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ACKNOWLEDGEMENTS

This work was undertaken as part of, and funded by, the CGIAR Research Program on Agriculture for Nutrition and Health (A4NH). This report was written by Margaret Wagah, Judith Hodge and Amanda Lewis. The authors would like to thank Stuart Gillespie (IFPRI), Charlotte Dufour (FAO, Rome) and Anna Herforth (FAO consultant) for their guidance in this country report. The authors also acknowledge the contribution of FAO Kenya country officer Anne Chele and FAO Assistant FAO Representative Augusta Abate for their support in setting up interviews with stakeholders and in arranging the LANEA workshop in Kenya, and of Stefania Croce, Joyce Mukiri and Angela Kimani (FAO Kenya) for reviewing the report. LANEA country consultant Margaret Wagah conducted the research interviews and the subsequent analysis and coding of the data. LANEA study co-ordinator Judith Hodge researched and wrote the structured evidence review section on evidence of agriculture-nutrition linkages. Thanks are extended to the 15 participants who generously gave their time to be interviewed about agriculture and nutrition. Finally, the support of Jayne Beaney, copy editor, and Francesco Graziano, graphic designer, is duly acknowledged.
<table>
<thead>
<tr>
<th>ACRONYMS</th>
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<tbody>
<tr>
<td>AGRA</td>
<td>Alliance for a Green Revolution in Africa</td>
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<tr>
<td>AMREF</td>
<td>African Medical and Research Foundation</td>
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<tr>
<td>ASAL</td>
<td>Arid and Semi-arid Lands</td>
</tr>
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<td>ASCU</td>
<td>Agricultural Sector Coordination Unit</td>
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<td>ASF</td>
<td>Animal source foods</td>
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<td>ALV</td>
<td>African leafy vegetables</td>
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<td>BCC</td>
<td>Behaviour Change Communication</td>
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<td>BMI</td>
<td>Body Mass Index</td>
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<tr>
<td>CAADP</td>
<td>Comprehensive Africa Agriculture Development Program</td>
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<td>CHEWs</td>
<td>Community Health Education Workers</td>
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<td>DON</td>
<td>Division of Nutrition</td>
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<tr>
<td>ECHO</td>
<td>European Commission on Humanitarian Aid and Civil Protection</td>
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<td>FAO</td>
<td>Food and Agriculture Organization</td>
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<tr>
<td>FNSP</td>
<td>Food and Nutrition Security Policy</td>
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<td>FNSS</td>
<td>Food and Nutrition Security Strategy</td>
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<td>GAIN</td>
<td>Global Alliance for Improved Nutrition</td>
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<td>HAZ</td>
<td>Height-for-age Z Score</td>
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<tr>
<td>IFT</td>
<td>Indigenous Fruit Trees</td>
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<td>IYCF</td>
<td>Infant and Young Child Feeding</td>
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<td>JHPIEGO</td>
<td>Johns Hopkins Program for International Education in Gynecology and Obstetrics</td>
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<td>KALRO</td>
<td>Kenya Agricultural Research Institute</td>
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<td>KAVES</td>
<td>Kenya Agriculture Value Chain Enterprises</td>
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<td>KIPPRA</td>
<td>Kenya Institute for Public Policy Research and Analysis</td>
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<td>KNBS</td>
<td>Kenya National Bureau of Statistics</td>
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<td>LANEA</td>
<td>Leveraging Agriculture for Nutrition in East Africa</td>
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<td>LANSA</td>
<td>Leveraging Agriculture for Nutrition in South Asia</td>
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<tr>
<td>MCHIP</td>
<td>Maternal and Child Health Integrated Program</td>
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<tr>
<td>MDG</td>
<td>Millennium Development Goal</td>
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<tr>
<td>MoALF</td>
<td>Ministry of Agriculture, Livestock and Fisheries</td>
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<td>MoPHS</td>
<td>Ministry of Public Health and Sanitation</td>
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<tr>
<td>NDVI</td>
<td>Normalized Difference Vegetation Index</td>
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<tr>
<td>NGO</td>
<td>Non-governmental Organization</td>
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<tr>
<td>NICC</td>
<td>Nutrition Interagency Coordinating Committee</td>
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<tr>
<td>NMK</td>
<td>Njaa Marufuku Kenya Programme (translated as Eliminate Hunger in Kenya)</td>
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<td>NTF</td>
<td>Nutrition Technical Forum</td>
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<td>SUN</td>
<td>Scaling Up Nutrition movement</td>
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<td>TANDI</td>
<td>Tackling the Agriculture-Nutrition Disconnect in India</td>
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<td>USAID</td>
<td>United States Agency for International Development</td>
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<tr>
<td>WAZ</td>
<td>Weight-for-age Z Score</td>
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<td>WHZ</td>
<td>Weight-for-height Z Score</td>
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LANEA (Leveraging Agriculture for Nutrition in East Africa) is an IFPRI/FAO research initiative carried out in Kenya, Uganda and Ethiopia to investigate opportunities and challenges related to scaling up impact on nutrition through the food and agriculture sector. The study took place from October 2013 to July 2014 and included a structured literature review, key informant interviews, and a stakeholder workshop held in Nairobi on 26 May 2014. Information gained from this study deepens the evidence base on how to create and sustain an enabling environment for nutrition within agricultural policy and programmes. The study initiative was organized around three core domains that are key to generating change: politics and governance, knowledge and evidence, and capacity and financial resources (Gillespie et al., 2013).

As a member of the SUN movement since 2012, Kenya has demonstrated a growing commitment to improving nutrition; however, malnutrition levels still remain high, including stunting, wasting, underweight and the growing problem of overweight and obesity. Drought, recurring conflict and high food prices, among other factors, impact food and nutrition security, and food insecurity affects approximately 26 percent of the population. However, agriculture has a strong potential to contribute to improving food and nutrition security. Over 80 percent of the Kenyan population derive their livelihoods from agriculture, which is the most dominant sector in the Kenyan economy. The LANEA Kenya study highlights stakeholder perceptions regarding how agriculture can be leveraged to achieve improvements in nutrition.

Key Findings

Politics and Governance

Kenya has demonstrated a growing political commitment to scaling up nutrition. For example, the 2010 Constitution Bill of Rights includes the right to food, and the Government has adopted a cross-sectoral, integrated Food and Nutrition Security Policy (FNSP) that includes agriculture’s role in impacting nutrition. Despite efforts to address nutrition cross-sectorally, the National Nutrition Action Plan (NNAP) makes little mention of agriculture, and the Agriculture Sector Development Strategy (ASDS) hardly mentions nutrition. The LANEA study identified as one of the main challenges to integrating nutrition and agriculture the lack of a high-level, multisectoral structure to support and ensure collaboration and coordination among relevant stakeholders, both at national and decentralized levels. Such a structure could be responsible for implementing the FNSP, as well as advocating for nutrition integration into the National Medium-Term Plan (MTP) and Expenditure Framework (MTEF) to ensure budget allocation for nutrition-sensitive agriculture programmes.

Identifying nutrition advocates and developing such a multisectoral structure could also help to address other barriers to collaboration and coordination, such as the lack of linkages between the different mandates of the Ministry of Agriculture (MoA) and the Ministry of Health (MoH) and the lack of a common vocabulary for nutrition across sectors. The study found that there is a need for understanding how to work towards a
common nutrition goal, as well as awareness-raising on nutrition-sensitive terminology across sectors. There is also a need for consensus on defining key indicators for nutrition-sensitive agriculture and relevant multisectoral approaches for monitoring and evaluation of the same. Institutionally, the devolution process in Kenya presents opportunities for better nutrition advocacy at county level, but also challenges in terms of coordination between ministries, between national and county governments, and between county governments themselves. County governments require support in order to better integrate nutrition-sensitive agriculture into their plans and to develop strategies for implementing the FNSP.

Knowledge and Evidence
The LANEA interviews and workshop elicited stakeholder perspectives on the linkages between agriculture and nutrition, and many interview respondents referred to various pathways by which agriculture can impact nutrition. These included women’s empowerment and time-saving technologies for women, value chain approaches to integrating nutrition in agriculture, improving production and direct consumption by farming households, and food prices. However, many stakeholders stressed the limited evidence base for these pathways, which was also echoed in the structured literature review conducted for the study.

The review identified 16 studies related to agriculture-nutrition pathways in Kenya. However, the studies’ findings may not have been widely distributed and, consequently, have not always informed policy and programme decisions. Furthermore, few studies found a positive association between agricultural activities and nutritional outcomes, and those that did (e.g. two studies on dairy farmer groups found a positive association among dairy farmers and dairy customers compared to non-dairy households) had limited geographical coverage and quality. Thus, the findings cannot be generalized for the entire country, and stakeholder perceptions that more evidence is needed appear to be true.

Along with the need for more research evidence, the study found that knowledge management is also needed, including linking research to programme application at national and county levels, and wider dissemination of training materials, manuals and guidelines on agriculture-nutrition integration. A stronger knowledge base could also be supported by linking agriculture or food security and health information systems to nutrition.

