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Livestock Contribution to Food Security in the Near East and North Africa

EXECUTIVE SUMMARY

Livestock plays an important role in food security and nutrition as well as the economies of countries in the Near East and North Africa (NENA) region, supporting rural livelihoods and employment, and ensuring access to animal source foods (ASFs). Between 1993 and 2013, while global livestock numbers expanded by 16 percent, the NENA region numbers expanded by 25 percent, from 77 million livestock units to 96 million. Diverse livestock production systems exist in the region and are rapidly evolving in the face of a sustained growing demand for ASFs. One of the key challenges is maintaining a balance between the intensification of livestock systems and ensuring livelihoods of the livestock-dependent poor householders. A growing dependence on imported ASFs is prompting several countries in the region to seek innovative and affordable options for the future, including best practices and options for better and more sustainable management of adapted livestock which make use of scarce feed resources in predominantly semi-arid environments. Meanwhile, ensuring access of urban populations to affordable ASFs through the intensification of poultry and dairy operations is important, not only for national food security but for job creation and economic growth. Building on a comprehensive regional analysis of livestock systems in the region in addition to a technical consultation with regional experts in January 2016, the Sustainable Development Goals (SDGs: 1, 2, 12 and 15), sustainable food and agriculture (SFA: 1, 2, 3, 4 and 5) and COP21, this paper discusses the evolution of demand for ASFs and the challenges on the supply side, which include the control of animal diseases, management of animal genetic resources, ensuring feed accessibility both through sustainable natural ranges and forage production, ensuring food and feed safety, promoting innovative ways to adapt to the changing climate and reducing food losses and waste along the chain.

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Guidance sought from the Regional Conference

The Regional Conference may wish to:

- 1) welcome the efforts and actions undertaken by countries, FAO and partners in developing strategies and programmes for the control of major animal diseases and zoonoses;
- 2) call on FAO to support countries in the region in developing sustainable ASF systems, particularly those that are focused on the rural poor and their better integration into national value chains;
- 3) call on countries to reinforce, with the support of FAO and partners, the governance of the veterinary services to efficiently prevent, control and eradicate animal diseases at national, regional and global levels;
- 4) call on countries to develop collaborative strategies and plans to manage transboundary animal disease risks in times of crisis, including through monitoring of livestock movements and strengthening of cross-border research and dialogue on critical issues affecting the system;
- 5) call on countries to enhance policies in support of emergency and rehabilitation activities in the livestock sector.

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I. INTRODUCTION

1. Livestock¹ plays multiple roles in the economies of countries in the Near East and North Africa (NENA) region, supporting rural livelihoods in terms of food security and employment and ensuring access to locally produced animal source foods (ASFs). In particular, in many of the dry and semi-arid areas of NENA (which constitute 90 percent the region's land mass), livestock is often the only source of income and food security for rural households and a safety net at times of crop failure. A significant part of the land area is not suitable for crop production and can only be used by ruminants.

2. The present document reviews the sector trends and challenges in ASF evolution in NENA, and presents options for action to support sustainable livestock development and improve food security in the region. It highlights the livestock production systems, genetic diversity and constraints in the region. It provides guidance on management of natural resources and animal genetic resources, control of animal diseases, and safety of animal feeds and ASFs. Finally, it proposes action-oriented options based on best practices, and presents issues that would require further regional dialogue and collaboration.

II. IMPORTANCE OF LIVESTOCK, EVOLUTION OF FARMING SYSTEMS AND TRENDS

3. Livestock plays an important role in ensuring food security and nutrition in the NENA region, supporting rural livelihoods and employment, and ensuring access to ASFs. Between 1993 and 2013, while global livestock numbers expanded by 16 percent, the NENA region numbers expanded by 25 percent, from 77 million livestock units to 96 million. Diverse livestock production systems (pastoral, agropastoral, mixed extensive, intensive and landless) exist in the region and are rapidly evolving (from traditional to commercial) to meet the growing demands for ASFs.

4. The importance of the livestock sector in many countries is revealed through its significant contribution to the gross value of agricultural production, which ranges for selected countries between 24 and 45 percent (Table 1). Smallholders dominate both crop production and livestock systems in the NENA region and most of the poor residing in rural areas raise livestock: 44 percent of smallholders in Lebanon, 60 percent in Egypt, 70 percent in Tunisia and the majority of rural dwellers in Mauritania and Sudan². Analysis shows that the livestock sector often has a higher multiplier effect on economic growth and job creation than other sectors. Consequently, ensuring future prospects for securing affordable ASFs while promoting livelihoods of livestock-dependent households in the region requires the identification of options for national investments in animal resources in a more sustainable manner.

