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Reducing Food Losses and Waste in the Near East & North Africa Region

Executive Summary

Food losses and waste (FL&W) in the Near East & North Africa (NENA) region are high and contribute to reduced food availability, aggravated water scarcity, adverse environmental impacts and increased food imports in an already highly import-dependent region.

This paper which outlines a strategic framework for reducing food losses and waste in the region responds to the NERC-31 recommendation calling on FAO to “assist member countries in addressing the key challenges of reducing food waste and losses by conducting comprehensive studies on 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% within 10 years”.

This strategic framework has direct links to FAO’s “Global Initiative on Food Loss and Waste Reduction” with respect to vision, objectives and aims, but recognizes the unique characteristics of the NENA region in the actions being recommended. The components of the strategic framework are based on the region’s socio-economic context, gaps in combating FL&W, and availability of resources. They are also based on the various efforts and contributions that have been accomplished, especially since NERC-31, including important national and regional consultations, intensive awareness and advocacy mechanisms, networking platforms, a regional study, and national and regional technical support especially with regard to improvement of value chains, value addition, cold chain and quality and safety management for the different food sectors in the region. Such efforts have already led to actions by member countries, namely the adoption of national initiatives to reduce FL&W in Egypt and Kingdom of Saudi Arabia, and some very important measures in Iraq, Iran, United Arab Emirates (UAE), and Tunisia.

Implementation of the strategic framework would require the participation and cooperation of all actors in the food supply chain in addition to government agencies, NGOs, civil society institutions and local communities. Formative and summative evaluation processes would need to be carried out during implementation, including key indicators of losses and waste reduction as indicated in the objectives of this strategic framework.

This document is intended to provide a strategic framework to FAO/RNE member countries to guide FL&W reduction through national strategic action plans and regional collaborative efforts.

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Guidance sought from the conference

The conference is invited to;

- i) **Endorse the strategic framework for the reduction of Food Losses and waste in the Near East and North Africa;**
- ii) **Call on Countries in the region to collaborate with FAO and partners to develop evidence-based national action plans for food losses and waste, with clear objective, baseline, indicators and targets;**
- iii) **Call on countries in the region and funding institutions, as well as the private sector to give high priority to investments for improving food chain efficiency and other actions crucial to reduce FL&W.**

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I. INTRODUCTION

1. Food losses and waste (FL&W) refer to the edible parts of plants and animals produced for human consumption but are not ultimately consumed by people. In particular, food losses refer to quantities of food that are lost along the food supply chain and do not reach the ultimate consumer. In contrast, food waste refers to food that reaches the ultimate consumers in the desired quality but is not consumed and instead discarded. FL&W represent a potentially avoidable decrease in the mass, nutritional value and/or other quality attributes of edible food intended for human consumption.

2. FL&W occur at all stages of the food chain, and have serious economic, social and environmental impacts. Scarce resources embedded in food production are also lost, such as water, land, energy and labor, which reduce economic return for agri-business and farmers. FL&W deepens food insecurity for vulnerable countries who struggle to afford imported supplies to barely meet basic food needs. Losing and wasting food is especially critical for those countries that have severe limitations in increasing food production and have to depend on imports to meet their needs, as is the case for all countries of the NENA region. Environmentally, FL&W contribute to increasing greenhouse gas emissions and degradation of resources.

3. Reduction of FL&W is now recognized as a priority issue in the fight against hunger and threats to the ecosystem. Several initiatives to reduce FL&W have been launched in recent years, including FAO's "Global Initiative on Food Loss and Waste Reduction" which serves as the benchmark for regional and local actions for FL&W reduction and sustainable food security goals. FL&W reduction is essential in the transition for more sustainable food and farming systems, leading to improved resource efficiency, climate change mitigation and preservation of biodiversity. It is also essential for improving food security since the actions needed to reduce FL&W will improve food availability, quality, and affordability. Moreover, reducing FL&W is an ethical obligation towards the millions of undernourished people worldwide.

4. FL&W reduction is acknowledged as the most efficient and feasible approach in economic and environmental terms to increasing food availability and security, in comparison to increasing food production. For this reason, the NERC-31 urged member countries to include "reduction of food loss and waste" in national policies, priorities, and strategies. It also requested FAO to assist member countries, inter alia, in establishing a plan to reduce FL&W in the region by 50 percent within ten years. This document aims at initiating a process towards this goal.

