

# Afghanistan Nutrition Solutions Series

## Increasing the Nutritional Impact of the National Horticulture and Livestock Productivity Project

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## **About the Afghanistan Nutrition Solutions Series**

The Afghanistan Nutrition Solutions Series is a collaboration with program implementers and policymakers in Afghanistan to identify and refine promising programmatic platforms for scaling-up effective nutrition solutions in the country. The overarching framework for the Series is the Government of the Islamic Republic of Afghanistan's Nutrition Action Framework. The Nutrition Action Framework outlines a multisectoral approach for addressing, in a sustainable way, the alarmingly high rates of child and maternal malnutrition in Afghanistan. The Series builds on the global knowledge base to support Afghanistan-specific analysis, technical assistance, and pilots that generate contextualized nutrition solutions in relevant sectors. These solutions are generated by combining global evidence with in-depth knowledge of the Afghan context. Each of the notes in this Series is the result of the review of evidence, additional information gathering in Afghanistan, and engagement with a range of stakeholders.

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### **Abbreviations and Acronyms**

HLP	(Emergency) Horticulture and Livestock Productivity Project
MAIL	Ministry of Agriculture, Irrigation, and Livestock
NHLP	National Horticulture and Livestock Productivity Project

## Key Messages

The Afghanistan National Horticulture and Livestock Productivity Project (NHLP), which includes activities designed to help improve nutritional outcomes in the country, was approved in December 2012. Building on interactions held during project preparation, representatives from the World Bank discussed nutrition and agriculture linkages with representatives from the Ministry of Agriculture, Irrigation, and Livestock (MAIL) in June 2013. As a result of these discussions, the group proposed three areas in which NHLP activities could be modified or added to the value chain to further leverage the NHLP contribution to improve nutritional outcomes in Afghanistan. These suggestions are as follows:

- *Broaden nutrition awareness activities associated with the project's kitchen and home gardening beyond the crops grown as part of the current NHLP:* For example, where local seeds and seed oils, such as sesame and flax, are grown locally, consumption of these should be promoted within the nutrition awareness activities.
- *Promote concomitant small-scale livestock rearing—especially for milk—and kitchen/home gardening:* for a better-balanced supply of foodstuffs and magnifying nutritional impact.
- *Small Enterprise Opportunities/Income Generating Activities:* This is based on surplus or lower quality products grown by NHLP home gardening beneficiaries and neighbors. Potential activities include:
  - Development of small-scale dairies for yogurt and cheese production.
  - Drying pomegranate, watermelon, and other seeds, and subsequently combining them with dried fruits in small snack packets.
  - Using dried seeds, fruit, dairy products, and local flour to produce high nutrient biscuits. These biscuits could be made by local women's groups as an enterprise and potentially sold to school feeding programs, or via small-scale bakeries.
  - Non-export quality nuts could form the basis for ready to use lipid based supplemental and therapeutic foods, as well as nut butters – peanut butter is being imported into Afghanistan to meet local demand.

## Introduction

The Afghanistan National Horticulture and Livestock Productivity Project (NHLP) incorporates many activities that help the nutritional well-being of the Afghan population. After cereal and industrial crops, the horticulture and livestock subsectors are recognized as the highest priorities, given Afghanistan's comparative advantage in these subsectors and their close linkages with exports and poverty reduction. With financing from the World Bank, the Ministry of Agriculture, Irrigation, and Livestock (MAIL) is working to improve nutritional outcomes through NHLP. This technical assistance document highlights the ongoing actions and proposes innovative activities to increase NHLP's nutritional impact.

*“Agriculture has a strong influence on food consumption and nutritional status, and its influence is maximized when nutrition is explicitly considered and the progress is measured.”<sup>1</sup>*