5. Consumption of ASFs has risen by 4 percent, or twice the global average, over the past two decades to reach 13.4 million tonnes for meat in 2014 and 35 million tonnes (in milk equivalent) for milk and dairy products³. The production response to higher demand has led to a near doubling of meat and dairy output over the same period – a trend similar to that in global markets – to an estimated 9 million tonnes and 28 million tonnes, respectively.

6. However, the more rapid growth in consumption has led to imports of milk doubling over the past two decades while imports of meat have tripled. The region is now one of the largest import

¹ Here the term “livestock” is used in its narrow sense, covering only cattle, buffaloes, camels, sheep, goats, pigs and chickens.

² CIRAD. 2015. “Study on small-scale agriculture in the Near East and North Africa region”.

³ FAO livestock study for the NENA region (unpublished). In: Primary Paper. Table: Import bill for the Near East and North Africa region, 1995-2014.

regions for ASFs, accounting for an estimated 20 percent of global milk powder imports and 15 percent of meat deliveries in 2014. Notably, the region includes some of the largest milk powder importers in the world, with Saudi Arabia and Algeria each estimated to have imported in excess of 3 million tonnes (milk equivalent) in 2015.

7. A crossroads was reached in 2008 when the rapid growth in ASF production was challenged by the increased volatility of agricultural commodities resulting from skyrocketing food prices. Escalating feed prices translated into higher costs of meat and dairy products, and the resulting higher import bills triggered significant concerns about food security and the continued affordability of ASFs in major importing countries, including the NENA region.

Table 1. Key demographic and livestock indicators in the Near East and North Africa region, 2014

Country	Human population (million), 2014	Livestock/TLU (2013)	Livestock as share of gross value of agricultural production (constant 2004-2006 US\$)	Total meat production (1000 tonnes)
Sudan (former)	33 000	43 778 900	41%	926
Iran (Islamic Republic of)	78 470	13 461 500	27%	2 627
Egypt	82 056	7 527 000	43%	1 810
Morocco	33 008	4 897 310	40%	1 077
Algeria	39 208	4 829 002	35%	681
Mauritania	3 000	4 270 000	77%	116
Yemen	24 400	3 540 000	46%	348
Iraq*	34 769	3 210 900	30%	209
Syria**	21 898	2 869 250	35%	390
Saudi Arabia	28 829	2 115 000	53%	706
Tunisia	10 997	1 499 680	24%	320
Libya	6 202	1 176 450	na	176
UAE	9 346	776 450	na	77
Oman	3 632	599 800	38%	26
Jordan	7 274	402 670	53%	230
Lebanon	4 822	156 550	26%	94
Qatar	2 169	126 850	80%	15
Kuwait	3 369	102 300	60%	63
Bahrain	1 332	14 250	64%	16

Source: World Bank indicators, FAO estimates, FAO food outlook, 2015, FAOSTAT.

* Lucani, P. and Saade M. 2012. Iraq agriculture sector note. Country highlights: prepared under the FAO/World Bank Cooperative Programme. <http://www.fao.org/docrep/017/i2877e/i2877e.pdf>

** Khoury, G. Syria Country Report. In: FAO 2016. Small-scale dairy sector in the Near East. M. Tibbo (ed.). FAO-RNE (in Press).

Note: The estimated 40 percent of Syrian livestock decimated by the ongoing conflict in Syria is not captured here.

8. Nearly three-quarters of the increase in meat production in the region over the past two decades (Table 2) has been due to a rapid expansion in intensive poultry operations, particularly in the strongest growth markets of Iran, Egypt and Morocco. The 5 percent annual growth in poultry output was accompanied by a corresponding escalation in demand for animal feed. By 2014, the region accounted for 24 percent of global coarse grain imports and 11 percent of global protein meals, and the total value of ASF and feed imports exceeded USD 34 billion. Registering annual gains of 10 percent over the past 20 years, ASF imports currently constitute approximately 32 percent of total food imports and more than 40 percent of the value increase in total food imports by the region between 2010 and 2014.