II. MAGNITUDE AND NATURE OF FL&W IN THE REGION

5. Many studies suggest a lack of accurate quantitative data on scale, origins, causes, and nature of FL&W. A FAO study¹ was the first systematic effort to quantify FL&W at global and regional levels. It estimates that around one third of all food produced in the world is lost and/or wasted. The study defines a region consisting of North Africa and West and Central Asia, and indicates that up to 68% of FL&W occur during production, handling, processing and distribution. Waste at the consumption stage is estimated to be 32% and occurs mostly in urban centres. Significant waste takes place during religious holidays, wedding ceremonies, family gatherings and the fasting month of Ramadan.

6. Quantitative FL&W in NENA are estimated to be 14 to 19% of grains, 26% of roots and tubers, 16% of oilseeds and pulses, 45% of fruits and vegetables, 13% of meats, 28% of fish and seafoods, and 18% of dairy products. For fruits and vegetables, which have the highest proportion of losses and waste, country-specific data indicates a substantial part (as high as 29% for fresh vegetables in Egypt as an example) of these losses occur at the post-harvest stage.

7. Qualitative losses in the region are very high and exacerbated by deficient market infrastructure, especially for food destined for domestic markets. This includes a lack of cold chain infrastructure, poor transportation such as in non-refrigerated vehicles, and open air markets where food is exposed to heat and sunlight. These factors speed up food degradation and create health hazards. Measures to reduce quantitative losses will also reduce qualitative losses.

8. The causes and origins of FL&W are attributed to poor farming systems and deficient infrastructure and practices at all post-harvest stages of the supply chain. This includes handling practices, drying techniques, storage (especially cold storage), contamination, and infestation by micro-organisms, rodents and other pests. Inadequate markets and inefficient marketing systems, as well as inadequate financing are also important constraints leading to a deficient market structure

¹ Gustavsson, J., Cederberg, C., Sonesson, U., van Otterdijk, R., & Meybeck, A. 2011. Global food losses and food waste: extent causes and prevention. FAO, Rome. Available at: <http://www.fao.org/save-food/info-resources/en/>

favoring intermediaries and hindering investment and capacity building. However, countries differ widely in terms of the origins and causes of FL&W. In countries where there is little production of a particular commodity, FL&W occur further down the supply chain at distribution and final consumption stages. This is the case for several countries in the region (especially GCCs) which import the bulk of the food commodities they consume.

III. CONSTRAINTS HINDERING FL&W REDUCTION IN THE REGION

9. Some important constraints have hindered effective actions in reducing FL&W in the region. These include inter alia, inadequate data on commodity and location-specific losses and waste, lack of awareness among all actors, non-existent or inappropriate policies and incentives, institutional and coordination gaps, and insufficient investment.

Inadequate data

10. A recent review of available literature on FL&W in the NENA region currently being developed by FAO/RNE indicates a serious lack of information on FL&W in several respects. Quantitative data on the magnitude, causes and stages of the supply chain where FL&W occur are indispensable in taking remedial action; however data have not been systematically collected and included in national or international databases. Furthermore, sound methodologies and harmonized approaches have not been employed, which prevents cross comparison of data. Finally, there exists an information gap on a wide range of technical matters, such as comprehensive information on existing capacity and types of systems in use, for example cold chains, in every country of the region.

Lack of awareness and technical capacity

11. Systematic awareness campaigns for targeting the public and raising awareness at all levels along the supply chain from the farm-gate to processors and distributors, policy makers and consumers, with a view of changing their attitudes towards FL&W are critically needed. Such awareness is also important for saving other complementary resources such as water and energy.

Technical capacity in the reduction of losses and waste is also lacking. Some areas where gaps of expertise are evident include: assessments of losses and causes; upstream and downstream linkages of each stage of supply chain, value addition, packing and packaging, quality and safety, good agricultural practices, good manufacturing practices and good hygiene practices, sorting and grading, transportation, traceability, and dry and cold storage.

Academic curricula in universities and colleges in the region are deficient with regard to their focus and relevance to the realities on the ground. Crucial gaps also exist in specialized human resources such as technicians responsible for operating, maintaining and repairing machinery, cold chains and other infrastructure, as well as in the transport and logistics sector.

Non-existent or inappropriate policies and regulations

12. Concerns about FL&W have been included in the strategic frameworks for agricultural development and food security of some countries of the region. However, by and large, these considerations have not generated effective policies and incentives to support private initiatives to discourage wasteful practices. Moreover, certain existing policies have been found to indirectly encourage FL&W. These include policies related to consumption, such as non-targeted food subsidies, which are seen as being responsible for over-consumption and waste.