Communication efforts are not only important in working with decision-makers at policy level; stakeholders also pointed out the need for more knowledge at the programme level regarding how to implement nutrition-sensitive programmes and how to contextualize nutrition messages to the social and cultural environment when reaching out to households to promote nutrition behaviour change. Knowledge of what indicators to use to measure agriculture’s impact on nutrition is also needed.
Capacity and Financial Resources
The LANE A study looked at capacity at individual, community, organizational and structural levels, as well as financial resources for agriculture-nutrition integration. Study participants highlighted the need for capacity-building at all levels, from building policymakers’ capacity to integrating nutrition into agricultural policies and plans, to supporting capacity development of women, youth, farmers, and agriculture and health extension workers. Together with the need for training and support, there are also insufficient numbers of nutritionists and agriculture and health extension workers who are trained to integrate nutrition and agriculture at national and county level.

The educational system is key for training in nutrition, including the need for scaling up nutrition in primary and secondary school curricula and supporting cross-sector university research efforts seeking to better understand agriculture-nutrition pathways. Along with research and education, further organizational capacity is needed to scale up coverage of integrated nutrition-sensitive programming. Stakeholders also described the capacity to understand and respond to the social and cultural context as important when designing nutrition programming and messages.

In addition, the capacity to leverage agriculture for nutrition requires financial support and a long-term vision for impact. Commitments to funding and scaling up nutrition-sensitive multisectoral programmes are needed from development partners and the Kenyan Government. The current capacity is limited, with a lack of funding for longer-term food-based approaches to nutrition and integrated programming. There is a need for advocacy at the highest level in order to secure funding and continue to work for integrated responses to impact nutrition.

Study Recommendations
Based on the study interviews and stakeholder workshop discussions, as well as the gaps identified through the literature review, a number of recommendations for how to move forward on integrating nutrition and agriculture in Kenya has been identified.

Politics and Governance
1. Create and/or strengthen formal and high-level multisectoral structures that support collaboration at national and county levels.
2. Identify and support advocates for agriculture-nutrition integration in policies and programmes.
3. Support national and county governments to implement existing policies, such as the FNSP.
4. Agree on key indicators for monitoring and evaluation of nutrition-sensitive agricultural programmes.
5. Support collaborative and timely agriculture, food security and nutrition data collection and analysis.
Knowledge and Evidence

6. Support larger-scale research on best practices related to the agriculture-nutrition pathways and impact evaluations; promote dissemination and application of findings in relevant policies and programmes.

7. Include nutrition education in the formal education system, including at tertiary level and within agricultural education programmes.

8. Include nutrition education in agricultural training courses for communities.

9. Scale up dissemination of agriculture-nutrition training materials, guidelines and research findings, and promote their application in programming.

10. Integrate nutrition together with climate change adaptation work in agriculture.

Capacity and Financial Resources

11. Increase funding for nutrition, and implement existing nutrition frameworks and plans.

12. Build capacity of policy-makers to integrate nutrition into agricultural policies and programmes.

13. Increase number of nutritionists in agriculture and health ministries at national and county level.

14. Train health and agriculture extension/community workers in nutrition-sensitive agriculture and their roles, and increase the numbers of these front-line workers.

15. Design culturally and socially appropriate nutrition messaging [that can create demand for nutrition-sensitive agriculture] to fit the target audience - policy-makers, researchers/academia, extension and community workers, farmers and households.
Background and Rationale

There is a growing acknowledgement that “nutrition-sensitive” multisectoral approaches that complement “nutrition-specific” interventions are needed to achieve progress in reducing undernutrition. The food and agriculture sector is central to achieving this progress, and it has potential to contribute much more to nutritional improvement than it has to date (Ruel and Alderman, 2013). However, not enough is known about how this impact can be achieved. To create an enabling environment for agriculture-nutrition integration, quality evaluations of the nutritional impact of agricultural programmes and interventions are needed (Ruel and Alderman, 2013), as well as more knowledge about the political, institutional and capacity-related challenges that need to be addressed to link agriculture and nutrition at all levels.

Leveraging Agriculture for Nutrition in East Africa (LANEA) is a research study based in Ethiopia, Kenya and Uganda that addresses the need for knowledge of the enabling environment necessary to impact nutrition through the food and agriculture sector. The LANEA study documents describe challenges and identify opportunities to scale up the food and agriculture sector’s contributions to improving nutrition. These three countries are members of the Scaling Up Nutrition (SUN) movement.

The LANEA study took place from October 2013 to July 2014 and includes two main parts: a systematic literature review aligning research studies to six agriculture-nutrition pathways, completed in January 2014 for all three countries; and a qualitative research based on one-to-one interviews and workshops with key stakeholders in the nutrition and agriculture sector in each country.

Following a detailed review of the nutrition-relevant policy literature in the fourth paper of the Lancet series (Gillespie et al., 2013), three core domains were identified as key to generating change: politics and governance; knowledge, perceptions and evidence; and capacity and resources (Box 1). Drawing on these domains, this study explores: stakeholder perceptions of nutrition-agriculture linkages; political and institutional challenges and opportunities; evidence that is available, needed, and influential for policy-making; and key issues with regard to capacity development to scale up nutrition in the food and agriculture sector.

Box 1: Core domains for impact on nutrition through the food and agriculture sector

1. **Political context and institutional structures** affecting agriculture-nutrition linkages
   [Policy, politics, governance]

2. **Knowledge, perceptions and evidence** of linkages between agriculture and nutrition
   [Evidence, data, perceptions]

3. **Capacity and financial resources** needed to impact nutrition through the food and agriculture system

Source: Gillespie et al., Leveraging Agriculture for Nutrition in South Asia and East Africa: Examining the enabling environment through stakeholder perceptions
LANEA Kenya Methodology

The LANEA Kenya study includes a systematic literature review conducted in January 2014, key informant interviews carried out between March and April 2014, and a consultative workshop held on 26 May 2014. The study adapted analytical frameworks, tools and methods from the Leveraging Agriculture for Nutrition in South Asia (LANSA) study and Transform Nutrition activities.

The literature review compiled evidence from Kenya relating to the agriculture-nutrition pathways described by Gillespie et al. (2012) in their work on the TANDI initiative (Tackling the Agriculture-Nutrition Disconnect in India). Detailed methodology and discussion for this literature review is described in Section 3. Findings from the review were shared during the consultative workshop and inform this report.

Prior to the key informants’ interviews, the research objectives and methodology were presented at a meeting of the Nutrition Technical Forum (NTF), and comments and inputs were recorded and considered in the study. At this NTF meeting, potential interviewees were identified and a list generated in collaboration with the FAO Representation in Kenya. Interviews were conducted with 15 stakeholders working on agriculture and nutrition (Annex A).

The interview guide was adapted from the one used by the LANSA consortium in order to allow cross-regional comparisons and exchanges (Annex B). Notes taken during the interviews were then transcribed into a stakeholder grid that included categories related to the three core domains identified in Box 1 above. From this process, patterns, associations and relationships between emerging issues were identified and triangulated with the policy and programme documents reviewed.

The consultation workshop was held in Nairobi on 26 May 2014, with 43 stakeholders attending (Annex A). The workshop was used to disseminate the findings from the literature review and the stakeholder interviews and generate further insights on the role of agriculture in improved nutrition in Kenya. Detailed notes were taken at the workshop and, along with the interviews, they are incorporated into this report and provide diverse perspectives from the Government, NGOs, UN and other stakeholders, contributing to the knowledge on nutrition-sensitive agriculture in Kenya.

According to the new Kenya Constitution adopted in 2010, several functions in the agricultural and health sectors (the latter mainly dealing with nutrition-specific interventions) have been devolved to the newly created 47 county governments. Information for this study was not collected at county level, but rather at national level; therefore, county or sub-county differences are not specifically reflected, and findings are generalized for the country as a whole. However, participants shared county-level observations during the consultation workshop, and these have been incorporated into this report. The report consolidates the results from this research in order to identify constraints and opportunities to scale up the nutritional outcomes of investments in the food and agriculture sector and contributes to better understanding the agriculture-nutrition pathways in Kenya.
Food Security and Economic Development in Kenya

According to the National Food and Nutrition Security Policy (Republic of Kenya, 2011), economic growth has contributed to a decrease in poverty in the country. However, Kenya continues to struggle to ensure food and nutrition security for its population (Table 1). Currently, about 10 million people - approximately 24 percent of the population - are considered chronically food-insecure (Republic of Kenya, 2011). This food insecurity exists despite Kenya having the highest Human Development Index (HDI) (0.535 in 2013) of the three LANEa case study countries, and higher than the average HDI for sub-Saharan Africa (0.502) (UNDP, 2014). The Economist Intelligence Unit’s Global Food Security Index, measuring vulnerability to hunger through affordability, availability, quality and safety, gave Kenya a score of 40.1 out of 100 in 2014, pointing to issues of poverty and food insecurity in the country (GFSI, 2014).

Achieving food security remains a daunting task due to a number of factors. These include persistent and frequent droughts caused by the changing climatic conditions, high food prices influenced by the droughts and international markets, low purchasing power, and recurrent conflicts especially in the arid and semi-arid lands (ASAL) communities.

Table 1 Economic and Human Development Indicators, Kenya

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Uganda Data</th>
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<tbody>
<tr>
<td>GDP growth rate (2012)*</td>
<td>4.6%</td>
</tr>
<tr>
<td>GDP growth rate (2012)*</td>
<td>840</td>
</tr>
<tr>
<td>Population living below the national poverty line (2005)*</td>
<td>45.9%</td>
</tr>
<tr>
<td>Human Development Index score (2013)b</td>
<td>0.535</td>
</tr>
<tr>
<td>Human Development Index ranking (2013)b</td>
<td>147 out of 186 countries</td>
</tr>
<tr>
<td>Global Food Security Index ranking (2014)c</td>
<td>80 out of 109 countries</td>
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Agriculture in Kenya

Since pre-independence, agriculture has been the backbone of the Kenyan economy. It remains the most dominant sector and an engine of economic growth, directly contributing 24 percent of the Gross Domestic Product (GDP), and indirectly contributing another 27 percent through linkages with manufacturing, distribution and other service-related sectors (IFPRI, 2012). According to the CAADP Nutrition Country Paper for Kenya, approximately 80 percent of the Kenyan population depends on agriculture for their livelihood, either through production or processing (CAADP, 2013).