9. Given this increasing import dependence, countries are concerned about the implications on long-term food security and poverty reduction, particularly given that, on average, 40 percent⁴ of the population in the region lives in rural areas, and livestock raising is often associated with supporting livelihoods and the resilience of the rural poor. The overall increase in livestock numbers in the NENA

⁴ World Bank Development Indicators

region was mainly a result of increases in the major livestock-producing countries, e.g. Sudan and Iran and, to some extent, Egypt, Algeria, Mauritania and Morocco (Table 1). The evolution of the production systems from traditional (extensive, mobile pastoralism and smallholder village systems) to transitional (partially commercial) to commercial (mostly intensive), have largely been driven by growing product demand, and influenced by ecological and geopolitical factors.

Table 2. Animal sourced foods in the NENA region: Production, trade and consumption

ASFs	1995	2014 (estimated)	Projected 2024	Annual growth	
				1995-2014	2015-2024
Live animals (1000 TLU)	76 812	95 748	na		
Production (1000 MT)					
Beef	1 060	1 775	2 007	3%	1%
Poultry	2 523	5 911	7 101	5%	2%
Sheep and goat	1 084	1 472	1 823	2%	2%
Camel*	153	297	na	na	Na
Total Meat	4 685	9 180	10 953	4%	2%
Milk	14 453	28 283	33 212	4%	2%
of which camel milk	263	560	na	na	Na
Consumption (1000 MT)					
Beef	1 620	3 191	3 681	4%	1%
Poultry	3 001	8 276	10 667	5%	3%
Sheep and goat	1 388	1 811	2 307	1%	2%
Total Meat	6 030	13 383	16 784	4%	2%
Milk	18 751	35 385	42 304	3%	2%
Imports (1000 MT)					
Beef	586	1 494	1 743	5%	2%
Poultry	520	2 567	3 669	9%	4%
Sheep and goat	376	462	607	1%	3%
Total Meat	1 485	4 616	6 135	6%	3%
Milk powder	441	910	1 132	4%	2%
* Camel data from 2013					
NENA as share of World				World totals (1000)	
				1995	2014
Live animals (1000 TLU)	6%	7%	na	1 210 875	1 403 816
Meat production	1%	2%	2%	200 285	315 319
Meat consumption	3%	4%	5%	199 782	314 348
Meat imports	11%	15%	16%	14 587	29 347
Beef	10%	14%	14%	6 169	9 188
Poultry	12%	21%	23%	4 360	12 256
Sheep and goat	37%	34%	40%	1 003	962
Milk powder imports	18%	20%	19%	34 416	69 041
Share of total meat consumption (by meat type)					
Beef	27%	24%	22%		
Poultry	50%	62%	64%		
Sheep and goat	23%	14%	14%		
Imports as share of consumption					
Beef	36%	47%	47%		
Poultry	17%	31%	34%		
Sheep and goat	27%	26%	26%		
Total meat	25%	34%	37%		

Sources: FAOSTAT, OECD/FAO agricultural outlook, 2015-2024; FAO; milk consumption calculated by the author TLU, Livestock units/tropical livestock units; mt, metric tonnes; NENA, FAO Near East and North Africa region.

III. KEY DRIVERS INFLUENCING CONSUMPTION OF ASFs IN NENA

10. Income and population growth, shifting diets and demographic change, including urbanization, underpin the strong consumption growth rates for ASFs in the region. The complexity and diversity of the 19 countries of the NENA region is revealed in Table 3, which highlights the key drivers contributing to these country-specific consumption trends. These indicators act as a lens through which to view the relationships among incomes, urbanization and population growth, and their impact on consumption of ASFs.

Table 3. Consumption and imports of meat and milk by the Near East and North Africa region, 2014

Country	GDP per capita current US\$	Per capita meat consumption (kg), 2014	Meat imports (1000 tonnes)	Meat imports as % of consumption*	Per capita milk consumption (kg) (estimated)	Dairy imports (1000 tonnes, ME)	Dairy imports as % of consumption*
Qatar	97 519	68	28	94%	83	155	84%
UAE	44 204	75	230	85%	197	2 025	112%
Kuwait	36 473	75	106	72%	181	671	95%
Bahrain	24 868	75	28	83%	93	227	177%
Saudi Arabia	24 161	53	541	55%	133	3 094	73%
Oman	19 310	44	103	115%	203	1126	123%
Lebanon	10 058	39			158	516	56%
Libya	6 570	49	11	7%	104	427	65%
Iraq	6 334	12	2	2%	31	767	67%
Algeria	5 498	21	31	6%	163	3115	48%
Jordan	5 423	47	40	26%	80	344	56%
Iran (Islamic Republic of)	5 315	33	50	3%	195	394	5%
Tunisia	4 317	31	3	2%	111	98	8%
Egypt	3 199	30	221	16%	76	1 394	20%
Morocco	3 103	34	10	2%	80	436	16%
Sudan (former)	1 876	22	4	0%	221	248	3%
Syria	1 859	17	11	3%	121	158	7%
Yemen	1 473	21	64	31%	38	702	68%
Mauritania*	1 275	33	18	2%	165	243	38%

*Ratios above 100% imply non-declared exports; dairy imports are in milk equivalents.