Policies and regulations have not addressed the excessive food handling preparation in commercial and hospitality industries, such as in restaurants and hotels, which encourages food waste.

Gaps in institutions and coordination

13. Different actors are responsible for interrelated food issues, such as marketing, storage, handling, processing, quality and safety. Although many of these actors might be aware of the potential returns of FL&W reduction, they lack organized coordination of their roles and efforts. There is a need for consolidation and streamlining of responsibilities among relevant agencies such as municipal governments and Government Ministries (Agriculture, Industry, Economy, Commerce, Local

Government, etc.)² as well as among implementing agencies and institutions. This includes improving partnerships, coordination and collaboration among government line ministries at various administrative levels, the private sector, civil society organizations and other relevant stakeholders. The needs of small scale producers should always be taken into consideration in reforming existing institutions and in introducing new roles and responsibilities.

Insufficient investment

14. Promoting investment to reduce losses and waste has lagged behind all other investments in agricultural production and agri-business in the region. Beyond public sector investment in general infrastructure (roads, transport, energy, telecommunications, etc), specially targeted private sector investment for the reduction of FL&W is essential. Considering that some 20-30% of all FL&W in the countries of the region take place during the handling and storage stages of the supply chain, investment in this area can yield high returns.

15. For perishable commodities (fruits and vegetables), improvements in post-harvest handling are of critical importance. These would need to be complemented with commensurate improvements along the whole supply chain. Reducing post-harvest losses is necessary but not a sufficient condition for saving the product if, for example, there is no access to markets or if crops spoil at the final leg of the chain due to long delays and poor handling and cooling infrastructure. Thus, government investments in public goods can stimulate private investment in critical steps of the supply chain that would enable sustainable solutions to FL&W reduction.

16. Investment in public goods also includes improving access to and knowledge of appropriate technologies, and adapting technologies to local conditions. Investment in R&D in the agriculture sector has lagged, despite the need for advances in harvesting and handling practices, transformation and processing, and value addition. The public sector plays a role in access to technology for small scale producers and handlers, who are often risk averse and lack capacity for private investment.

IV. OBJECTIVES AND BENEFICIARIES

Objectives

17. The overarching objective of the strategic framework is to achieve a reduction in FL&W in the NENA region by 50% during the next 10 years (2014-24). This objective forms part of a vision to integrate FL&W reduction within strategies and programs to strengthen long-term food security.

In attaining this overall objective, a number of inter-related objectives would also be achieved, including:

(i) Increasing the efficiency of the food system, through:

- Use of appropriate farming and harvesting technologies;
- Cultivation of the crop varieties with adequate shelf lives and suited to the most efficient processing techniques and infrastructure;
- Improving efficiency of agribusiness through appropriate technologies, such as the use of the cold chain, among others;
- Strengthening coordination between all actors of the food system;
- Improving consumers' awareness and consumption behavior;
- Improving regulation and oversight of the food import sector to minimize poor handling and ensure quality and safety.

(ii) Making better use of natural resources in the food system, by:

- Saving water, land, energy and other inputs embedded in food production;
- Reducing adverse environmental impacts;

² For example, a total of five Ministries and 16 separate authorities are responsible for various subcomponents, regulations and inspections of the *balady* bread supply chain in Egypt.

- Reusing FL&W in animal feed, compost, and safe sources of energy.
- (ii) Increasing the agriculture sector's contribution to economic growth and stability, by:**
- Enhancing value addition through agro processing and enforcing quality and safety standards;
 - Improving long-term financial returns to agribusiness through increased reduction of food waste and cost saving procedures;
 - Decreasing farm production costs by adopting pre- and post-harvest cost- and waste-effective technologies;
 - Reducing burdens of food subsidy programmes;
 - Reducing food import bills.

Target groups

18. The strategic framework is directed to all actors who contribute to FL&W in the NENA region namely farmers, agribusiness firms, transporters, storage companies, market authorities, processors, food services institutions, and households. However, target groups may differ from country to country in the NENA region according to their food supply chain structure and origins of losses and waste.

19. Food producers, agribusiness firms and consumers will be the most important actors in this strategic framework in countries with substantial local food supply. For countries that import the bulk of the food they consume, the target groups would be actors at the final stages of the supply chain, including consumers.

