food value chain in a similar way to health inspection. Also of importance are institutional structures to ensure and facilitate value addition, such as certification and patent systems. Ways should be found to ensure that the institutional framework is stable and sustainable, and its life span does not for example depend on the lifespan of the government.

As most countries do not yet have the institutional structure to deal with food wastes, efforts should be made to establish it, ensuring that it is adequate for collecting excess food (from hotels, supermarkets and other establishments), distributing it to receiving institutions such as hospices and homeless shelters, and enforcing compliance with standards such as those related to food quality and safety. The elements required to set up and enforce standards such as those dealing with the food safety, would also be required. The experience of countries which already operate Food Banks, such as Egypt, can be valuable in providing lessons to other countries.

**Awareness**

Interventions are needed to raise the awareness of the public in general, consumers, and policy makers. At the technical level, government authorities, national research organizations, public and private institutions, universities and stakeholder organizations need to be sensitized on the issues involved so as to increase their interest in undertaking or participating in interventions to reduce losses and wastes.

With a view towards changing their attitudes, the awareness of consumers should be raised about dietary requirements and approaches to food purchase, handling, storage, preparation and consumption which reduce losses and waste of the food as well as resources such as water.

In order to increase information dissemination and awareness on the issues, a webpage on food losses and waste should be developed and key institutions in the region who are working in the domain should be provided access to post their experiences.

**Organising producers**

Measures should be taken to encourage small farmers to organise themselves into groups and other associative structures. This would increase their bargaining power with other chain actors, and also facilitate their access to finance, thereby making it easier for them to make the investments required to reduce losses. It allows them to participate in more efficient chains in which losses are minimal, and facilitate their being targeted for training on improved techniques in production, post-harvest and marketing operations.

**Innovation and technologies**

There is need to improve access to and knowledge about various technologies and to support the innovation processes that develop and adapt technologies. At the pre-harvest stage it includes technologies which ensure that the crop is grown in such a way that it will not be amenable to being lost or wasted after harvest. Within the post-harvest chain technologies are required to adequately harvest and handle crops and transform them into foods in ways that add value and minimise losses and waste. Preference should be given to simple technologies such as portable cooling units for local food distribution. Technology transfer should be fostered through creating pilot food processing plants and research institutions should be encouraged to tackle the problems of food losses with provision of sufficient human and financial resources.

Innovation and technologies are also needed to ensure judicious use and prevent waste of resources. In this regard, measures are needed to reduce water use and optimize water management, for example through automation of irrigation; use of biosensors; using recycled water for irrigation; exact dosing of water and fertilizer; reducing infiltration and evaporation in rivers,
streams and canals and reservoirs; making optimal use of rainwater; using efficient irrigation methods; dosing fertilisers using geographic information systems; and disease prediction models which can significantly reduce fungicide applications in the field, and prevent major infections.

**Capacity development**

Programmes should be designed to develop capacity in improved production practices as these have an impact on the crop's subsequent resistance to losses after harvest. Some of the issues to be addressed include: use of high quality seeds; soil preparation; irrigation; fertilizer application; pesticide management; harvesting practices; enforcement of traceability and record-keeping. Farmers' schools should be developed and mentored at the farm level where interaction and information sharing at community level will contribute to identifying solutions which are based on local knowledge and experiences.

Programmes should be designed and implemented to develop human capacity in the domains relevant to loss and waste reduction in the post-production chain. Some areas to be addressed include: assessment; value chain improvement; value addition; packaging; HACCP systems; quality and safety; GAP, GHP and GMP; sorting and grading; transportation; traceability; dry and cold storage; production issues. Experience shows that an effective approach to conduct training on approaches to reduce waste is through simple posters in local languages. At the consumer facet of the chain these programmes should target building capacity in appropriate food acquisition, preparation and consumption, and the re-use of bad products.

Special attention should be given to developing academic programmes on post-harvest issues in universities and colleges in the region. At the moment, courses are given in very few universities in the region, and research undertaken in this domain is very limited and not at the appropriate level. This responsibility should fall not only on FAO but also on the regional organizations under the auspices of the LAS (League of the Arab States), such as AOAD, AAAID, ACSAD.

A crucial element to be addressed is building capacity of specialized human resources such as technicians responsible for operating, maintaining and repairing machinery, cold chains and other infrastructure. The transport and logistics sector needs immense support and training programmes that should be provided to drivers and other workers on the logistics chain on appropriate product handling.