Farming systems in Kenya vary greatly depending on region. High rainfall areas in the highlands, coastal plains and the lake region produce maize, rice, wheat, sorghum, potato, cassava, vegetables and beans as well as tea, coffee, sugar cane and other cash crops.
FOOD AND NUTRITION SECURITY SITUATION

In the ASALs, pastoralism and agro-pastoralism dominate (CAADP, 2013). Livestock in Kenya includes cattle, sheep, goats, camels, poultry and pigs (Alpha, 2013).

Most farmers in Kenya are smallholders cultivating less than 2 hectares, and they account for 75 percent of total production in the country (CAADP, 2013). Major threats to agricultural productivity include climate-related events such as droughts and flooding. Droughts have recently affected almost 10 percent of the population and left around 3.7 million people in need of food aid (CAADP, 2013).

Nutrition in Kenya
Malnutrition continues to be one of the major concerns in Kenya. Stunting (chronic malnutrition), wasting (acute malnutrition) and underweight remain public health problems, with high levels of micronutrient deficiencies also evident.

Kenya is far from meeting its 2015 Millennium Development Goal (MDG) goal of reducing the rate of stunting to 16.3 percent. In fact, stunting rates have not changed significantly since 2003 (CAADP, 2013), with current national prevalence at 35.3 percent (KNBS, 2010). This is considered to be of high public health significance by the World Health Organization (WHO). Stunting rates vary by region, with the highest rates, at 42 percent in the Eastern province (KNBS, 2010).

Wasting and underweight have also shown little progress in the past ten years, with rates of 6 percent and 16.5 percent, respectively, according to Kenya’s Demographic and Health Survey (DHS) data (KNBS, 2010). Wasting is highest among children from 6-8 months old, indicating inadequate complementary feeding practices (KNBS, 2010).

Micronutrient deficiencies also remain a challenge in Kenya. While the results of the recently conducted micronutrient survey are still being awaited, the last national micronutrient survey, conducted in 1999 (MOH, 1999), found high levels of Vitamin A deficiency and iron deficiency among women and children. The Kenya Situation Analysis for Transform Nutrition (Transform Nutrition, 2011) refers to iron, vitamin A, zinc and iodine as key micronutrient issues in the country, while the Micronutrient Initiative Annual Report 2011-2012 identifies a need to improve iron and folic acid supplementation for pregnant women (MI, 2012). Findings from the Kenya DHS indicate a 97.6 percent coverage of iodized salt, which is promising for addressing iodine deficiencies in the country (KNBS, 2010).

Along with these issues, Kenya is also facing an emerging incidence of overweight and obesity and other non-communicable diseases (NCDs). The WHO reports a prevalence of overweight among Kenyan children at 5 percent in 2008/9 and overweight and obesity in women in 2003 at 23.4 percent and 6.3 percent, respectively (WHO, 2014).
**Nutrition and agriculture policies and networks**

The Government of Kenya has shown a commitment to addressing food and nutrition security through a number of policies. At the highest level, this includes the new Constitution, adopted in 2010, which refers to the right to basic nutrition for all children and the right to food for all Kenyans (Republic of Kenya, 2010). In addition, Kenya’s Vision 2030 is a broad development policy that provides a blueprint for political, economic and social development to transform Kenya into a middle-income country by 2030. The agriculture sector is considered as a major economic pillar to realize this vision (Republic of Kenya, 2008).

The Agricultural Sector Development Strategy (ASDS) is the tool for implementing the Vision 2030 at the sector level. Its strategic thrust is on an “Innovative, commercially oriented and modern agriculture.” Prioritization of nutrition is therefore not explicit and emphasis is on interventions that improve commercialization and competitiveness. Looking through the priorities laid out in the strategy, it would be expected to impact nutrition through increased incomes/reduction in poverty levels. As stated in the foreword to the strategy by the then Kenyan President: “Besides ensuring food and nutritional security for all Kenyans, the strategy aims at generating higher incomes as well as employment, especially in the rural areas (Republic of Kenya, ASDS 2010-2020).”

In terms of multisectoral policies, the Food and Nutrition Security Policy (FNSP) is a result of a comprehensive multistakeholder consultative process, consolidating the views of relevant government ministries, UN Agencies, donor groups, NGOs and the private sector. It was done with the support of FAO, WFP and UNICEF, under the coordination of the Agricultural Sector Coordination Unit (ASCU). The policy, which was enacted in February 2012 (Republic of Kenya, 2012), was the first attempt to integrate nutrition into the national food security policy. The FNSP has three broad objectives:

1. to achieve good nutrition for optimum health of all Kenyans;
2. to increase the quantity and quality of food available, accessible and affordable to all Kenyans at all times; and
3. to protect vulnerable populations using innovative and cost-effective safety nets linked to long-term development.

The FNSP offers opportunities to prioritize nutrition in the agriculture sector in a number of ways, highlighted in Box 2. The policy defines food security using the 1996 World Food Summit definition as “a situation where all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life” (Republic of Kenya, 2011 p. vii.).
Box2: Opportunities offered by the Food and Nutrition Security Policy (FNSP) to link agriculture and nutrition in Kenya

The FNSP:
- promotes the production of nutrient-rich foods (crops, livestock and fisheries) and consumption of a diverse diet.
- Supports protection of natural resources, which is essential for sustainable food systems.
- Gives consideration to vulnerable population groups through targeted subsidization of agricultural inputs.
- Supports promotion of small-scale, rural home processing and preservation of various foods, including livestock, fishery products and grains, all of which have the potential to increase farmers’ incomes through value addition and increased food availability.
- Promotes nutrition education as a key component to agriculture and health efforts.

Source: (Republic of Kenya, 2011)

There has been some progress, albeit limited, in the implementation of the FNSP. The initial multistakeholder attempt was to develop an implementation strategy defining the institutional modalities for the implementation of the policy. This process was supported by FAO and the draft national food and nutrition implementation strategy that captured input from a broad range of stakeholders was developed. Its finalization and roll out was however not realized following the enactment of the constitution and the new government structure. This is also noted in a report by Action Against Hunger (Alpha, 2013), which observes that a Food and Nutrition Security Strategy (FNSS) was drafted and it represented the implementation plan of the FNSP. Stakeholders interviewed in this study indicate that the FNSS has never been finalized: there was general agreement that delays in developing the implementation strategy were in part due to Kenya’s current transition to a devolved government system.

Following the stalling of the multistakeholder-driven development of the national food and nutrition implementation strategy, the Ministry of Health (MoH) developed the National Nutrition Action Plan (NNAP) based on the FNSP, as a tool for the implementation of the nutrition-specific interventions of the policy. The implementation of the NNAP, which is focused on HINI interventions, has been very vibrant and supported by a number of partners. Further evidence of Kenya’s commitment to addressing nutrition issues is the decision to formally join the Scaling up Nutrition (SUN) movement in 2012. The SUN movement in Kenya is a multistakeholder forum that includes the Government, mainly represented by the MoH and the Ministry of Agriculture, Livestock and Fisheries (MoALF), as well as UN agencies, donors, civil society organizations and the private sector.

The entry into the SUN movement has further strengthened support to the implementation of the NNAP. Unfortunately, the implementation of the FNSP based on a multisectoral approach as envisaged has not yet been realized. The draft national food and nutrition implementation strategy had proposed implementation structures for the FNSP that would foster coordination and linkages of the various multidimensional interventions (nutrition, food production, food safety, employment and purchasing power). However, this has not been realized as indicated above. Current institutional structures with a potential to promote nutrition-sensitive agriculture and support multisectoral nutrition approaches include the Nutrition Interagency Coordinating Committee (NICC) which is intended...
to serve as a platform for relevant ministries and stakeholders. The participation of the agriculture sector in this committee has not been very proactive. The Nutrition Technical Forum (NTF), which is a subcommittee of the NICC, is currently the most active stakeholder forum and provides technical guidance mainly on nutrition-specific interventions (SUN, 2013). The NTF is co-chaired by the MoH and UNICEF and includes several stakeholders, among which are representatives from the Government, UN agencies, NGOs, donors and the private sector. There are also county-level NTFs in each of the 15 counties.

FAO is playing an important role in the NTF; for instance, it supported the creation of a Working Group on Food and Nutrition Linkages, which will promote collaboration between the agricultural and health sectors. This WG is chaired by FAO and co-chaired by the MoALF. Its first meeting took place in July 2014.
Overview and Methodology

The LANEA Kenya systematic review was undertaken in January 2014 to find evidence on the linkages between agriculture and nutrition in Kenya. The search covered fifteen databases, websites and references from bibliographies. It combined search terms related to food, nutrition and agriculture, and identified both published and grey literature.