### *Why is agriculture important for nutrition?*

It is ironic that most of the world's undernourished people live in poor, rural areas, where agriculture forms the basis of most incomes. In all countries where the agricultural GDP per worker is less than USD1000, severe problems of stunting and micronutrient deficiencies exist.<sup>2</sup> Beneficiaries of typical agriculture and rural development projects overlap with those most affected by undernutrition – the rural poor. Agricultural-led growth is more “pro-poor” than non-agricultural led growth. Poverty reduction leads to improved nutrition as people diversify their diets and consume more meat and dairy products, fruits, and vegetables. Agriculture-led growth has led to faster (though still insufficient) declines in undernutrition than non-agricultural growth.<sup>3</sup> However, this relationship may be weaker in South Asian countries. India reaped enormous gains from the Green Revolution and subsequently moved from rice imports to being a rice exporter. Nevertheless, 48% of children under the age of 5 are stunted; India's stunting prevalence ranks 11<sup>th</sup> highest out of 136 countries.<sup>4</sup> Nutrition and gender specialists argue that gender inequity plays a large role in undernutrition in India. South Asian countries have some of the highest levels of both hunger and gender inequity in the world. The International Food Policy Research Institute's (IFPRI) 2009 Global Hunger Index shows that three of the five South Asian countries included (Bangladesh, Nepal, India, Pakistan, and Sri Lanka) ranked in the bottom quartile for 3 of the 4 Gender Gap 2008 subcomponent indices – economic participation, educational attainment, health, and survival. Similarly, all but one of the 5 countries ranked in the

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<sup>1</sup> *Addressing Nutrition through Multisectoral Approaches*. 2012. Washington, DC: The World Bank Group.

<sup>2</sup> *State of Food and Agriculture 2013: Food Systems for Better Nutrition*. 2013. Rome: Food and Agriculture Organization of the United Nations (FAO).

<sup>3</sup> Webb, P. and S. Block. 2012. “Support for Agriculture during Economic Transformation: Impacts on Poverty and Undernutrition.” *Proceedings of the National Academy of Sciences of the United States of America (PNAS)*. 109(31):12309-12314. Published ahead of print December 20, 2010. Accessed from [www.pnas.org/cgi/doi/10.1073/pnas.0913334108](http://www.pnas.org/cgi/doi/10.1073/pnas.0913334108).

<sup>4</sup> *State of the World's Children*. 2009. UNICEF.

<sup>5</sup> Stunting is low height for age.

top quartile for *hunger* revealing that high levels of *hunger* and *gender inequity* are associated in the region.<sup>6</sup>

Iron and folic acid and vitamin A supplementation and the fortification of staple grains, salt, and oils are especially important for pregnant and lactating women and young children. Supplementation and fortification can help in addressing micronutrient deficiencies, but supplementation and fortification coverage often is extremely low, especially in rural areas. For example, prenatal coverage for vitamin A supplementation is 36% throughout Afghanistan, 71% in urban areas but only 30% in rural areas, and postnatal coverage for vitamin A supplementation is less than 25% throughout Afghanistan.<sup>7</sup> Furthermore, 8 large wheat millers participate in fortification programs, but they provide fortified wheat flour to only about 8% of the urban and peri-urban populations. The majority of rural households (81%) use flour milled locally by small village mills, without fortification.<sup>8</sup> For rural areas the agriculture sector is best situated to address food production and consumption of nutritious foods needed for healthy and active lives, and thus, could leverage more impact on nutrition.

Women are the gatekeepers of food security for most households; they are the people who translate a vibrant agriculture sector into food and nutrition security for their households. They often are the farmers who directly produce foods for their households as well as selling the surplus, with male household members focused more heavily on cash crops. Women, on average, comprise 43% of the agriculture labor force in developing countries.<sup>9</sup> In Afghanistan, 60% of the economically active work in agriculture, and women represent nearly one third of those in agriculture. Formal statistics show women represent 23.4% of the economically active population, with the agricultural share of those women being 82%.<sup>10</sup>

Finally, agriculture projects can cause unintentional nutritional harm. The nutritional status of household members is strongly influenced by clean water, disease occurrence, food quality, and childcare practices.<sup>11</sup> Mycotoxins, and particularly aflatoxins, which affect many staple foods, such as maize and groundnuts as well as tree nuts, increasingly are recognized as being strongly associated with negative impacts on nutrition.

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<sup>6</sup> Welt Hunger Life, International Food Policy Research Institute (IFPRI), Concern Worldwide. 2009. *Global Hunger Index. The Challenge of Hunger: Focus on the Financial Crisis and Gender Inequality*. Bonn, Washington DC, Dublin: Welt Hunger Life, IFPRI, Concern Worldwide.

<sup>7</sup> Levitt, Emily, Kees Kostermans, Luc Laviolette, and Nkosinathi Mbuya. 2011. *Malnutrition in Afghanistan: Scale, Scope, Causes, and Potential Response*. Washington, DC: The World Bank Group. Accessed from [www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2010/11/15/000356161\\_20101115233235/Rend ered/PDF/578720PUB0Maln11public10BOX353782B0.pdf](http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2010/11/15/000356161_20101115233235/Rend ered/PDF/578720PUB0Maln11public10BOX353782B0.pdf).