Each of the countries of the region has experience in certain domains that can be exchanged with the other countries. For example UAE has experiences in wholesale markets, Morocco and Tunisia have experiences on the cold chain, while Iraq has experiences on water related issues. It is therefore important that these capacity building programmes explore opportunities for transferring experiences from one country of the region to the other.
Unsafe marketing of fish in local markets

Polluted Environment and Tools while preparing fish in local markets
5. PRIORITY ACTIONS AND IMPLEMENTATION MECHANISMS

5.1. PRIORITY FOLLOW-UP ACTIONS
This section discusses the priority actions recommended by the panel of participating experts during Session V of the ECM.

1. Institutional reforms should be implemented, including restructuring the extension and cooperative departments in the Ministries of Agriculture.
2. Governments of the region should enhance investment in public goods, social public services, regulatory and institutional frameworks and infrastructure to create an environment that is conducive to private sector activity.
3. Existing data on food losses and waste should be consolidated and additional studies should be undertaken to understand where gaps exist. The national food security information centres, e.g. the Food Security Data Centre, should be upgraded. At regional level, a Regional Food Security Information Center should be established. Initially, the center may focus on the major strategic food commodities. Any centre set up should not deal with only one Ministry but should have wide competencies to work with all the relevant Ministries and even civil society.
4. Policies to support the development of the private sector and strengthen public-private partnership should be formulated and implemented.
5. Cooperation should be strengthened among academic and research institutes and regional organizations working in the Near East Region (e.g. AOAD, ICARDA, ACSAD, etc.) in relevant areas of capacity building, data and information collection and exchange on issues dealing with food security, reducing food losses, improving post-harvest technologies, etc.
6. Awareness should be raised and information should be disseminated on the issue of food losses and waste.
7. A regional Marketing Information System should be developed for serving the member countries of the Region.
8. In order to ensure that the private sector can take advantage of the enabling environment set up by the Government, the capacity of Small and Medium Enterprises (SME) and other parts of the private sector should be built.
9. Regional cooperation and intra-regional trade should be fostered to facilitate access to raw materials and ensure economic utilization of available marketing facilities.
10. The link between agricultural research, extension and education should be strengthened.
11. Food losses and waste reduction should be included in the Country Priority Framework (CPF) which FAO is compiling for each country. This would ensure that food losses and waste is considered as a priority of the country programme, thereby increasing its chances of being the target of interventions and also the beneficiary of funding from donors and other agencies.

5.2. MECHANISM FOR IMPLEMENTATION OF FOLLOW-UP ACTIONS
RNE is called upon to consider the formulation of a “Regional TCP Umbrella Project” which would undertake the priority actions listed above. Further details of the implementation mechanism should include the following:

1. A sub-project of the umbrella project could be implemented jointly by RNE and the League of the Arab States (LAS). Its main objectives would be: to foster cooperation with the universities of the Near East region, AOAD, AAAID and ACSAD, on training, teaching, research and development in all areas related to post-harvest technology. It should build on the regional agricultural marketing project which was implemented by FAO of the mid-seventies.
2. Senior management of RNE to consider undertaking awareness raising and advocacy targeting Ministers and other relevant stakeholders in the region. The objectives of the exercise would be to highlight the importance of the issue of food losses and waste, as well as the need to consider the reduction of food and agricultural losses and waste as a measure to achieve food security. A handbook can be prepared to support awareness raising, information
dissemination and advocacy activities.

3. Success stories should be identified on sustainable agricultural development and reduction of food losses and wastes, and they should be scaled up through the TCP project. Regarding wastes, the Egyptian Food Bank may contribute ideas from its experiences which can be scaling up through the project. The Egyptian Food Bank has an agreement with the Alliance Against Hunger initiative at FAO Headquarters, and FAO and the Egyptian Food Bank could sign a Memorandum of Understanding to cooperate in implementing activities within the framework of a detailed project, either at country or regional level.

4. As part of activities of the TCP, an annual expert consultation should be held on reducing food losses and waste, and its conclusions and recommendations should be reported regularly to the NERC and the regional conference of food security which reports to the Committee on World Food Security (CFS);

5. The consultative process should be continued through a regional forum which would involve the participation of a much bigger and wider spectrum of decision makers (including senior officials of Ministries of Finance and Economy), experts and

other stakeholders, and would aim at establishing concrete and effective strategies and regional collaborative efforts.

6. FAO/RNE is called upon to consider preparing a roadmap to reduce food losses with a 10-year timetable. This should be presented to national, regional and international donors and funding agencies.