Source: World Bank indicators, FAO estimates, FAO food outlook, 2015, FAOSTAT.

11. Per capita income is one of the major factors influencing shifting preferences to high-value foods, such as ASFs. In the countries of the Gulf Cooperation Council (GCC) per capita income is high and ranging from USD 20 000 to USD 97 419, meat and dairy consumption are in the range of 44–75 and 83–197 kg/capita/year, respectively, and are among the highest in the region. Analysis shows, however, that the most rapidly growing ASF consumption is found in countries with per capita incomes ranging from USD 2 000 to USD 10 000, such as the Maghreb countries, along with many of the countries in the Mashreq, as well as Iran. Countries characterized by relatively high animal numbers per capita, such as Mauritania and Sudan, have relatively high ASF consumption despite per capita incomes of USD 1 275 and USD 1 876, respectively. Projections undertaken by FAO show that demand for high-quality ASFs in the NENA region will continue to grow in the future.

IV. UNDERLYING CHALLENGES FACING THE LIVESTOCK SECTOR

12. Growing demand for ASFs has catalysed an intensification of the sector, mainly through investments and strong growth in the dairy and the poultry industries. The rise of animal numbers (by 25 percent over 20 years), usually raised and managed by smallholders, has not been accompanied by a similar growth in productivity. This raises concerns about the potential impact of these animals on already eroded grazing lands, greenhouse gas emissions and the food security situations of these households and their ability to respond to crises, particularly in semi-arid and arid areas.

13. With smallholders playing a predominant role in agriculture in the NENA region, one of the key challenges is maintaining a balance between the intensification of livestock systems and ensuring livelihoods of the livestock-dependent poor householders. There is also the risk that adapted local livestock breeds are being lost with the intensified introduction of non-local, unadapted breeds. Most households⁵ raise livestock in addition to growing crops/fruits and vegetables. Countries need to support in:

- 1) tailored strategies to address the many diverse production systems which sustain rural and more vulnerable populations where livestock is often the only income option;
- 2) enhanced role of producers and producer organizations, and better accessibility to inputs and resources and integration into the national value chain;
- 3) stability and affordability in ASFs' supply through mechanisms which address potential market volatility; and
- 4) policy frameworks that are accompanied by concomitant public expenditure and programmes, which ensure the sustainable management of pastures, rangelands and water resources.

14. A wide range of diseases affect livestock and people associated with livestock in the region, and constrain processes of development and poverty reduction through four pathways that are not necessarily mutually exclusive:

- 1) affect fundamental assets and increase vulnerability causing high mortality in livestock kept by the poor (Newcastle disease, avian influenza and *peste des petits ruminants* [PPR]);
- 2) hamper processes of intensification and limit productivity gains and production efficiency (tick-borne diseases, gastrointestinal parasites, mastitis, enterotoxaemia, foot-and-mouth disease [FMD] and PPR);
- 3) constrain access to markets and affect public health (zoonotic diseases: brucellosis, Middle East respiratory syndrome coronavirus [MERS-CoV]), Rift Valley fever [RVF] and tuberculosis [TB]); and
- 4) limit cross-border trade (FMD, lumpy skin disease [LSD], PPR and bluetongue disease). These health constraints have several important features:
 - a) the sheer number of infectious diseases, including highly contagious, vector-borne and foodborne;
 - b) the significant number of infectious diseases with an expanding geographical distribution;
 - c) the large number of zoonotic diseases and the substantial impacts of WHO's grouping of neglected tropical diseases⁶, many of which are zoonotic;
 - d) the scarcity of definitive epidemiological data on many of these diseases, and food safety hazards;
 - e) the weakness of structured epidemiological reporting systems;
 - f) the inadequate understanding, presence and impacts of antimicrobial resistance as well as the weaknesses of reporting of antimicrobial use and of emerging resistance;
 - g) the inadequacies of leadership, governance and communication on animal health issues, both between public and private authorities and stakeholders; and
 - h) the need for a more institutionalized One Health⁷ approach to disease control.