<sup>8</sup> Levitt, Emily, Kees Kostermans, Luc Laviolette, and Nkosinathi Mbuya. 2011. *Malnutrition in Afghanistan: Scale, Scope, Causes, and Potential Response*. Washington, DC: The World Bank Group. Accessed from [www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2010/11/15/000356161\\_20101115233235/Rend ered/PDF/578720PUB0Maln11public10BOX353782B0.pdf](http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2010/11/15/000356161_20101115233235/Rend ered/PDF/578720PUB0Maln11public10BOX353782B0.pdf).

<sup>9</sup> *State of Food and Agriculture 2010-2011*. 2011. Rome: Food and Agriculture Organization of the United Nations (FAO).

<sup>10</sup> *State of Food and Agriculture 2010-2011*. 2011. Rome: Food and Agriculture Organization of the United Nations (FAO).

It is likely that far more women are informally involved in agriculture and are not declared economically active.

<sup>11</sup> *Addressing Nutrition through Multisectoral Approaches*. 2012. Washington, DC: The World Bank Group.

### *Why is nutrition important for agriculture?*

The link between nutrition and agriculture goes both ways; addressing nutrition can be beneficial for agricultural productivity. First of all, improved nutrition means improved smallholder farmer well-being. Nutrition investments improve human capital and have been shown to have a positive impact on agricultural productivity. Smallholder farmers are among the most malnourished, with higher rates of malnutrition among women than men. Undernutrition results in lost agricultural productivity and lower agricultural wages. For example, in Sierra Leone iron deficiency among women agricultural workers was estimated to cost the economy USD100 million over a five year period.<sup>12</sup> Nutrition knowledge may be an added incentive to transition to a diversified agricultural production model. Finally, adopting a nutrition lens is likely to improve women's participation and empowerment, with important effects on income and productivity, in addition to nutrition and gender equity.<sup>13</sup>

In Afghanistan in June 2013, a team including members from the World Bank and MAIL began early discussions of how NHLP could further increase its contribution to improved nutritional outcomes in the coming years, while creating opportunities for women's empowerment and income generating activities.

### **Why Nutrition in Afghanistan?—Key Nutrient Deficiencies**

In addition to lost productivity costs from stunting, Afghanistan loses over USD235 million annually in GDP to vitamin and mineral deficiencies.<sup>14</sup> Increasing the nutritional impact of agricultural initiatives in the country has the potential to alleviate micronutrient deficiencies, while simultaneously having a positive impact on household income.

The levels of child undernutrition in Afghanistan are very high. UNICEF finds that 59% of children under the age of five are stunted, and 33% are underweight.<sup>15</sup> The stunting levels are among the highest in the world. Acute undernutrition (wasting) in children under five is 9%,<sup>16</sup> which is low for a poor, conflict-stricken country, but these wasting levels remain very high, above the 15% emergency threshold by WHO standards, in the first two years of life (18.1% in children between one and two years old<sup>17</sup>).<sup>18</sup> One of the causes of child undernutrition is

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<sup>12</sup>Darnton-Hill, Ian, Patrick Webb, Philip W. J. Harvey, Joseph M. Hunt, Nita Dalmiya, Mickey Chopra, Madeleine J. Ball, Martin W. Bloem, and Bruno de Benoist. 2005. "Micronutrient Deficiencies and Gender: Social and Economic Costs." *American Journal of Clinical Nutrition*. 81(5): 1198S–1205S.

<sup>13</sup>*Addressing Nutrition through Multisectoral Approaches*. 2012. Washington, DC: The World Bank Group.

<sup>14</sup> UNICEF and the Micronutrient Initiative. 2004. *Vitamin and Mineral Deficiency: a Global Progress Report*. &

World Bank. 2009. World Development Indicators (Database). From *Nutrition at a Glance Afghanistan*. 2013. Washington, DC: The World Bank Group.

<sup>15</sup>*State of the World's Children*. 2009. UNICEF.

<sup>16</sup>*State of the World's Children*. 2009. UNICEF.

<sup>17</sup> Levitt, Emily, Kees Kostermans, Luc Laviolette, and Nkosinathi Mbuya. 2011. *Malnutrition in Afghanistan: Scale, Scope, Causes, and Potential Response*. Washington, DC: The World Bank Group. Accessed from [www.wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2010/11/15/000356161\\_20101115233235/Rendored/PDF/578720PUB0Maln11public10BOX353782B0.pdf](http://www.wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2010/11/15/000356161_20101115233235/Rendored/PDF/578720PUB0Maln11public10BOX353782B0.pdf).