All references were entered into Mendeley referencing software, which enabled removal of duplicates, irrelevant and inaccessible studies. The search yielded a total of 872 citations, which were eventually reduced to 16 articles through an elimination process. The remaining articles were then rated according to quality criteria and mapped to one or more of the six key pathways between agriculture and nutrition (Box 3). The sequence of steps is illustrated in Figure 3.

Studies included were full text articles in published or grey literature that linked nutrition to elements of agriculture in Kenya. Those that were excluded were opinion pieces or conceptual papers, including the ones that did not measure nutrition outcomes or relate elements of agriculture to nutrition outcomes, as well as the ones that could not be accessed electronically despite searches in a number of search engines. Articles were categorized according to study design and quality assessment based on factors such as appropriateness and rigour, internal and external validity, reliability and cogency, with gradings of high, medium and low quality (DFID, 2013).

Agriculture was defined in broad terms to encompass agri-food systems and policies. Measures of nutrition outcomes/status included anthropometry, total calorie intake, diet quality, nutrient consumption, nutrient deficiencies, consumption of specific food commodities, nutrition knowledge and nutrition-related practices.

Box 3: Agriculture-nutrition pathways (REF TANDI pathways)

Six pathways by which agriculture impacts nutrition:
1. **Agriculture as a source of food**: Farmers produce for own consumption.
2. **Agriculture as a source of income for food and non-food expenditures**: As a major direct and indirect source of rural income, agriculture influences diets and other nutrition-relevant expenditures.
3. **Agricultural policy and food prices**: Agricultural conditions can change the relative prices and affordability of specific foods, and foods in general.
4. **Women in agriculture and intra-household decision-making and resource allocation** may be influenced by agricultural activities and assets, which in turn influence intra-household allocations of food, health and care.
5. **Maternal employment in agriculture and child care and feeding:** A mother’s ability to manage child care may be influenced by her engagement in agriculture.

6. **Women in agriculture and maternal nutrition and health status:** Maternal nutritional status may be compromised by the often arduous and hazardous conditions of agricultural labour, which may, in turn, influence child nutrition outcomes.

**Source:** Gillespie S., J. Harris, S. Kadiyala. 2012. The Agriculture-Nutrition Disconnect in India: What Do We Know? Policy, Health and Nutrition Division. IFPRI.

**Figure 3.** LANEA study inclusion pathway
Results by agriculture-nutrition pathway

Half of the 16 studies included in the evidence review were associated with pathway one: agriculture as a source of food. Pathway 6 (women in agriculture and women’s nutritional status) had no related studies. Only one study provided evidence on how agricultural policy and food prices affect food consumption (pathway 3) and one study supported pathway 5, which links childcare and feeding and maternal employment in agriculture (Table 2). The findings relating to each pathway are described below.

Table 2: Number of studies included in the evidence review by pathways and study design

<table>
<thead>
<tr>
<th>Pathway</th>
<th>Numbers of studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1: Agriculture as a source of food</td>
<td>8</td>
</tr>
<tr>
<td>2: Agriculture as a source of income for food and non-food expenditure</td>
<td>3</td>
</tr>
<tr>
<td>3: Agriculture policy and food prices affecting food consumption</td>
<td>1</td>
</tr>
<tr>
<td>4: Women in agriculture and intra-household decision-making and resource allocation</td>
<td>4</td>
</tr>
<tr>
<td>5: Female employment in agriculture and child care and feeding</td>
<td>1</td>
</tr>
<tr>
<td>6: Women in agriculture and women’s nutritional and health status</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Study Design</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Randomized controlled trials</td>
<td>0</td>
</tr>
<tr>
<td>Quasi-experimental studies</td>
<td>1</td>
</tr>
<tr>
<td>Observational studies using analytical methods such as multivariate regressions and econometric modelling</td>
<td>13</td>
</tr>
<tr>
<td>Observational descriptive studies</td>
<td>2</td>
</tr>
</tbody>
</table>

*Some studies are included in more than one pathway; therefore the total exceeds 16.

Pathway 1: Agriculture as a source of food

Agriculture----own production----household access to calories/micronutrients----individual intake----nutrition outcome

Eight studies probed the link between agricultural production and food consumption, both at the household and individual level. All of them were observational studies with analysis, apart from one high-quality quasi-experimental study (Johnson-Welch, 1999).

Agricultural interventions to boost production for household consumption of animal-source foods (ASF), vegetables and fruit showed mixed results. A nine-month trial intervention that promoted vitamin A-rich orange-fleshed sweet potato (OFSP) production and consumption measured nutritional impact using the Helen Keller International (HKI) food frequency method (Alpha, 2013). Because of a severe drought that occurred during the intervention period, there were serious food shortages among all communities – intervention and control. Yet HKI food frequency scores increased among children whose
mothers were involved in women’s groups in intervention communities, while scores fell in the control groups. Two studies on dairy farmer groups (Hoorweg et al., 2000; Walton et al., 2012) found a positive association between milk consumption and nutritional status of pre-school children among dairy farmers and dairy customers compared to non-dairy households, even after controlling for household income, energy intake and education level. Dairy farmers had higher levels of food production, food consumption and household incomes, although off-farm employment made an important contribution to higher incomes (Hoorweg et al., 2000). The high costs of both dairy farming and milk as a source of protein made the study’s authors question the importance of intensive dairy production as a livelihood strategy for resource-poor households, as well as the importance of milk as a means to improve children’s nutritional status in low-income households. Another more recent study (Walton et al., 2012) showed that women and school-aged children in a dairy group had higher energy, percentage of energy from ASF, and dietary diversity; however, vitamin A and zinc intakes were still inadequate in this group. Moreover, a higher prevalence of overweight among member women compared to non-member women suggested potential negative effects of increased dairy consumption.

Livestock ownership by women, mediated by child ASF intake (mainly dairy products), was positively associated with children’s weight-for-age z score (WAZ), with a trend towards significance for height-for-age (HAZ) in Jin and Iannotti’s (2014) high-quality national study using data from six provinces. Abandoning the pastoral way of life and its access to milk and other livestock products was not found to improve health and nutrition status in studies of two pastoral communities adopting sedentarization, an action encouraged by the government (Adongo et al., 2013; Fujita et al., 2004). Gabra women showed mixed outcomes and limited improvements (Adongo et al., 2013), with high levels of Chronic Energy Deficiency (CED) in both communities (49 percent among settled and 52 percent among semi-settled women), suggesting that food insecurity remained a significant problem. The mean BMI of settled women was not significantly different from that of semi-settled women.

In an observational study in Western Province (Ayieko and Midikila, 2010), the inability of farm households to meet their nutrient requirements through household production was prevalent even in an area with adequate rainfall patterns. Dietary diversity positively correlated to household food availability, whereas increased consumption of common staples negatively correlated to food availability and dietary diversity, although this was not evaluated at the individual level. Seasonality of food supply was a dominant factor, with households facing serious challenges to procuring adequate amounts of nutritious food prior to the harvest season. The potential for indigenous fruit trees (IFTs) to smooth consumption was identified in Simitu et al.’s case study (2009), which collected data on IFT abundance on farms and fruit consumption of adults and children. During the course of the year, fruit consumption varied, but 10-25 IFT species were ready for harvest even during the ‘hunger gaps’ of the two cropping seasons (March to May and October to December). However, IFT consumption was still low at 19g for adults and 23g for children, compared to the WHO recommendation of 200g of fruit per day. The authors recommended the domestication of priority species to increase the number of IFTs on farms and to improve the perception of IFTs in rural communities as a valuable source of nutrients.
Mwangi & Foeken (1995) investigated the potential for urban agriculture to contribute to food and nutrition security outcomes for low-income dwellers in Nairobi. Results comparing three groups (those who practised urban farming, those who did not, and a group involved in an urban farming project) found that urban farming did contribute to food security, but this did not translate into better nutritional outcomes for children under five. However, households practising urban agriculture with assistance from a local development project had wider crop diversification and sold more of their produce compared to urban farmers not in the programme, although levels of food production were still quite low due to very small plot sizes.

Pathway 2: Agriculture as a source of income for food and non-food expenditure

Three medium quality studies (Athanasios et al., 1994; Hoorweg et al., 2000; Mwadime, 1996) examined links between income from agriculture and food or healthcare purchase.

All three of the studies alluded to employment outside of the agriculture sector (off-farm employment) as a necessary means of livelihood for rural households and a vital source of cash income for acquiring food, with associated nutritional outcomes. Hoorweg et al. (2000) found that off-farm income made a significant contribution to the higher incomes of both dairy farmers and their customers, with regular dairy customers being mainly households with wage employment. Analysis found a positive association between milk consumption and nutritional status of children, independent of household income, energy intake and level of education.

Mwadime’s thesis (1996) consisted of four studies that investigated the role of non-farm employment on childhood nutrition in rural coastal Kenya. The author concluded that off-farm income increased both the quantity and variety of food consumed in the households studied, enabling them to stabilize consumption throughout the year. However, the positive effects of income on nutritional status were weak where health and child care conditions were sub-optimal. Mwadime could find no evidence that the rural informal sector had a negative effect on child care, household living conditions or on children’s nutritional status.

In another study, significant nutritional gains occurred to the benefit of Food-For-Work (FFW) participants via food transfers as compared to an equivalent net income transfer to participant households (Athanasios et al., 1994). Possible explanations suggested by the authors were that household decision-making processes may be different in the case of food distribution as compared to cash income spending, although this was not evaluated in the study. Holding income levels constant, the nutritional gains (calories) of the poorest participant households were higher than the gains by all income participant groups (32.43 percent compared to 26.07 percent, respectively).
**Pathway 3: Agriculture policy and food prices affecting food consumption**

Supply & demand factors (policies, taste, prices) ----relative prices of various food items----
household calories/micronutrients----individual intake-----nutrition outcome

One study (Grace *et al*., 2014) was found for pathway three, linking the effect of agricultural policies or prices to nutritional outcomes at either the individual or household level.