15. There is a need for a demand-driven approach to improve veterinary service functionality as there is no "one-size-fits-all" solution for the health priorities of the region. A new demand-driven approach is proposed to improve the functionality of veterinary services along the value chains in all countries, based on the needs of different production systems, domestic and regional disease risks posed to different stakeholders disease impacts and types of responses required to reduce them.

⁵ CIRAD Study, see footnote 1.

⁶ Hotez, P.J., Savioli, L. and Fenwick, Alan. 2012. "Neglected Tropical Diseases of the MENA". Available at <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3289601/pdf/pntd.0001475.pdf>.

⁷ One Health is the integrative effort of multiple disciplines working locally, nationally and globally to attain optimal health for people, animals and the environment.

16. Food safety concerns: Bacteria, viruses, parasites or chemical substances in contaminated food or water can cause foodborne illnesses. Unsafe food can cause more than 200 diseases in humans, as diverse as diarrhoea, viral diseases, reproductive and developmental problems and cancers, killing an estimated 2 million people globally each year. In most countries of the region, government bodies have been established to monitor the safety of ASFs and to build the capacity for Hazard Analysis Critical Control Point (HACCP). Other good practices such as Good Agricultural Practices (GAP), Good Manufacturing Practices (GMP) and Good Hygienic Practices (GHP) are in place for the post-harvest handling of food.

17. Rangeland deterioration: Over the years, the contribution of the rangelands to animal feed requirements decreased in most countries as the areas declined or remained static compared with the continued increase in human and livestock population (Figure 1). In some countries, it is estimated that existing rangelands can provide only 20 percent of feed requirements for the rapidly increasing livestock populations due to overgrazing, deterioration and mismanagement of rangelands. Transforming rangelands into croplands, urban dwellings and related infrastructures, has affected feed availability and sustainability of the system.

18. Feed management: At present, most of the feed resources in the region are sown pastures, food crop residues, poorly utilized or wasted agro-industrial by-products and grain-based manufactured feeds. Most countries, especially those in the GCC, are feed deficient and, either grow high water-consuming fodder crops, import large quantities of feed or are progressively outsourcing the production of fodder crops and livestock in foreign countries. With the incremental depletion of already scarce water resources and the advancing threats of climate change, the coping mechanisms of the pastoralists have been greatly reduced.

19. Central to the region’s livestock sector’s contribution to food security is water scarcity. It is aggravated by increasing and unsustainable use of water. Even where water is abundant, distribution and access is a major constraint to the livelihoods of the pastoral and agropastoral communities. Moreover, the use of groundwater at a speed faster than replenishment is threatening many parts of the region with desertification.

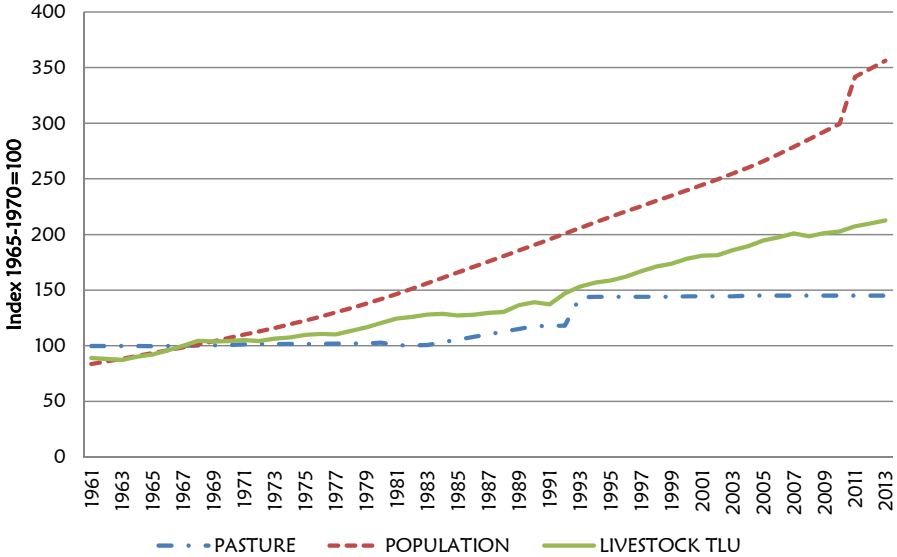


Figure 1: Relative growth of key indicators in NENA: Pasture, People and Livestock Numbers
 TLU, tropical livestock units. Available at: <http://www.fao.org/wairdocs/ilri/x5443e/x5443e04.htm>
 Source: FAO. 2015. FAOSTAT.