<sup>18</sup>*Stunting* is low height for age. *Wasting* is low weight for height. *Underweight* is low weight for age.

widespread micronutrient deficiency.<sup>19</sup> The National Risk and Vulnerability Assessment shows that 57% of the population in Afghanistan have very low diet diversity.<sup>20</sup>

The level of malnutrition also is high among women in Afghanistan. 20.9% of women have low body mass indices, which indicate chronic energy deficiencies. 48.4% of non-pregnant women of childbearing age have anemia.<sup>21</sup> Additionally, an estimated half million babies are born each year in Afghanistan with intellectual impairment due to iron deficiency in pregnancy.<sup>22</sup> The goiter rate in Afghanistan is 48%, indicative of widespread moderate iodine deficiency, and this deficiency is likely to lower the national IQ by 10-15 percentage points.<sup>23</sup>

### **Why Agriculture in Afghanistan?—Agriculture and Rural Development in Afghanistan**

Agriculture is central to the Afghan economy. Over 75% of the Afghan people live in rural areas, where agriculture is the primary activity.<sup>24</sup> The sector accounts for about half of the GDP (excluding the opium economy) and is a major source of employment of the labor force.<sup>25</sup> The rural areas also harbor the highest incidence of poverty. Agricultural performance thus is pivotal for overall economic growth and poverty reduction and offers the only significant prospect for increasing incomes, contributing to food security, providing rural employment, and reducing the vulnerability of resource poor rural people. The importance of agriculture to the Afghan economy and people has been recognized in documents starting from the Agricultural Master Plan in 2005 to the Afghanistan National Development Strategy in March 2008, and finally in the National Agricultural Development Framework that was prepared in April 2009.<sup>26</sup> As previously mentioned, horticulture and livestock subsectors are recognized as high priorities, given Afghanistan's comparative advantage in these subsectors and these sectors' close linkages with exports and poverty reduction.

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<sup>19</sup> Iron, zinc, Vitamin A, and iodine deficiencies are the most widespread micronutrient deficiencies in Afghanistan. Back to Office Report 2013—Lynn Brown, Agriculture and Environmental Services Consultant, World Bank Group.

<sup>20</sup> *Afghanistan National Development Strategy: An Interim Strategy for Security, Governance, Economic Growth, and Poverty Reduction*. 2006.

<sup>21</sup> *Malnutrition in Afghanistan: Scale, Scope, Causes, and Potential Response*, PPT. Accessed from [http://siteresources.worldbank.org/INTAFGHANISTAN/Resources/Afghanistan-Reconstructional-Trust-Fund/Malnutrition\\_inAfghanistan\\_for\\_High\\_level\\_audience.pdf](http://siteresources.worldbank.org/INTAFGHANISTAN/Resources/Afghanistan-Reconstructional-Trust-Fund/Malnutrition_inAfghanistan_for_High_level_audience.pdf).

*Afghanistan: The State of Health and Development*. Micronutrient Initiative. Accessed from <http://www.micronutrient.org/english/view.asp?x=601>.

<sup>22</sup> "Vitamin and Mineral Deficiency. A Damage Assessment Report for Afghanistan." *UNICEF and Micronutrient Initiative Leadership Briefing*.

<sup>23</sup> "Vitamin and Mineral Deficiency. A Damage Assessment Report for Afghanistan." *UNICEF and Micronutrient Initiative Leadership Briefing*.

<sup>24</sup> *World Bank Afghanistan: Priorities for Agriculture and Rural Development*. Accessed from <http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/SOUTHASIAEXT/EXTSAREGTOPAGRI/0,,contentMDK:20273762~menuPK:548212~pagePK:34004173~piPK:34003707~theSitePK:452766,00.html>.

<sup>25</sup> *World Bank Afghanistan: Priorities for Agriculture and Rural Development*. Accessed from <http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/SOUTHASIAEXT/EXTSAREGTOPAGRI/0,,contentMDK:20273762~menuPK:548212~pagePK:34004173~piPK:34003707~theSitePK:452766,00.html>.

<sup>26</sup> Back to Office Report 2013—Lynn Brown, Agriculture and Environmental Services Consultant, World Bank Group.