In this recent high quality study, Grace *et al*. (2014) examined the relationship between the price of maize (a major Kenyan food staple) and low birth weight (<2500 g) to help quantify the impact of local food prices on one outcome of household food insecurity. Applying econometric modelling to Kenyan DHS data between 2001 and 2008, the authors found that price increases of maize during pregnancy did not appear to lead to nutritional deficiencies in women, at least not those influencing birth weight. The results suggest that some households that are net producers of maize may benefit from high prices, or that high prices may impact the number of conceptions, with the poorest women who are the most sensitive to price increases unable to conceive or carry a pregnancy to term. The authors used other data (normalized difference vegetation index or NDVI – a “greenness” measure for community level crop production) to help distinguish between those households that are dependent on the market for food versus those households that rely on very local household or community-level production. This implies that price may act as a barrier to food consumption only for those families without access to locally produced food (maize, in this case). Regardless of where the household was located, when NDVI increased, nutrition seemed to improve – and this was especially the case in the presence of low prices.

**Pathway 4: Women in agriculture and intra-household decision-making and resource allocation**

Agriculture----women in agriculture----women’s decision-making power----intra-household resource allocation----nutrition outcome

Four studies examined factors linking women’s employment in agriculture to their decision-making power and resource allocation for improved health or nutritional status within the household. Two high-quality observational studies (Kiriti and Tisdell, 2004; Fischer and Qaim, 2012) examined the effects of agricultural commercialization on women’s empowerment and access to productive resources. A survey of small-scale banana producers investigated the gender implications of recently-established farmer groups set up to promote innovation and commercialization in the banana sector (Fischer and Qaim, 2012). Banana has traditionally been a crop cultivated by women in Kenya. Results confirmed the study’s hypothesis that farmer groups contributed to increasing male control over banana production and revenues. While male control over revenues did not affect total calorie consumption, it did have a negative marginal effect on dietary quality, indicating that the gains from the collective were not shared equally within the household. However, the negative gender implications of farmer groups could be avoided when women were group members themselves. In the poorest income quintile, group membership even appeared to have a positive effect on female-controlled income share.
Cash cropping was found to have a negative influence on per capita food availability in male-headed households, with less land available for subsistence crops in a case study in the Nyeri district (Kiriti and Tisdell, 2004). Husbands’ control over cash income reduced the amount of money spent on food purchases (men were more likely to spend the cash on nonfood priorities), thus reducing food availability to family members. This negative influence was not apparent in the female-headed households and in fact, per capita food availability rose with increased agricultural commercialization.

There was mixed evidence of the effect of female household headship on child nutrition in a study of de facto female headship (common due to male labour migration in Kenya) versus male household headship in an analysis of family income and decision making patterns (Onyango, 1994). Female heads of households assumed more farming responsibilities and had higher remittances from husbands. Male-headed households produced more food crops and used a larger proportion of them for home consumption, but children of female heads of households consumed a greater variety of foods in this study. Despite a higher prevalence of stunting, there was a lower prevalence of low weight-for-age among children of female heads. However, in statistical analyses, headship did not relate significantly to nutritional intake or status, and trade-offs in coping strategies appeared to balance some of the negative and positive effects of each situation.

The correlation between gender dimensions of agriculture and nutrition outcomes was explored in Jin and Iannotti’s research (2014) on livestock ownership. The study reported a positive association between co-owned/female-owned livestock (mediated through ASF intake) and child WAZ and HAZ scores, but no apparent effect on weight-for-height (WHZ) after adjusting for caregiver education level, income, child age and child sex. The partial mediating effect may be explained by other factors inherent in co-owned/female-owned livestock such as higher status of females in these households with greater influence over other child care practices promoting growth.

Pathway 5: Female employment in agriculture and child care and feeding

Agriculture----(female) employment----caring capacity/practice----nutrition outcome

Only one medium-quality study investigated the influence of female employment on child care practices and nutrition and health outcomes. Maternal labour force participation had a positive but insignificant effect on child stunting and a combined indicator of stunting and wasting in Mugo’s recent research (2012). Although the study did not specify employment sectors, the focus was on paid employment (off-farm work) rather than engagement in subsistence or agricultural activities. Being in poor health, living in rural areas, and having larger land parcels deterred participation in the labour force. Mothers in households that owned their land probably did not seek paid employment and might have been engaged in farming activities, as most women were at this stage of economic development.

Pathway 6: Women in agriculture and women’s nutritional and health status

Women in agriculture----energy expenditure----female adult BMI

There were no studies found for this pathway.
Conclusion
Evidence was lacking for all six pathways linking agriculture and nutrition in Kenya, with no randomized controlled trials (RCTs) and only one quasi-experimental study contributing to causal evidence. Most studies focused on pathway 1 (agriculture as a source of food).

The studies reviewed nevertheless reveal interesting findings pertaining to factors affecting pathways between agriculture and nutrition, such as the following:

- Agricultural interventions to boost production of ASF, vegetables and fruits showed mixed results, but studies reveal some indications that livestock ownership and milk consumption are associated with improved nutritional outcomes.
- There exist challenges of meeting nutritional requirements with household food production, especially where a strong food seasonality is associated with such production.
- Income from on-farm and off-farm employment/production and Food for Work (FFW) is associated with improved food security and increased quantity and variety of foods consumed but not always with nutritional status, especially when health and child care practices are sub-optimal.
- There are potential limitations to intensive dairy production for low-income groups due to the high costs of inputs.
- Food prices may act as a barrier to food consumption, especially for those families without access to locally produced food, such as maize.
- Studies have shown a correlation between gender dimensions of agriculture and nutrition outcomes in cash cropping and livestock ownership; women’s employment in agriculture was positively associated with improved nutrition status within the household when women - for example, members of farmers’ collectives or co-owners of livestock - had decision-making power over resource allocations.
- No studies were found for pathway 6 (women in agriculture and women’s nutritional and health status).

This literature review underlines an urgent need to develop a stronger evidence base to better inform policy-makers and those involved in health, nutrition and agriculture sectors on the design and implementation of nutrition-sensitive agricultural programmes and policies.
LANEA KENYA INTERVIEW AND WORKSHOP FINDINGS - POLITICS, EVIDENCE AND CAPACITY

4. LANEA KENYA INTERVIEW AND WORKSHOP FINDINGS - POLITICS, EVIDENCE AND CAPACITY

As previously described, interviews and a consultative workshop were carried out with key stakeholders from the Government, donor and UN agencies, NGOs and research institutions to gain perspectives on challenges and opportunities for agriculture-nutrition integration in Kenya. The findings from these interviews and the workshop have been classified into the three major areas of impact: 1) the political context of agriculture-nutrition linkages; 2) knowledge and evidence for agriculture-nutrition linkages; and 3) capacity to carry out agriculture-nutrition linkages. These key areas form the basis of the following discussion.

Political Context of Agriculture-Nutrition Linkages

This section describes stakeholders' perspectives on challenges and constraints to integrating nutrition and agriculture, as well as the extent to which there is an enabling environment to maximize agriculture’s contribution to nutrition in Kenya. Participants’ perceptions of what factors are key to influencing policy for nutrition are also described.

Challenges and constraints to considering nutrition in the food and agriculture sector

Study participants described a number of challenges and constraints to integrating nutrition and agriculture and implementing multisectoral nutrition-sensitive approaches at both policy and programme level. These range from issues of collaboration and incentives, to challenges with measurement and funding. Several MoALF and NGO stakeholders described the challenge of getting the agriculture and health sectors to collaborate towards a common goal of improving nutrition. One participant reflected that the MoALF’s mandate is to increase crop and livestock production; for them to go beyond this and incorporate nutrition, especially when they don’t understand exactly what to do, is difficult. Another NGO stakeholder said that implementing the FNSP is a challenge as it “falls under two ministries with distinct mandates” - agriculture more entrepreneurial and health more focused on treatment. Thus, the challenge is to establish a truly collaborative platform to implement the FNSP, rather than each sector undertaking its own independent activities.

Relatedly, numerous stakeholders from the MoALF, MoH, UN agencies, NGOs and workshop participants pointed to a lack of coordination between the sectors as a serious constraint for integrating nutrition and agriculture. This lack of coordination was described at both national and county levels. A participant from MoALF pointed to the lack of a coordination mechanism to link agriculture and nutrition, while another pointed to the need for a “unifying voice” through setting up a secretariat for the FNSP, and a UN participant pointed to the lack of a strong advocate for nutrition integration. An NGO participant said that there are no fora for the different sectors to work together. These perspectives exist against the backdrop of the various networks and policies described in Section 2, reinforcing their sectoral nature.
Leveraging Agriculture for Nutrition in East Africa (LANEA)

Participants also described the lack of accountability when integrating agriculture and nutrition at policy, programme design and field levels. A participant from the MoH said: “Without proper legal framework, no one is presently accountable for different roles on the implementation and coordination of the FNSP - without legal framework, who will be held responsible?” Workshop participants also discussed the need for governance and accountability at the county level. They pointed out that the FNSP was developed prior to the devolved government system, so there is now a need to align the FNSP with the county government plans.