20. The public sector directs strategic national action and regional collaboration for FL&W reduction. Coordination is a key function of the public sector, bringing together the actors listed above with academia and research institutions, civil society, financial institutions and all related ministries, including agriculture, health, industry, commerce and education.

V. THE STRATEGIC FRAMEWORK

21. Three important considerations need to be taken into account in the formulation of the strategic framework for reducing FL&W and for the prioritization of related actions.

22. The first consideration is to know which commodity groups are primarily responsible for the bulk of FL&W. In the NENA region, these are cereals and fruits and vegetables which account for a large part of FL&W.

The second consideration is the analysis of the stage in the supply chain that is primarily responsible for losses and waste. In the NENA region all stages of the supply chain (pre- and post-harvest stages and the final consumption stage) are responsible for a substantial part of losses and waste (some 44% and 34% of total losses in pre/post-harvest and consumption stages, respectively), however this differs among commodity groups.

The third consideration relates to the constraints identified in Section III which have prevented FL&W reduction thus far. These considerations guide the formulation of the components of the strategy and the prioritization of the different actions envisaged.

The strategic framework has four distinct components:

- Data gathering, analytical research and knowledge generation;
- Awareness raising and promotion of good practices at all levels of the supply chain;
- Developing policies/regulations, and strengthening collaboration and networking;
- Promoting investment and specific projects.

5.1 DATA GATHERING, ANALYTICAL RESEARCH AND KNOWLEDGE GENERATION

Rationale

23. Data collection and related analytical research are indispensable for generating information on current levels and causes of FL&W, impacts and prioritisation, and costs incurred at the micro and macro levels. Based on a common methodological approach, individual countries of the region should adjust their own data gathering and analysis to the characteristics of their food supply chains, and resulting losses and waste. In addition, relevant technologies and good practices should be identified and form part of databases on FL&W.

24. Main actions under this component may include:

(i) Identifying data and information gaps

- Review available knowledge of magnitudes, causes, types of FL&W at each level of the supply chain, disposal and use of waste, and economic, environmental and social impacts.
- Construct databases using available data and identify major gaps.
- Conduct studies and investigations to generate critical missing data.

(ii) Collaborating with national and international research and development institutions to:

- Define a common methodology to quantify FL&W.
- Undertake joint research projects to generate data.
- Develop a database and network accessible to all concerned agents and institutions.
- Identify feasible areas for sustained FL&W reduction.
- Monitor and evaluate gains from food waste reduction programs.
- Investigate available technologies and procedures.
- Identify needed technologies and/or adapt existing ones to the local conditions.

5.2 AWARENESS RAISING AND PROMOTION OF GOOD PRACTICES

Rationale

25. Supply chain actors are not fully aware of the issues and the impacts of their practices on FL&W. For example, farmers who are risk-averse by nature often lack knowledge of alternative methods and technologies that could be adopted, usually without much cost. They are also not fully aware of the rapidly evolving demands of markets and consumers who may be more sensitive to the way food is produced and processed. At the other end of the supply chain, consumers are often unaware of the value of the food they throw away, which is linked to poor nutrition habits. In between, food handlers, supermarkets, restaurants, transporters and other agents are unaware about the economic costs and other impacts of FL&W, largely because financial losses are borne by consumers through higher prices or the state through subsidization. Actors in the food industry should realize that FL&W reduction may require some initial investment, but that a food supply chain with reduced losses and waste is more efficient, expends fewer costs and resources, and thus generates a higher profit margin in a long-term sustainable way, to the benefit of all actors.

Moreover, greater awareness at all levels of the food supply chain is needed, especially with regard to practices and technologies to preserve quality and safety of food.

26. Relevant actions under this component may include:

(i) Developing public awareness campaigns

- Conduct awareness campaigns using several means (workshops, seminars, extension services, meetings, training, documentaries, etc) that involve national media and institutions such as schools, universities, producer and consumer groups, NGOs and health establishments.
- Raise awareness on FL&W in primary and secondary schools, to change attitudes at the consumer level.