## Nutrition Action Framework

The Nutrition Action Framework of the Islamic Republic of Afghanistan seeks to address the problem of maternal and child undernutrition by focusing on the 1,000 days period from conception through the first two years of life. The Framework complements the Afghanistan National Development Strategy<sup>27</sup> and builds on its multisectoral approach, engaging the Ministries of Agriculture, Irrigation, and Livestock; Public Health; Education; Rural Rehabilitation and Development; and Commerce and Industry. The key areas of commitments by the ministries include: (a) dietary diversity, in particular, in food insecure households by MAIL, (b) infant and young child feeding and care practices and micronutrient provision by the Ministry of Public Health, (c) school health and nutrition, and curriculum development in nutrition-related areas, with special attention to female students by the Ministry of Education, and (d) activities associated with the National Solidarity Programme and water sanitation and hygiene by the Ministry of Rural Rehabilitation and Development.<sup>28</sup>

The overall objective of the Nutrition Action Framework is to reduce stunting in children aged 0-24 months old by 10 percentage points (from an estimated 59% to 49% by the end of 2016).<sup>29</sup>

The following principles were used in the preparation of the Framework:

- Common targets and indicators with the prevalence of child stunting serving as the primary impact indicator
- Coordination among the ministries and their partners, particularly in advocacy, fundraising, and overall governance
- Resource availability
- Ministry-specific identification of capacity development requirements
- An agreement to utilize the Framework as a means of increasing commitment in each of the relevant sectors to the reduction of malnutrition and to working as a coordinated body of ministries

There is agreement among the ministries that a high-level coordination mechanism is necessary to integrate particular activities across ministries, to track the progress of individual activities and of the Framework as a whole, to address problems and limiting factors quickly and efficiently, and to assure accountability for the results within each of the core ministries. Following

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<sup>27</sup> The Afghanistan National Development Strategy highlights health and nutrition in Pillar 5 under the social and economic development goals. This Pillar commits to reduce the morbidity and mortality of the Afghan population by implementing a package of health and hospital services, special programs, and human resource development.

<sup>28</sup> The list of commitments by the ministries are as follows: (a) MAIL by (i) increasing food access and availability and (ii) improving dietary diversity with a primary focus on insecure food households; (b) the Ministry of Public Health by (i) the efforts to improve infant and young child feeding and care practices, (ii) infectious disease control including improved water sanitation, hygiene, and deworming, (iii) micronutrient provision, and (iv) the treatment of severe and acute malnutrition and other nutrition-related illnesses with a focus on disease prevention; (c) the Ministry of Education by (i) school health and nutrition, (ii) curriculum development in nutrition-related areas, and (iii) behavioral change communications, in each case providing special attention to female students to encourage enrollment and attendance; and (d) and the Ministry of Rural Rehabilitation and Development by (i) activities associated with the National Solidarity Programme, (ii) improved water sanitation and hygiene; and (iii) social protection initiatives with special attention to women's participation.

<sup>29</sup> As mentioned previously, stunting (low height for age) along with wasting (low weight for height) and being underweight (low weight for age) can serve as measures of nutritional status in the first 1000 days. The likelihood of recovering from early stunting (stunting at age two or before) in Afghanistan is very low.

extensive consultations, the team designing the Nutrition Action Framework proposed that a High Level Food and Nutrition Security Steering Committee be created under the chairmanship of the Second Vice President and comprised of the ministers from each of the five core ministries involved in food and nutrition security. Initially, the proposed Steering Committee will meet four times per year to review progress in operationalization of the Framework and to explore linkages between the participating ministries. This Steering Committee will be supported by a modest Secretariat located in the Office of the Second Vice President, with the following core functions: coordination, data collection and analysis to track the operationalization of the Nutrition Action Framework, and advocacy/communications. The Framework forms an integral part of a national Food and Nutrition Security Policy Framework, which currently is being developed. Each of the participating ministries also will have a small Nutrition Coordination Unit to support the delivery of the Nutrition Action Framework actions and to coordinate with other ministries. While the creation of technical sub-committees was considered, the recommendation at this point is to begin the implementation and to create sub-committees and task forces as and when required to address specific implementation challenges.

The core Islamic Republic of Afghanistan government ministries responsible for the design and implementation of this Framework are being supported, technically and financially, by a range of international technical and funding partners, including: the Canadian International Development Agency, the European Commission, the Global Alliance for Improved Nutrition, the UN Food and Agriculture Organization, the Micronutrient Initiative, the Millennium Development Goals Fund, UNICEF, the United States Agency for International Development, the World Bank, the World Food Programme, and the World Health Organization. Additionally, the Islamic Republic of Afghanistan's Ministry of Finance will have financial oversight over the Framework and the activities within it.