A lack of a common vocabulary for programme design and monitoring, indicators and research was also cited as a constraint. While stakeholders described a number of agricultural projects that potentially have an impact on nutrition, they reported that these projects do not always measure nutrition outcomes. Workshop participants in particular noted a lack of sufficient indicators that would support cross-sector work and the need for a clear definition of nutrition-sensitive interventions and indicators that are agreed upon by all relevant sectors. A participant from GAIN reported that without “strong evidence” of agricultural programmes’ impact on nutrition, securing funding was a challenge, saying: “Without evidence, it’s difficult to convince donors and policy-makers on the effectiveness of and role of agriculture for improved nutrition”. It was evident from participants’ descriptions of research that integrated agriculture and nutrition research is still insufficient, with research conducted in silos.

Another challenge described by both an MoALF representative and an NGO participant was the issue of short-term funding versus the “long-term nature of solutions” to food-based approaches to nutrition. Workshop participants also discussed funding, saying that advocacy for nutrition-sensitive approaches needs to be strengthened at national and county levels in order to mobilize resources so that these activities will be reflected in county budget plans.

**Current momentum and enabling environment for scaling up nutrition through agriculture**

While the challenges described above put serious constraints on the momentum to scale up nutrition through the food and agriculture sector in Kenya, study participants also gave evidence of the growing enabling environment for such integration. They pointed to the current commitments at policy level, as well as to a number of ongoing programmes that show promise for agriculture-nutrition integration.

Of the many agricultural policies in Kenya, the FNSP is most relevant to nutrition sensitivity, cutting across both agriculture and nutrition. Study participants from both the MoALF and MoH, as well as UN and NGO interviewees, pointed to the cross-sectoral nature of the FNSP and the fact that nutrition-sensitivity is well articulated within it. A UN agency participant reported that it was a “jointly developed venture”, and an MoH interviewee said that it links agriculture and health. A participant from MoALF said that to address food security in totality, there is a need for nutrition; there is “no food security without a nutrition component”, which he states is found in the FNSP. Such perspectives, coming from across sectors, point to the interest and momentum towards integration; however, these participants and workshop attendees also pointed out that while the policy was good on paper, there had been major hurdles in implementation. They gave various reasons for the
lack of implementation so far, including statements about coordination hitches, changes in government organization that have made it difficult to converge around nutrition, and stalled development of the FNSS (the implementation plan for the FNSP).

Three participants described Kenya’s commitments in joining the SUN movement and developing the Nutrition Interagency Coordinating Committee (NICC) for providing an enabling environment for agriculture’s role in addressing nutrition. The MoH and a UN agency participant reflected that the SUN coordinating committee, while chaired by the DON within the MoH, includes representatives from other sectors, such as agriculture, education, and labour and social security. These actors are also part of the NICC, which, according to an NGO participant, has the potential to engage with nutrition sensitivity through sub-committees and programmes, and includes representation from the agricultural sector. It was not clear from interview respondents how strong the NICC currently is and how much presence the food and agricultural sector has within it, though it is cited as having potential to bring together stakeholders from across sectors.

Along with this policy-level momentum, many stakeholders, including workshop participants, described the current landscape of programmes and projects that involve nutrition-sensitive agriculture approaches contributing to the enabling environment. A list of the projects described by stakeholders can be found in Table 3 below.

Table 3 Programmes cited by stakeholders as examples of the current momentum and enabling environment for nutrition-sensitive agriculture

<table>
<thead>
<tr>
<th>Agency</th>
<th>Programme Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>MoA and partners</td>
<td>Njaa Marufuku Kenya (NMK): public-private partnerships, school gardens and locally produced school meals, nutrition education, home gardens and crop and livestock technical support to farmers, processing and value addition, community nutrition volunteers and community-based child growth monitoring.</td>
</tr>
<tr>
<td>World Vision International</td>
<td>Aphia Program: Farmers trained on production and consumption of nutritious foods such as OFSP and ALVs. Using positive deviance model where communities screen children for malnutrition. Farmer Field School strategy and provision of seeds to farmers.</td>
</tr>
<tr>
<td>USAID, Fintrac, AMREF, and over 30 other partners</td>
<td>Kenya KAVES: USAID-funded Feed the Future program, Kenya Agricultural Value Chain Enterprises, focusing on improving agricultural productivity and promoting positive nutrition outcomes. Increasing production of nutritious foods and income to access foods, combining maize, horticulture and dairy. Developed the agri-nutrition training manual described by LANEA participants.</td>
</tr>
<tr>
<td>JHPIEGO</td>
<td>Maternal and Child Health Integrated Program (MCHIP): Agriculture is promoted in mother-support groups as part of Income-Generating Activities (IGAs) and integrated into a health and nutrition programme.</td>
</tr>
</tbody>
</table>
**Factors influencing policy-making for agriculture-nutrition integration**

While most interviewees did not especially address which factors influence policy-making for agriculture-nutrition integration, their descriptions of the challenges and constraints concentrate on some of these factors. An MoALF participant indicated that developing coordination mechanisms would help to influence policy. Similarly, an NGO participant said that “establishing clear institutional arrangements for the two sectors to work together” and a “common platform and mandate” for nutrition integration in the agricultural sector would also influence policy-making.

Additionally, having research-based evidence on nutrition and agriculture integration appears to be an important factor in the Kenyan policy-making context. Government and NGO interviewees and workshop participants brought up research and evaluations. A participant from the MoA pointed to the need for “convincing knowledge on what works”, and many participants from across institutions and sectors mentioned the important role of research institutes and universities in linking agriculture and nutrition. Workshop participants pointed to the need for research on nutrition-sensitive agriculture pathways not only to influence policy-makers, but also to gain donor attention to these issues.

**Knowledge and Evidence**

The LANEA Kenya study gathered stakeholder perceptions of the current knowledge and evidence base for agriculture-nutrition pathways in Kenya. This section describes these perceptions. We also share participants’ thoughts on potential negative consequences that agriculture can or has had on nutrition outcomes, as well as the gaps and evidence needed to scale up nutrition through agriculture.

**Knowledge and perceptions of agriculture-nutrition pathways**

When asked about pathways linking agriculture and nutrition, many participants shared perspectives that correspond to the six agriculture-nutrition pathways described in the LANEA Kenya literature review in Section 3 (Box 3), indicating a high level of awareness of nutrition-sensitive agriculture approaches among those interviewed.

Participants from the MoPHS and several NGOs referred to women’s empowerment and women’s contributions to agriculture being important for nutrition, and they made a connection between technologies to save women’s time and energy and women’s ability to care for their children.
Study participants from both the MoA and an NGO pointed to the linkage between knowledge or behaviour change communication (BCC) and improved nutrition outcomes, with BCC and nutrition knowledge perceived as influencing and promoting consumption of healthy fruits and vegetables and limiting consumption of highly processed foods. This observation relates not only to agriculture’s impact on issues of undernutrition, but also to the growing health burden of overweight and obesity in Kenya.

Another area where participants, particularly NGOs and AGRA (a public-private partnership funded by the Gates Foundation) perceived a linkage between agriculture and nutrition was in the direct production and consumption of food, including micronutrient-rich fruits, vegetables and ASF. Along with production, NGO participants recognized agriculture’s impact on nutrition along the value chain, including processing, post-harvest practices, food quality and safety, and marketing. A UN agency participant suggested that by including a “nutrition lens across the value chain”, agriculture “can influence nutrition outcomes”.

An interviewee from AGRA also pointed out the importance of food prices to nutrition, while an NGO participant suggested that by increasing productivity, farmers’ incomes rise, which can also have an impact on nutrition.

However, one NGO interviewee shared the perspective that “most organizations are not clear on the terminology” relating to nutrition-sensitive agriculture and these pathways, and expressed that there is a lack of knowledge regarding which agricultural activities will contribute to improved nutrition outcomes. Workshop participants also expressed this lack of knowledge and clarity on what nutrition-sensitive agriculture means, saying that the definition of nutrition sensitivity is still unclear, particularly at the county level.

Making agriculture nutrition-sensitive

In order to better understand the current knowledge and evidence for nutrition-sensitive agriculture, participants were asked about agriculture-related efforts in Kenya that have the potential to impact nutrition. They described a number of current and potential approaches for nutrition-sensitive agriculture at both policy and programme levels.

At the policy level, participants and workshop attendees described a need for stronger coordination across sectors and the establishment of a high-level mechanism to oversee implementation of the FNSP and other government efforts to work cross-sectorally. An MoALF participant said that this overarching coordination needs to come from a level higher than the MoALF or MoH, and suggested that the office of the Deputy President would be appropriate to ensure that the FNSP’s implementation is a “joint venture”. The workshop participants discussed similar ideas, suggesting that a secretariat to implement the FNSP needs to be established and based in a high-level office, such as the Office of the President or Vice-President, in order to ensure visibility, resources, effective coordination and responsibility for the implementation of the FNSP and nutrition integration.

Along with the potential to link agriculture and nutrition through policy, participants pointed to the current ongoing programmatic efforts. These include programmes and projects carried out by Government ministries, research institutes and academia, as well
as by civil society and UN agencies. Stakeholders described a range of projects, including involving farmers in school feeding programmes, training extension workers on nutrition-sensitive agriculture, and focusing on nutrition across the value chain. Several of these efforts are described here and in Table 4 above.