Poor infrastructure of markets
**APPENDIX 1: PROGRAMME OF THE ECM**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
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<tbody>
<tr>
<td>7:30 – 9:00</td>
<td>Registration</td>
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<tr>
<td>9:00 – 9:30</td>
<td>Opening</td>
</tr>
<tr>
<td>9:30 – 10:00</td>
<td>Introduction to the Expert consultation Meeting: Elhadi Yahia</td>
</tr>
<tr>
<td>10:00 – 10:30</td>
<td>Coffee Break</td>
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</tbody>
</table>
| 10:30 – 13:00| First Session

"The Extent, Effects, and Causes of Food Losses and Waste in the Region"

Facilitator: Mohamed Abubakr Fattah
Rapporteur: Ahmed Ait-Oubahou

**Expected outcome:** demonstrate that food losses and waste is a very important problem in the region, needing urgent attention and a regional strategy and a plan of action.

10:30 Introduction: Mohamed Fattah
10:40 Food losses and waste in the region: Mohamed Barre
11:00 Food losses and waste in Egypt: Akila Saleh
11:20 Food losses and waste in Jordan: Najj Haddad & Kauther Qatarneh
11:40 Food losses and waste in the Gulf: Abdullah Alhamdan
11:50 Impact of food losses and waste on water shortage in the region: Hussein Jabir
12:10 Panel Discussants: Discussants to be assigned
12:30 Floor discussion
12:50 Conclusions and recommendations: Ahmed Ait-Oubahou

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<tr>
<th>Time</th>
<th>Activity</th>
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<tbody>
<tr>
<td>13:00 – 14:00</td>
<td>Lunch</td>
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</tbody>
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| 14:00 – 17:00| Second Session

"Improving Food Security by Reducing Food Losses and Waste"

Facilitator: Divine Njie
Rapporteur: Mustapha Jouili

**Expected outcome:** Demonstrate that food loss and waste reduction can effectively improve food security in the region.

14:00 Introduction: Divine Njie
14:10 Food and nutrition security as affected by food losses in horticulture crops: Hesham Allam
14:30 Food losses at the household level and their contribution to food and nutrition insecurity: Gulden Pecan
14:50 Consumer behaviour and how voluntary initiatives can contribute to increasing food availability and quality: Moez El Shohdi
15:10 Panel Discussion
15:50 Floor discussion
16:50 Conclusions and recommendations: Mustapha Jouili

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<thead>
<tr>
<th>Time</th>
<th>Activity</th>
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<tr>
<td>17:00 – 17:30</td>
<td>Coffee Break</td>
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</table>
17:30 – 18:00

Conclusions and recommendations for the first day sessions
Mohamed Fattah
Ahmed Ait-Oubahou
Divine Njie
Mustapha Jouili

Wednesday 18 December

08:30-11:00

Third Session
"Means to Reduce Food Losses and Waste"

Facilitator: Elhadi Yahia
Rapporteur: Amar Kaanane

Expected outcome: List of concrete recommendations and appropriate mechanisms for means to reduce food losses and waste in the region

8:30 Introduction: Elhadi Yahia
8:40 Value chain improvement: Douglas Anderson
9:00 The cold chain: Atef ElAnsary
9:20 Value addition: Mustapha Jouili
9:40 Markets infrastructure & marketing systems and information: Adel Cortas
10:10 Quality and safety management systems:
10:30 Capacity building: Ahmed Ait-Oubahou

11:00 -11:30 Coffee Break

11:30 Panel discussion
12:00 General discussion
12:50 Conclusions and recommendations: Amar Kaanane

13:00-14:00 Lunch Break

14:00-16:30

Fourth Session
"Developing Effective Policies and Strategies to Reduce Food Losses and Waste"

Facilitator: Moez El Shohdi
Rapporteur: Asif Niazi

Expected outcomes: to suggest policies and strategies to combat the problem of food losses and waste in the region.

14:00 Introduction: Moez El Shohdi
14:10 Positioning the Reduction of Food Losses and Waste in the Mainstream of Food Security and Sustainable Agricultural and Rural Development in the Near East Region: Dyaa Abdou
14:20 Global strategies and initiatives to deal with food loss and waste: What can the Arab Region learn from? Carlos Menendez and Abraham Abatneh
15:00 Panel discussion
15:30 Floor Discussion
16:20 Conclusions and policy recommendations: Asif Niazi

16:30 – 17:00 Coffee Break
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<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>17:00-18:00</td>
<td><strong>Closing session: Conclusions, recommendations and the way forward</strong></td>
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<tr>
<td></td>
<td>Ahmed Abu-Zakhar</td>
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<td>Hussein Jabir</td>
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<td>Adel Cortas</td>
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<td>Mohamed A. Fattah</td>
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<td></td>
<td>Divine Njie</td>
</tr>
<tr>
<td>19:30</td>
<td><strong>Dinner</strong></td>
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</table>
Participants of the meeting
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