### **What is the National Horticulture and Livestock Project (NHLP)?**

The Afghanistan NHLP is implemented by MAIL, with financial support from the World Bank. NHLP is a follow-on of the Bank supported Emergency Horticulture and Livestock Productivity Project (HLP), which closed December 31, 2012.

Both HLP and NHLP are part of the Government of the Islamic Republic of Afghanistan's national priority programs focusing on a broader vision of improving sustainable agriculture production and productivity, increasing on and off-farm enterprises, and contributing to food security and inclusive economic growth. NHLP will contribute to long-term increased market-driven agricultural productivity and production by promoting the adoption of improved production practices by target producer households in focus areas.

*Objective:* NHLP will promote the adoption of improved production practices by targeting farmers, with the gradual national establishment of farmer-centric agricultural services mechanisms and investment support. Service delivery centered on farmers will promote, in practice, increased participation of beneficiaries both in defining the type of services required and in the delivery itself. The project also will promote a higher percentage of the overall costs reaching beneficiaries as direct investments. The aim, thus, is to promote sustainability, effectiveness, and efficiency.

HLP was successful overall: (a) on average, 52% of target farmers adopted the improved horticulture practices in focus districts (slightly exceeding the target of 50%); (b) 66% of target farmers (all women) adopted the improved poultry husbandry practices in focus districts (exceeding the target of 60%); (c) about 1,050 hectares of new orchards were established in focus districts, which brings the cumulative new plantings to 3,187 hectares (representing 106% of the overall target of 3,000 hectares); (d) 12,800 semi-intensive poultry egg production and 200 broiler units were established by women producer groups, bringing the total to 25,000 (representing 100% of the overall target); (e) 114 veterinary clinics were privatized (bringing the total to 166 or 138% of the target) and about 75% of them are doing well; and (f) 424 male horticulture producer groups and 358 female poultry groups received training from extension workers. The project developed 12 extension messages according to the Farmer Field School principles. According to the 2010 outcome monitoring survey, about 90% of the participating female poultry producers adopted improved production practices. Farmers continue to contribute 25% of the investment costs in higher production activities, which indicates that they value the quality of services and benefits provided by the project.<sup>30</sup>

Nevertheless, thus far, few agriculture and rural development actions in Afghanistan have addressed nutrition explicitly. But the product lines prioritized in NHLP have great potential to both increase exports and improve domestic availability of highly nutritious nuts and fruits. In June 2013, representatives from the World Bank discussed nutrition and agriculture linkages with representatives from MAIL. As a result of these discussions, the group proposed three target areas for promoting nutritional status within agriculture, horticulture, and livestock projects. These suggestions are as follows:

- *Broaden nutrition awareness activities associated with the project's kitchen and home gardening beyond the crops grown as part of the project:* For example, where local seeds and seed oils, such as sesame and flax, are grown locally, consumption of these should be promoted within the nutrition awareness activities.
- *Promote concomitant small-scale livestock rearing—especially for milk—and kitchen/home gardening:* for a better balanced supply of foodstuffs and magnifying nutritional impact.
- *Small Enterprise Opportunities/Income Generating Activities:* The development of small-scale dairies for yogurt and cheese production, utilizing surplus production, provides valuable nutrition for young children. Opportunities also exist to use nuts, dried fruits, seeds, dairy, and local flours to make high energy biscuits that could be used in school feeding programs and homes, and potentially sold in the market. Given the production of nuts in NHLP, Lipid Based Nutrient Supplements and Ready to Use Therapeutic Foods/Ready to Use Complementary Foods could be produced locally. Additionally, nut butters already are being imported into Afghanistan demonstrating local market potential for their production. These provide value added uses for nuts and fruits that do not meet export quality standards. They also provide small enterprise opportunities, often for women, that could be linked to the Afghanistan Rural Enterprise Development Project.

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<sup>30</sup> Various World Bank National Horticulture and Livestock Productivity Project and Emergency Horticulture and Livestock Productivity Project internal documents.

The actions proposed for increasing the nutritional impact within NHLP are aligned with MAIL's primary contributions in the Nutrition Action Framework,<sup>31</sup> which are supported by the MAIL general policy framework and were confirmed as priority areas in meetings between the Ministry and World Bank teams.