- Promote a healthy nutritional culture and responsible purchasing and consumption habits.
- (ii) Developing and promoting relevant and practical procedures and technologies.**
- Involve specialized experts and agencies to develop material which incorporates educational, economic, cultural and religious considerations for farmers, agribusiness or consumers, and their capabilities in reducing FL&W.
 - Disseminate procedures and technologies through specialized agencies and institutions working with farmers, agribusiness and consumers, such as agricultural extension services, consumer protection agencies and authorities, agribusiness boards and associations, civil society agents and NGOs, schools and universities.
 - Promote two-way communication, alongside general awareness raising, to help in identifying real opportunities to target FL&W reduction.
- (iii) Investing in capacity building**
- Support public and private initiatives to implement capacity building programmes leading to greater understanding of FL&W issues and the related technical and other remedies for addressing them at different levels of the supply chain, targeting the relevant stakeholders, such as farmers, wholesalers, traders, processors, and other actors of the supply chain.
 - Promote the introduction of FL&W in curricula of universities and colleges as well as ongoing training modules of food industry professionals in the public and private sectors.
 - Main areas in the food supply chain to focus capacity building include:
 - Pre- harvest and harvest practices
 - Food handling, transportation, processing, storage and distribution
 - Consumer education and information
 - Food quality and safety
 - FL&W economic and environmental impacts
 - Institutional capacity development.

5.3 DEVELOP POLICIES AND REGULATIONS, AND STRENGTHEN COLLABORATION, COORDINATION AND NETWORKING

Rationale

27. Reducing FL&W is a multi-sectorial, multi-disciplinary and multi-factorial task. It requires networking and coordination between public institutions and private sector agencies in agro-industry development, food quality and safety, research, food producers unions, food handlers, processors and consumers organizations, NGOs and civil society institutions. Policies and regulations are key drivers of all actions aiming at reduction of food losses and waste, however, they are only meaningful when they are being adhered to, faithfully implemented and when mechanisms are present to ensure compliance. For that, in addition to the responsible government bodies, the effective participation, collaboration and cooperation of all actors mentioned above is imperative.

28. This component consists of developing focused policies and public actions to delineate boundaries and responsibilities to support effective organization of FL&W reduction. It also consists of creating mechanisms for exchanging experience with regional and international agencies for combating FL&W. Such partnerships are equally important to mobilize the required resources for action.

29. Relevant actions under this component may include:

- (i) Developing an enabling policy environment for FL&W reduction.**
- Identify relevant national policies and regulations that can contribute to FL&W reduction and consider their integration into broader food security strategies.
 - Identify gaps in policies and regulations and draft appropriate legislation.
 - Strengthen (or create) an institutional regulatory framework conducive to smooth functioning of food supply chains and put in place a mechanism to ensure compliance.

(ii) Ensuring collaboration and coordination between all agents of the food supply chain and other stakeholders, including relevant government institutions.

- Enable effective communication between stakeholders.
- Provide incentives for collaboration and information sharing by offering, inter alia, useful market information and analysis, useful proven methods to improve efficiency and quality, opportunities for building business partnerships, and opportunities to engage with export markets.

(iii) Establishing regional and international networking

- Develop linkages for exchanging experience with regional and international agencies in order to make the best use of resources, and to promote feasible and cost-effective initiatives.
- Develop regional networking through a NENA Regional Save Food Network.
- Support international networking via the NENA Network and build partnerships and information linkages with international networks on FL&W reduction initiatives.

(iv) Create a Coordination Mechanism for the Management of FL&W Reduction.

- Establish/identify a national authority responsible for the implementation, coordination and management of national programs on FL&W, composed of members from related ministries, institutions, and key stakeholders including the private sector. It would assure integration of FL&W reduction into broader food policy and agriculture industry development. The national authority would be linked to the NENA Network on FL&W reduction referred to above.
- Define the roles and responsibilities of this authority which may include, as a minimum, the functions listed in i, ii, and iii above.
- Establish means for monitoring collaboration and coordination, and take corrective actions if business as usual is ineffective.

5.4 PROMOTING INVESTMENT AND ENGAGING THE PRIVATE SECTOR

Rationale

30. The magnitude of FL&W in the region suggests that sustained investments are required, especially focused on those stages of the supply chain that would be most important in reducing FL&W. A mix of investments in capital assets and spending on supporting services would be required at all stages of the food supply chain from the farm-gate to the ultimate consumer. These entail investments in infrastructure for production, transportation, storage, processing and distribution. In addition, upgrading supporting services such as capacity building in new technologies and processes, market information systems, accessible financial services and institutional facilities for quick and reliable certification of produce, need to be an integral part of these investments.

31. Investment in the reduction of FL&W would be required by both the public and the private sector; however, in general the areas of involvement of the two would be different. The public sector should focus investment in public goods such as strengthening the necessary infrastructure and logistics as well as supporting institutions promoting an enabling policy environment and incentives to private sector. On the other hand, the private sector would be expected to focus on tangible investment opportunities at different stages of the supply chain that can yield sufficient returns. Focus on exporting, importing, as well as local food supply chains, considering that the NENA region is import-intensive region which requires advance infrastructure, especially for the cold chain particularly storage and transportation.