Government-led agricultural initiatives with potential to influence nutrition outcomes include the project *Njaa Marufuku* Kenya (NMK, translated as Eliminate Hunger in Kenya). NMK, started in 2005, is an MoALF project with support from the Millennium Development Goals and FAO. An MoALF stakeholder described NMK’s integrated programming that links farmers to school feeding programmes to provide locally sourced school meals and includes community nutrition while increasing crop and livestock productivity. An MoH participant also said that the programme is an example of “a good opportunity” for integration between agriculture and nutrition. Yet, this same participant also noted that the NMK programme is disconnected from the DON within the MoH and that agriculture meetings do not typically involve nutritionists. Workshop participants described NMK as a good practice example of nutrition-sensitivity, also noting the need for research to determine the impact of such programmes.

Both MoA and MoH study participants shared the example of a USAID-funded agriculture-nutrition training manual (Republic of Kenya, 2013) that was developed by collaboration between the two ministries with support from the NGO AMREF. The manual is meant to be used by both agriculture and health community-level workers, and it provides information on food handling and preservation, food preparation and hygiene, meal planning, energy-efficient cooking methods to retain nutrients, nutrition in the life cycle, and value addition. An MoH participant noted that it had been disseminated in 33 counties with AMREF facilitating training-of-trainers (TOTs); however, several NGO participants reported that dissemination has been weak.

Several stakeholders also shared examples of research currently underway that has the potential to impact nutrition in Kenya. Stakeholders from the MoALF, MoH and AGRA shared the positive contributions to nutrition-sensitive agricultural research being made by the Kenya Agricultural Research Institute (KARI, now KALRO). Several participants mentioned KALRO’s work on OFSP to address vitamin A deficiency, as well as their work on “biodiversity for improved food and nutrition”. KARI (or KALRO?) was cited as an organization that has the ability to impact policy decisions through their research. A participant from AGRA also commented that his (or her) agricultural research has linkages to nutrition, describing ongoing research related to African leafy vegetables (ALVs), OFSP, forgotten or “orphan” vegetable crops, and breeding for low-cyanide cassava. They also support breeding grants to KARI for cowpea, OFSP, millet and sorghum.

On another note, an NGO participant noted that integrating nutrition considerations in agriculture faces challenges due to changing climatic conditions, particularly the impact of drought on agricultural production. The interviewee said that infrastructure development for irrigation could be one way to mitigate these challenges and would have a subsequent impact on nutrition.
Perspectives on potential negative consequences of food and agriculture policies and programmes

- MoA: Food imports, industrial crops, commercialization of agriculture;
- MoPHS: High food prices, climate change, high cost of quality seed;
- MoA HE: Focus on cash cropping → poor quality foods with less nutritional value;
- UNICEF: Policies that don't allow women to breastfeed have negative impacts on young children;
- WFP: Poor health and nutritional status influence agriculture negatively and affect productivity.

Study participants were asked whether they knew of agricultural interventions, programmes or policies that negatively affected nutrition outcomes. Two MoA participants responded that a focus on cash cropping and industrial crops could have a negative impact on nutrition, with one suggesting that these crops can be of poor quality with less nutritional value. An MoPHS interviewee pointed to high food prices and the high cost of quality seeds as negatively impacting nutrition outcomes.

Gaps and evidence needed on scaling up nutrition through agriculture

While some research has been undertaken in Kenya on scaling up nutrition through agriculture, as shown by the studies identified in the systematic literature review in Section 3, stakeholders identified gaps in this evidence base. Interviewees and workshop participants said that further research is needed in order to better understand linkages between agriculture and nutrition and inform policy-makers and programmes on the role of agriculture for nutrition. Workshop participants pointed to the need to disseminate research findings to a wider group of stakeholders in the country. They also discussed the need to strengthen collaborative approaches to studying nutrition-sensitivity among universities, research institutions, policy-makers and industry, saying that multisectoral research opportunities need to be put in place to study nutrition-sensitive agriculture.

The workshop participants also suggested that the Cost of Hunger in Africa (AUC, 2014) research study should be disseminated among the relevant stakeholders in Kenya, and the findings used for advocacy for nutrition-sensitive agriculture approaches.

Stakeholders often referred to knowledge and evidence gaps when they were asked about capacity necessary to scale up nutrition through agriculture. They described gaps in knowledge of how to best implement nutrition-sensitive agricultural programmes and policies, gaps in nutrition knowledge among individuals at all levels from households to field workers to policy-makers, and gaps in knowledge of how to measure agriculture’s impact on nutrition. These points are discussed in further detail below in the section on capacity to carry out agriculture-nutrition linkages.

Capacity to carry out agriculture-nutrition linkages

The LANEA Kenya study gathered stakeholder perceptions regarding the types of capacities that exist or are required in Kenya in order for the food and agriculture sector to become more nutrition-sensitive. These capacities fall into four categories: individual, community, organizational and structural. Participants indicated that capacities in each of these categories remain weak, while also acknowledging some of the current strengths.
Individual
At the individual capacity level, an AGRA participant described the need to build household decision-making capacity, providing consumer education and BCC in order to “change eating patterns” and “cultural beliefs” that are detrimental to nutrition, such as those regarding infant and young child feeding (IYCF). This participant also stressed that farmer capacity to address nutrition and produce nutritious crops needs to be strengthened through work on post-harvest handling, seeds, pest management and market linkages. A stakeholder from GAIN also underlined the need for crop varieties to support a diverse diet, saying that “the right crop varieties” could “take population groups from food deficiency to food sufficiency”. Another interviewee pointed to the need to build youth and women’s capacity, describing the positive capacity-building approach of the Uwezo Fund, which provides credit to youth and women and is being used to fund greenhouse production of nutritious crops.

A UN participant said that there are also human resource capacity gaps when it comes to knowledge of nutrition-sensitive approaches. Participants at the stakeholder workshop also voiced this perspective, pointing out the low numbers of agriculture and health extension workers. They further described the need to better train and build capacity of field-level workers such as agriculture and Home Economics extension staff, community health extension workers (CHEWs), and NGO field staff. Interview participants mentioned the development of the agriculture-nutrition training manual described in Section 2 as a step towards capacity-building, but its dissemination remains weak. An MoALF participant said that 12 000 front line staff at the sub-county level have been trained on basic nutrition knowledge, including gardening and food preparation, and an MoHS participant described upcoming capacity-building training to strengthen their CHEWs’ nutrition knowledge.

An MoPHS interviewee expressed the challenge to building capacity when it is unclear who should be involved in nutrition-sensitive activities - whether these activities should be carried out by all front-line workers or by a certain group. Workshop participants also stressed this, discussing the need to determine how, what and whose capacity needs to be strengthened. They also stressed the need to build the capacity of individual policy-makers from county to national levels, strengthening their knowledge of agriculture’s role for improved nutrition.

Community
Community-level capacity to address nutrition through agriculture also needs further development. A number of NGOs and government programmes are working at the community level, but participants point to the “disconnect” between agriculture and nutrition in these programmes. An NGO interviewee describing the Kenya KAVES programme said that despite the programme’s explicit focus on both agriculture and nutrition, there are “weak linkages” between the two sectors, and the community health strategy does not include linkages to agriculture. This interviewee also described “community units” (groups of health workers within a given area) as being disconnected from agriculture and nutrition and having limited capacity to implement integrated programming.
A participant from GAIN stressed the need to “design BCC messages based on evidence” and adapt these messages to social and cultural contexts, understanding the environment in which people are producing and consuming food and ensuring that “recommendations are sensitive to the local context”. He also stressed the need to align recommendations with reality, building capacity to provide relevant solutions for nutrition. MoALF interviewees also suggested building capacity through “harnessing indigenous knowledge”. They, along with others, suggest strengthening farmer capacity by bringing farmers together in groups and including nutrition within livestock programmes, broadening the scope of agricultural programmes beyond production and marketing to include consumption. In order to achieve this, they stress that extension workers need further training and capacity building.

Organizational
Stakeholders also described the need for capacity development at the organizational level. While examples of integrated programmes were shared (Table 4), the coverage of these programmes is limited. Furthermore, as described previously, organizations may not understand the terminology regarding nutrition-sensitive agriculture, so further capacity development for staff at all levels is also needed. Two NGO participants cited a training-of-trainers conducted by FAO on nutrition and food security as an example of capacity building that included nutrition-sensitive agriculture topics. By building knowledge on nutrition-agriculture integration, organizations will be better able to implement integrated programmes. A UN participant highlighted this by saying “You can’t implement what you don’t understand”.

Another area that needs further capacity development relates to monitoring and evaluation. MoH, GAIN and UNICEF participants described a need to develop and agree on indicators for measuring agriculture’s impacts on nutrition. An MoALF stakeholder also pointed to the need for further capacity development on data collection. She said that the MoH needs to be involved in the food security assessments currently being carried out by the MoALF, and that while these assessments provide some data, agriculture data is lacking and “there’s a need to harmonize how data collection is done and the frequency of reporting”.