## **Promoting the Nutritional Impact through NHLP**

### *(1) Kitchen and Home Gardens*

Ensuring a well-balanced and constant supply of vegetables from the home garden will do much to improve household micronutrient supplies. In order for a home garden to be effective, nutrition education must be promoted. For example, developing recipe cards and/or picture cards that group foods on a plate for a meal with good nutritional balance would be a good way of giving women reference material after a nutrition education training session. The Government of the Islamic Republic of Afghanistan produced a booklet covering vegetables and their growth, but it only is suitable for lead farmers with some formal education.<sup>32</sup>

The Government should encourage the adoption of small-scale livestock, including poultry, by households. This would extend the work done under the previously successful HLP. The small-scale livestock produce animal manure, which can help fertilize the home garden, but also produce essential protein and micronutrients for household diets. This is important given micronutrients sourced through animal products are more bioavailable than those through fruits and vegetables.<sup>33</sup>

Potatoes are a staple item in the Afghan diet—and therefore of a home garden. In Afghanistan, at the present time all consumption is white potato. Efforts should be made to introduce biofortified<sup>34</sup> orange flesh sweet potatoes, which are conventionally grown, non-genetically modified. The advantage of orange flesh sweet potatoes is that they are high in vitamin A content, which is necessary for all but especially for young children because vitamin A

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<sup>31</sup> The Ministry of Agriculture, Irrigation, and Livestock's priority areas within the Nutrition Action Framework are: (a) increasing food access and availability and (b) improving dietary diversity with a primary focus on food insecure households.

<sup>32</sup> Currently, the Ministry of Education's Afghanistan Female Youth Employment Initiative, with support from the World Bank-financed Education Quality Improvement Program, has a nutrition curriculum that covers food groups, macro- and micronutrients, and home gardening. The nutrition curriculum is being piloted in Balkh Province, Afghanistan. The modules in the curriculum are comprehensive and can be delivered in full at the high school level, in part at the elementary or middle school levels, or through development projects related to food security and nutrition. For more information on the Female Youth Employment Initiative, please refer to SAFANSI's *Raising Nutrition Awareness Among Young Women in Afghanistan through the Female Youth Employment Initiative* (January 2014).

<sup>33</sup> Appropriate safety and sanitation practices should be followed because of the risk of illness from bacteria in feces, specifically from *E. coli*. If families have small livestock, parents should keep their children away from animal feces. Additionally, all family members should wash their hands, with soap when possible, after touching or working with animals and after cleaning or working in a yard which may be contaminated with feces.

<sup>34</sup> Biofortification is a process of breeding crops with higher nutrient qualities. This process can be done transgenically, by using genes from different plants. Golden rice is a prime example, given no rice variety has beta-carotene naturally. Or the biofortification can be done by conventional breeding methods as with orange flesh sweet potatoes, by exploiting the different nutrient profiles of different varieties of the same crop. Red and orange potatoes have higher vitamin A content than white, and by exploiting these different varieties higher yielding strains can be bred that have higher yields and higher in vitamin A content.

deficiency can cause childhood blindness and compromises immune system function, leaving young children unable to fight common childhood infections such as measles or diarrhea. Sweet potatoes can grow at a wide range of temperatures between 15°-35° C,<sup>35</sup> making them adaptable. Sweet potatoes have been introduced successfully in several African countries where the preference was white potatoes. In Mozambique, a *HarvestPlus* project team worked with bakers to switch 50% of the wheat flour used in baking bread buns to sweet potato flour. The bun that was produced met the total vitamin A requirements for a young child. Additionally, sweet potato flour is cheaper than wheat flour. In Afghanistan, flour and chips could be derived from sweet potatoes in a similar manner.<sup>36</sup> Similarly, looking at other crops and the potential to breed biofortified lines or adapt them would be a step in the right direction.

Finally, incorporating pomegranate trees into the home gardens would provide key sources of crucial micronutrients, specifically iron, zinc, and folate found in dried pomegranate seeds. One study indicates that the rate of births with neural tube defects, caused by folate deficiency, was 8 times higher in a Kabul hospital than in hospitals in Canada or the United States.<sup>37</sup> Given that wealthier women, with better diets and antenatal care delivered in the hospital, this figure probably underestimates the true folate deficiency in rural Afghanistan.

*(1.a.) Focus on Other Crops, Not Part of NHLP, for the nutrition education component*

While not explicitly included in NHLP, promoting the incorporation of local seeds and oils, such as sesame and flax, into diets when available should be pursued. Specifically, sesame seeds can be added to foods to increase iron and protein content. They are energy dense from relatively high fat content, but the majority of this fat is unsaturated. Additionally, flax seeds are high in iron and folate as well as energy dense with unsaturated fat.

Seed oil can have a great nutritional impact because it can be fortified after processing, usually with vitamin A. Currently, the Global Alliance for Improved Nutrition is exploring fortifying cottonseed oil with vitamin A in Afghanistan, but such research is in the early stages.