32. **Relevant actions** under this component may include:

(i) Attracting investment to improve commodity supply chains

- Public investments in infrastructure and services, such as building roads and other transport and communications infrastructure as well as necessary logistics required to attract investors.

- Business enabling environment (policies, regulations): Provide incentives for investment to reduce FL&W.
 - Identify appropriate promising low-cost technologies that can be easily obtained and finance their adoption in pilot projects while making them widely known to potential targets, such as for example simple preservation techniques including drying.
- (ii) Investing in appropriate farming technologies and household equipment**
- Provide investment for the development of simple-to-use technologies appropriate for local conditions and accessible to small and medium scale food producers and handlers, such as small scale processing and drying, small scale packing, packaging and storage, and easy to use and low cost cold chain techniques.
- (iii) Investments in use and reuse of FL&W**
- Promote research and public-private partnership investment for the use and reuse of FL&W, including animal feed, composting and energy generation.
- (iv) Financing actions likely to have immediate impact**
- Identify - and finance the implementation of - low-cost projects that can yield immediate reductions of FL&W, especially at post-harvest and consumption stages of the supply chain.

VI. IMPLEMENTATION OF THE STRATEGIC FRAMEWORK

A voluntary and regulatory mix

33. The first key element of the FL&W reduction strategic framework is to establish a mechanism to ensure that national efforts are well coordinated and not duplicated by different actors, and limited resources provide the critical mass needed to effect change.

34. Evidence based national action plans are essential, since the problem will be different from one country to another.

Key national role

35. An implementation action plan should be developed at the national level in accordance with the objectives and components of the regional strategy but adapted to the local conditions. Local action plans may use a typology that takes into consideration levels of losses and waste for different commodities to identify priorities and feasible actions. Opportunities for bilateral, subregional and regional collaboration can be identified and developed to support national strategies. Events such as the CFS-FAO Regional Multi-stakeholder Workshop and the biannual NERC will provide occasion to take stock, share experience, and assess progress towards the regional goal of 50% FL&W reduction.

36. The NENA Regional FL&W Network will provide a platform for information sharing and networking for national authorities in the customization of a national strategy.

Resources

37. This strategic framework requires commitments from all stakeholders to provide necessary resources with expertise in areas related to FL&W reduction. These include primarily human and financial resources as well as access to capital. Human resources are critical for a successful implementation. This requires resources to finance related capacity building activities at different levels as spelled out in the relevant components of the strategy. Specific provisions in government budgets should explicitly target activities related to the reduction of FL&W.

Stakeholders to Implement the Strategy

38. This strategic framework needs the participation and cooperation of broad segments and actors in the food supply chain in addition to government agencies, NGOs and civil society institutions, as outlined under the different components of the strategic framework. Starting with food producers, their role is to reduce losses at pre- and harvest stages. Agri-business institutions will play a role in reducing FL&W during storage, packing, handling, transportation, processing and distribution. Consumers also play a crucial role, particularly in urban areas and during special events

and religious ceremonies. It is important to drive the participation of every institution, association and agent that can contribute to keeping the strategic framework feasible and to promoting an exchange of experiences with countries within the NENA region and internationally.

Monitoring and assessment

39. The monitoring process should use basic evaluation key indicators of planned activities, including efficiency, effectiveness and impacts of activities with respect to their objectives. It should start with establishing the quantitative baseline level of FLW in selected subsectors and supply chains in each country. It should also assess the baseline of awareness and perception of the general public and actors in the food systems towards FLW. Formative and summative evaluation processes should be carried out during implementation. The final outcome of 50% FL&W reduction would need to be evaluated during predetermined stages, and based on annual reduction targets, for example 7% starting in year 4, as the first 3 years will be reserved for preparing preliminary actions of R&D, awareness, policy development and coordination, and investments.

VII. Conclusions

The conference is invited to;

- i) Endorse the strategic framework for the reduction of Food Losses and Waste in the Near East and North Africa;**
- ii) Call on Countries in the region to collaborate with FAO and partners to develop evidence-based national action plans for food losses and waste, with clear objective, baseline, indicators and targets;**
- iii) Call on countries in the region, funding institutions, as well as the private sector to give high priority to investments for improving food chain efficiency and other actions crucial to reduce FLW.**