As described above, evidence-based policy is important to the Kenyan context. The potential to design appropriate programmes and policies rests on having strong evidence for what works. A participant from GAIN described current capacity-building activities on research, including support from Cornell University to build Kenyan researchers capacity to carry out research. A participant from AGRA described their capacity-building activities, training researchers and scientists, and working on breeding nutritious crop varieties such as OFSP. They stressed that further capacity to conduct adaptive research is needed. Together with support to research, UN agencies also pointed out that the capacity within educational institutions needs to be developed to include university courses that link agriculture and nutrition, as well as including nutrition and agriculture in school curricula at lower levels.
Structural
At a structural level, study participants voiced concerns regarding the capacity to implement multisectoral strategies for nutrition, saying that ministries are still working along sectoral lines from national to county levels. An MoALF participant said that the Government needs a “plan of convergence...to work out the policy implementation”, and needs to designate an institution to lead coordination and implementation of the FNSP at the national level. Another MoALF interviewee said that counties need capacity assistance to develop county-level implementation plans for the FNSP. A further MoALF interviewee pointed to the “weak link between county and national government when it comes to nutrition issues”, while a UN participant described the need to “align county priorities with national priorities” and coordinate between these levels to ensure that nutrition concerns are addressed. Capacity-building assistance is necessary to help with this process within the new devolved government structure.

A UN agency and an MoALF participant both commented on the need of the health and agriculture sectors to develop capacity for joint planning and collaboration. A participant from GAIN pointed to a particular challenge to accomplishing this joint planning: the potential for issues concerning which sector will control the budget. He said: “finance is where the fight is...agriculture and health can work together, but who among the two will control the budget?”

Apart from government capacity, another structural issue raised by stakeholders in the study is that of the focus of research. As described above, the capacity of researchers themselves is important and is being partly addressed by efforts to provide training and mentorship, but the focus of research is another issue. From the interviews with research institutions and MoALF representatives, it is evident that most agricultural research in Kenya is focused on productivity improvements; for example, testing yields of new crop varieties, breeding for drought resistance, variety multiplication trials, and acceptability studies of various novel crops. As described above, stakeholders stressed the need to build capacity for more integrated research on nutrition-agriculture synergies.

An MoH participant stated that the majority of research results lie on shelves and are never disseminated. Thus, building stakeholders’ capacity to translate research into action is also important. Linkages with potential local users of the research results and recommendations remain dismal. It was reported, for instance, that research results generated by KARI are rarely used by the Ministry of Agriculture for extension services. It was also reported that many NGOs design programmes without the knowledge of agricultural research findings and recommendations in their areas of programming. These programmes are donor-driven rather than research-driven.

Furthermore, stakeholders report a limited capacity to carry out integrated nutrition-agriculture programming due to funding issues. An NGO participant pointed to funding gaps in scaling up nutrition-sensitive agriculture approaches, while MoH interviewees said that nutrition-focused funding is also needed at the county level. MoALF interviewees said that long-term funding that fits into the country implementation plans is needed in order to realize sustainable impact on nutrition through agriculture. They said that “few donors fund food-based approaches [to nutrition]” and that donors “prefer short-term remedies”,

Leveraging Agriculture for Nutrition in East Africa (LANEA)
but these are not compatible with seeing results from integrated agriculture-nutrition programming, which requires long-term planning and commitment. It is not clear how funding for the implementation of the FNSP will be distributed and coordinated between the ministries to implement nutrition-sensitive activities, and capacity to manage these resources multisectorally needs to be increased.
5. CONCLUSION

Kenya relies on the agricultural sector for a large part of its economy, and it has an important role to play in food and nutrition security considerations. Agricultural resources provide a significant opportunity for the country to address malnutrition among vulnerable groups. As yet, the country’s policy guidance, programme orientations, capacity development efforts and research agenda are not providing a sufficient environment for agriculture to scale up its role in addressing nutrition. There are, however, opportunities in Kenya for agriculture to contribute significantly to impact nutrition, and this study has provided insight into a number of these opportunities through gathering stakeholder perspectives and recommendations and reviewing the research evidence.

The FNSP shows much promise, but further collaboration among health and nutrition sectors is necessary in order to implement it on the ground, and a responsible institution or structure needs to be identified in order to facilitate this process. The health and agriculture sectors need processes in place and capacity-building at all levels to assist them in working together towards common goals for nutrition - not just in theory, but also in practice. This is particularly the case in the context of the recent government devolution, which necessitates stronger horizontal and vertical coordination and support for county governments to implement multisectoral approaches to address nutrition.

In addition, further research is necessary together with better dissemination of findings to policy-makers and programmes at all levels. It is also important to undertake high-quality evaluations of cross-sector nutrition-sensitive programmes, and scale up those that have shown promise. While the 16 studies included in the LANEA literature review fill some of our knowledge gaps in terms of how agriculture can be leveraged for nutritional outcomes, investing in research and programme evaluation is necessary to increase the evidence base and feed into tools and strategies to build capacity in Kenya.

The following recommendations for leveraging agriculture for nutrition emerge from the stakeholder interviews, workshop discussions, as well as the gaps identified through the evidence review:

**Politics and Governance**

1. Create and/or strengthen formal and high-level multisectoral structures that support collaboration at national and county levels.
2. Identify and support advocates for agriculture-nutrition integration in policies and programmes.
3. Support national and county governments to implement existing policies, such as the FNSP.
4. Agree on key indicators for monitoring and evaluation of nutrition-sensitive agricultural programmes.
5. Support collaborative and timely agriculture, food security and nutrition data collection and analysis.
**Knowledge and Evidence**

6. Support larger-scale research on best practices related to the agriculture-nutrition pathways and impact evaluations; promote dissemination and application of findings in relevant policies and programmes.

7. Include nutrition education in the formal education system, including at tertiary level and within agricultural education programmes.

8. Include nutrition education in agricultural training courses for communities.

9. Scale up dissemination of agriculture-nutrition training materials, guidelines and research findings, and promote their application in programming.

10. Integrate nutrition together with climate change adaptation work in agriculture.

**Capacity and Financial Resources**

11. Increase funding for nutrition, and implement existing nutrition frameworks and plans.

12. Build capacity of policy-makers to integrate nutrition into agricultural policies and programmes.

13. Increase number of nutritionists in agriculture and health ministries at national and county level.

14. Train health and agriculture extension/community workers in nutrition-sensitive agriculture and their roles, and increase the numbers of these front-line workers.

15. Design culturally and socially appropriate nutrition messaging [that can create demand for nutrition-sensitive agriculture] to fit the target audience - policy-makers, researchers/academia, extension and community workers, farmers and households.
## Annex A - Study participants

### Stakeholder Interview Participants

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### Consultation Workshop Participants

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Annex B - Programme for Consultation Workshop

Stakeholder Consultation
30 May 2014

Objectives
The main objective of the meeting is to disseminate the findings of research on the role of agriculture for improved nutrition in Kenya and generate national-level stakeholders’ comments that will be incorporated in the revised draft.

Expected Output/Outcomes
Comments and inputs from the validation workshop will contribute to the revision of the report to be harmonized into the regional report.

Enhanced stakeholders’ understanding on the role of agriculture for improved nutrition for policy actions, capacity-building and research.

Preliminaries
8.00-8.30 Registration and Introduction of Participants

Session I: Background and Climate Setting: 8.30-11.00 am Chair - FAO
8.30-8.45 Opening Brief - FAO Representative in Kenya
Question & Answer session
9.00-9.15 Overview of leveraging agriculture for nutrition: some global perspectives
- Stuart Gillespie (IFPRI)
Question & Answer session
9.30-9.45 National evidence review of links between agriculture and nutrition –
Judith Hodge (IFPRI Consultant)
Question & Answer session
10.00-10.15 FAO perspectives on leveraging agriculture to improve nutrition –
FAO Representative
10.30 Refreshment break

Session II: Role of Agriculture for Improved Nutrition in Kenya: 11.00-12.45 pm Chair – MoA
11.00-11.10 A brief on the stakeholder interviews – Stuart Gillespie
11.10-11.30 Presentation of findings from stakeholder interviews - Margaret Wagah
(IFPRI Consultant)
Plenary discussions and comments
12.30-1.30 Lunch break
Session III: Further Insights into Agriculture–Nutrition Linkages: 1.45-3.30 pm Chair - MoH

1.45-2.00 Plenary discussions on global and key research priorities for Kenya on agriculture and nutrition– led by Stuart Gillespie

2.00-3.30 Break out Group Sessions to respond to the following questions:
- Are current agriculture policies responsive to nutrition?
- If not, what should be done?
- How should capacity-building for nutrition and agriculture be strengthened?
- How do we implement effective nutrition-sensitive interventions through agriculture?
- What are some current obstacles to effective implementation?
- Is there any ongoing or planned research for nutrition and agriculture that has not been captured in the evidence review?
- How have research studies been translated into policy and practice?
- What are the research gaps and priorities?

3.30 Refreshment break

4.00-4.45 Report back from Group activities

Concluding session/vote of thanks: Chair - ILRI

4.45 Concluding Session: Chair – KIPPRA
Wrap Up and Way Forward – IFPRI and FAO

5.00 Vote of Thanks
REFERENCES


7. DFID. How to Note: Assessing the Strength of Evidence. 2013.


LANEA (Leveraging Agriculture for Nutrition in East Africa) is an IFPRI/FAO research initiative carried out in Ethiopia, Uganda and Kenya to investigate opportunities and challenges related to scaling up impact on nutrition through the food and agriculture sector. The study took place from October 2013 to July 2014 and included a structured evidence review, key informant interviews and a stakeholder workshop. Information gained from this study deepens the evidence base on how to create and sustain an enabling environment for nutrition within agricultural policy and programmes. This report presents the study findings for Kenya and proposes recommendations for enhancing agriculture’s contribution to nutrition in the country.