Information about how to better use seeds should be incorporated in nutrition education materials for home gardens.

*(2) Dairy Promotion—as part of small-scale livestock rearing*

Milk plays an extremely important role in the nutrition of small children, especially for children in the critical 6-24 month old growth period. Therefore, increased promotion of small-scale dairy production for milk, yogurt (nutritionally important as a source of iodine), and cheese in local dairy cooperatives would help foster nutritional improvement. Cooler weather in Afghanistan makes dairy production less difficult than in some other countries in the South Asia region. Collaboration with the National Solidarity Programme or the Agriculture and Rural Development Project could assist communities with the infrastructure development for small-

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<sup>35</sup> The optimum temperature for sweet potato growth is 20°-25° C, but these potatoes adapt to growth in other temperatures between 15°-35° C.

<sup>36</sup> Deriving products from sweet potatoes could be done at the local level with input from the National Solidarity Programme in terms of the start up infrastructure/capital.

<sup>37</sup> *Strategy for the Prevention and Control of Vitamin and Mineral Deficiencies in Afghanistan*. 2010. Ministry of Public Health, Government of Afghanistan.

scale dairies or for dairy processing for yogurt and cheese.<sup>38</sup> It also is an extremely relevant activity for women, given they typically milk and care for cows.

### *(3) Small Enterprise Opportunities/Income Generating Activities/Women's Empowerment*

The income generating activities have the potential to increase family wealth as well as locally produce energy dense foods for all, but especially for children.

While the goal of nut production is export, not all meet the standards for export, while being perfectly safe (and nutritious) for consumption. Local almonds and pistachios are valuable nutrient sources for iron, zinc, and folate. Nuts can be processed into smooth butters as a product to be consumed by children 6-24 months old. Furthermore, nut butters currently are imported into some urban centers in Afghanistan, typically almond or peanut, showing a market demand for the product. Basic technology to crush nuts locally could provide nut butters both for the local market and increase nut consumption by young children.

Secondly, a combination of local nuts, dried fruit, seeds, fortified flour, eggs, and milk could produce high energy biscuits for use in schools.<sup>39</sup> In Afghanistan, children frequently go to school without breakfast, and as a result their concentration and learning potential are impaired. Consuming a high nutrient biscuit early in the day can address this lack of breakfast and improve the micronutrient status of school children.<sup>40</sup> Importantly, women's cooperative groups should bake these biscuits locally with infrastructure and capital assistance through the National Solidarity Programme or the Agriculture and Rural Development Project. Production of these biscuits has the potential to grow into a larger enterprise with business, technical assistance, and financial support—all facilitating female empowerment, as well as promoting nutrition and enterprise opportunities.

Another proposal for empowering women and launching income generating activities in communities is packaging small snack bags with local ingredients (e.g., dried apricots, dried grapes, dried peaches, pistachios, almonds, and pomegranate and watermelon seeds, etc.).

Finally, Lipid Based Nutrient Supplements and Ready to Use Therapeutic Foods/Ready to Use Complementary Foods, used for battling malnutrition in young children, should be produced with local nuts. These products traditionally use peanuts (and sometimes chickpeas), but using pistachios or almonds that are local in Afghanistan should be explored. The Global Alliance for Improved Nutrition prefers almonds because they are cheaper, but at this point little research has occurred into the widespread use of either almonds or pistachios for Lipid Based Nutrient Supplements and Ready to Use Therapeutic Foods.

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<sup>38</sup> For more information on the National Solidarity Programme and its role in the nutrition sector in Afghanistan, please refer to SAFANSI's *The National Solidarity Programme: Improving Nutrition and Empowering Women* (February 2014).

<sup>39</sup> Using local nuts and fruits would create a superior biscuit to the high-energy biscuits provided by the World Food Programme that use an imported nutrient mix.

<sup>40</sup> When schoolchildren are provided snacks at school rather than meals they are less likely to experience a reduction in meals at home.

## **Future of these Proposals**

In this note we show how with NHLP as a foundation, opportunities can be created for income generating activities and female empowerment that focus on and foster improved nutrition, especially for young children.

The feasibility of these suggestions depends on multisectoral coordination between MAIL and the various health, nutrition, education, and commercial actors within Afghanistan. The Nutrition Action Framework effectively outlines the reasons these various sectors should come together around a joint cause of improving nutrition outcomes, and NHLP, with World Bank financing, has the potential to take MAIL's role within the Nutrition Action Framework one-step further to a reality.