20. Animal genetic diversity: Endowed with rich livestock diversity, the region represents 5 percent of the total world breeds and the highest share of the world dromedaries. As early as 10 000 years ago, the Fertile Crescent of the region was one of the centres of the first domestication of

livestock. Some of the best adapted sheep, goats and chicken breeds were exported to up to 20 countries for their genetic merits in arid environments. Despite their merits, little attention has been given to these breeds and there are no breed-level population statistics for objective evaluation of their degree of endangerment. The risk status of almost 400 local breeds is unknown. Most of the countries of the region have no national policies or legal frameworks to promote sustainable use and conservation of animal genetic resources. In 2007, the 34th of the FAO Conference adopted the Global Plan of Action for Animal Genetic Resources (GPA-AnGR) as a policy framework for the sustainable use and conservation of livestock diversity. In 2014, monitoring of the implementation of the GPA-AnGR⁸ revealed that the countries of the region are lagging behind in implementing the Plan's agreed strategic priorities.

21. Climate change⁹ and climate variability have put the countries in the region at significant risk and exacerbated the region's scarce resources. Extreme climatic events such as droughts, floods, sea-level rise and storms are on the increase as the region is getting hotter and drier. Length of the growing period will decline, reducing the availability of animal feeds. River flows could be altered by decreasing precipitation. The increase in distribution of disease vectors and animal disease events would increase the rate of loss of genetic diversity. The increasing frequency of droughts is accelerating the rate of rural-urban migration, resource conflicts and civil unrest¹⁰. Countries are urged to support¹¹:

- 1) adaptation to climate change and frequent droughts through integrating targeted actions into national livestock strategies;
- 2) modelling and forecasting emerging diseases, integrating crop-livestock;
- 3) conserving feeds and supplementary feeding of animals, rehabilitating rangelands;
- 4) introducing insurance schemes based on index;
- 5) facilitating herd mobility, using multispecies and multibreed and herd splitting into smaller manageable groups and moving them to different areas; and
- 6) adjusting policies and institutions, supporting smallholders and adjusting production and marketing strategies to new and emerging realities.

22. Food losses and waste in the NENA region are estimated at 36 percent. They reduce food availability, worsen water and natural resource scarcity and increase the region's reliance on food imports¹².

- 1) Meat loss and waste along the value chain are estimated at 20 percent¹³ and cost over USD 10 billion per year¹⁴. The greatest proportions occur at production and consumption levels, though losses arise along the chain due to issues around cold storage and transport, hygienic processing and butchery, proper packaging and exposure to toxins, heat or bacteria.
- 2) Dairy losses and waste reach 20 percent and USD 5 billion per year, respectively. At the production level alone, dairy cow infections, such as mastitis, often result in estimated yield losses of around 3–4 percent, while high losses are recorded at the consumption stage in some GCC countries.

⁸ GPA-AnGR. Available at <http://www.fao.org/3/a-mm282e.pdf>.

⁹ NERC/12/5. Available at: <http://www.fao.org/docrep/meeting/025/md462E.pdf>.

¹⁰ FAO. 2015. Regional Overview of Food Insecurity - Near East and North Africa: Available at: <http://www.fao.org/3/a-i4644e.pdf>.

¹¹ Climate Change Adaptation and Mitigation Options for the Livestock Sector. http://link.springer.com/chapter/10.1007%2F978-94-007-6751-5_15.

¹² Expert Consultation Meeting on FL&W Reduction. Available at <http://www.fao.org/3/a-i3218b.pdf>.

¹³ FAO, 2013. Global food losses and food waste: extent causes and prevention.

¹⁴ FAO. 2014. Food wastage footprint: impacts on natural resources. Available at <http://www.fao.org/docrep/018/ar429e/ar429e.pdf>.

- 3) Meat and milk food losses and waste are associated with blue water losses of about 8 km³ and land loss of about 300 million hectares¹⁵ (mainly attributed to non-arable land and low livestock productivity in these systems). Greenhouse gas emissions and feed losses due to ASF loss and waste also need to be considered, along with their economic and environmental impact.
23. There is a need to build the evidence base for reducing loss and waste of ASFs¹⁶ at national and local levels, and to define targeted solutions and coherent action plans including coordination, networking supported by policy frameworks and financial resources.

V. FRAMEWORK FOR ENHANCING THE ROLE OF LIVESTOCK IN FOOD SECURITY AND NUTRITION

24. Livestock contributes to at least four Sustainable Development Goals (SDGs) viz. Goal–1, end poverty; Goal–2, end hunger and achieve improved food security and nutrition and sustainable agriculture; Goal–12, ensure sustainable consumption and production patterns; and Goal–15, restore and promote sustainable use of terrestrial ecosystems and halt biodiversity loss.
25. Countries in the region need to adopt comprehensive strategies to address the many constraints facing the sector, and set it on a sustainable development trajectory following the five principles for Sustainable Food and Agriculture (SFA)¹⁷. The action-oriented options derived from a comprehensive regional analysis on livestock and food security and regional technical consultation held in Cairo in January 2016 recommended the following:
26. Ensure the resilience of livestock systems in pastoral and agropastoral systems.
- 1) Develop national strategies/policies for sustainable management of natural resources, including:
 - a) addressing land tenure and sustainable land management in compliance with FAO's Principles for Responsible Investment in Agricultural and Food Systems and Voluntary Guidelines on the Responsible Tenure of Land, Fisheries and Forests (VGGT) and strengthening institutions;
 - b) investing in sustainable management of rangelands, community participation in restoration/rehabilitation efforts, payment for ecosystem services and other innovative climate change adaptation mechanisms;
 - c) ensuring access to water while preserving underwater resources, and utilization of nonconventional water resources for fodder production;
 - d) maximizing utilization of crop residues and field food crops in irrigated and rainfed mixed crop/livestock systems; and
 - e) developing national action plans for the sustainable use and conservation of animal genetic resources to implement the Global Plan of Action.
 - 2) Develop a crisis preparedness plan for emergency, epidemics, conflict, climate change related extreme events through building capacity and governance involving all stakeholders (producers, governments entities, NGOs and local government).

¹⁵ Ibid.

¹⁶ The framework is available at http://www.fao.org/fileadmin/templates/cfs/Docs1415/Events/CFS_NERWS_2015/Day2/CFS_NERW_Regional_FLW_Apr_2015.pdf

¹⁷ The five principles for SFA are available at <http://www.fao.org/sustainability/en/>

27. Enhance the competitiveness of the livestock sector in the region through improved value chains.

- 1) Promote integrated livestock value chains which link different production systems and improve the quality of ASF products as well as the biosecurity of all operations to reduce the possible impact of animal disease. Government actions could:
 - a) encourage value chain linkages which link large processors and small producers, particularly in dairy and poultry production, with the goal of improving smallholder productivity and facilitating access to marketing, animal health services and livestock extension services;
 - b) identify innovations within these various value chains that result in diversification of products, such as niche markets and labelling of products, which would also promote the use of well-adapted local breeds, supported by incentives to reduce losses and waste of ASFs; and
 - c) promote partnerships which link public and private financing in specific value chains, particularly those which co-fund investments while using innovative financing and “smart” subsidies to support producers and value chain development, rather than only subsidizing consumers.
- 2) Support the development of a national and regional data and information system on the livestock sector as this promotes the traceability of ASFs, enhances the capacity for control and food safety and monitoring of animal genetic resources (ensures regular update of data in the DAD-IS)¹⁸ and informs reliably for formulating livestock sector policies.
- 3) Ensure safe products to consumers through a reinforcement of food safety and biosecurity measures for ASFs, as well as feed safety.

28. In support of intraregional livestock trade as well as inter-regional trade with East Africa, countries are urged to review their institutions and legislations in harmony with the World Organisation for Animal Health (OIE) international standards; strengthen national capacities; invest in veterinary services, disease surveillance, veterinary quarantine systems, disease reporting, risk analysis, data and information management and sharing and reducing multiple taxations; and create enabling environments for livestock producers’ groups.

29. Ensure improved and better targeted veterinary services and effective food safety measures in all livestock systems, and clear priorities for investment in animal health and disease control through:

- 1) Building national and regional capacities and collaborative platforms for:
 - a) strengthening fundamental clinical veterinary services (including herd health, performance monitoring and vaccination) particularly targeted at small- and medium-scale systems engaged in the intensification processes underway in dairying, small ruminants and poultry;
 - b) building national emergency preparedness and response systems, official disease control campaigns, early warning, disease prediction and contingency planning (includes national and regional coordination for control of transboundary animal diseases) and addressing the issue of antimicrobial resistance;
 - c) ensuring national zoonotic disease preparedness, management and response, with a priority focus on endemic zoonoses (e.g. brucellosis);
 - d) building food system controls which ensure quality assurance for locally manufactured veterinary products, and food and feed safety and hygiene;
 - e) prioritizing identification and traceability of livestock as important tools for disease control which highlight the need for ensuring adequate availability of veterinary supplies, vaccines and drugs;

¹⁸ DAD-IS. Food and Agriculture Organization of the United Nations. Available at: <http://dad.fao.org/>

- f) ensuring inclusiveness of veterinary systems to respond to the vulnerability of households in extremely poor and vulnerable communities in all countries of the region and the special needs of livestock systems caught in war and zones of extreme insecurity;
- g) recognizing opportunities for greater and more innovative provision of incentives to community-based animal health providers to continue to provide services to these at-risk livestock holders, with the proper professional oversight; and
- h) building the capacity and leadership of animal health and disease control institutions through training, higher education, public-private partnerships and effective governance.

30. Ensure enabling and coherent policies to support sector development. National strategies aiming to modernize livestock systems often are accompanied by policy measures which may be in conflict with livelihood-protection policies. Furthermore, investment and innovations in management of pastoral areas are often neglected in the policy debate and the following need to be considered:

- 1) Review the trade-offs between preserving rural spaces, particularly in pastoralist areas, and the need for the food security of urban consumers. Within this policy space, policy coherence between the measures put in place at different levels of the chain should be reviewed for possible improvement options.
- 2) Review the impact of programmes and policies on the sector, including mechanisms for exchange rates and investment policies as well as regulations ensuring transparent access to productive land and water.
- 3) Identify pro-poor livelihood innovations and target investments towards infrastructure and pro-poor market arrangements which emphasize inclusive value chains, including enabling environments for efficient professional/producers organizations.
- 4) Identify evidence and innovative solutions for reducing ASF loss and waste, with a key national role in developing coherent plans, guided by the Regional Strategic Framework for Food Losses and Waste Reduction with emphasis on data and information on ASF loss and waste.
- 5) Identify new technologies to address some of the challenges facing by the livestock sector in NENA. For example, farmers and veterinarians in the livestock sector across Africa are increasingly using cell phones to issue alerts quickly about possible animal disease outbreaks at a very early stage and to track wide-scale vaccination campaigns. Mobile phone applications are making 'early warning' a matter of seconds instead of weeks for animal disease outbreaks, and essential veterinary care can be tracked with pinpoint accuracy and speed, thanks to the Global Positioning System function now directly integrated in most cell phones.

31. Strengthening of regional collaboration on animal health:

- 1) Support the implementation of the Animal Production and Health Commission for NENA, established in the framework of the FAO Charter Article VI. The regional commission should provide a framework for exchange of information and knowledge, policy debate and coordinated efforts to addressing effectively existing and emerging transboundary issues affecting the sector.
- 2) Develop a regional network for NENA which would coordinate with other subregional networks to control transboundary animal diseases (e.g. epidemiology, laboratory diagnosis, vaccines, communication and food safety).
- 3) Strengthen information exchange and joint action on investment and management of pastures and rangelands.
- 4) Strengthen the network and focal points for animal genetic resources to facilitate exchange of information and genetic materials.

VI. CONCLUSIONS AND GUIDANCE SOUGHT FROM THE REGIONAL CONFERENCE

32. It is clear that supply-side growth for ASFs in the region has been challenged to keep up with consumption. Ensuring current and future development of the livestock sector in the region requires sustainable solutions, policies and investments. These need to be considered in the context of:

- 1) the need to respond to the growing demand for ASFs while ensuring food and nutrition security;
- 2) sustaining rural livelihoods for vulnerable rural populations where livestock is often one of the only income options;
- 3) ensuring the sustainable management of the rural landscape, in particular rangelands, pastures, and water resources; and finally
- 4) guaranteeing safe food and human and animal health.

33. Within the context of policy-makers' concern on balancing food security preoccupation with productive investments in livestock systems and sustainable management of natural resources, the Regional Conference may wish to:

- 1) welcome the efforts and actions undertaken by countries, FAO and partners in developing strategies and programmes for the control of major animal diseases and zoonoses;
- 2) call on FAO to support countries in the region in developing sustainable ASF systems, particularly those that are focused on the rural poor, and their better integration into national value chains;
- 3) call on countries to reinforce, with the support of FAO and partners, the governance of the veterinary services to efficiently prevent, control and eradicate animal diseases at national, regional and global levels;
- 4) call on countries to develop collaborative strategies and plans to manage transboundary animal disease risks in time of crisis, including through monitoring of livestock movements and strengthening of cross-border research and dialogue on critical issues affecting the system;
- 5) call on countries to enhance policies in support of emergency and rehabilitation activities in the livestock sector