



**CGIAR**

**RESEARCH  
PROGRAM ON  
Agriculture for  
Nutrition  
and Health**

LED BY **IFPRI** 

**Agriculture for Nutrition and Health -  
Results Framework, Future Research Areas  
and Potential for Impact**

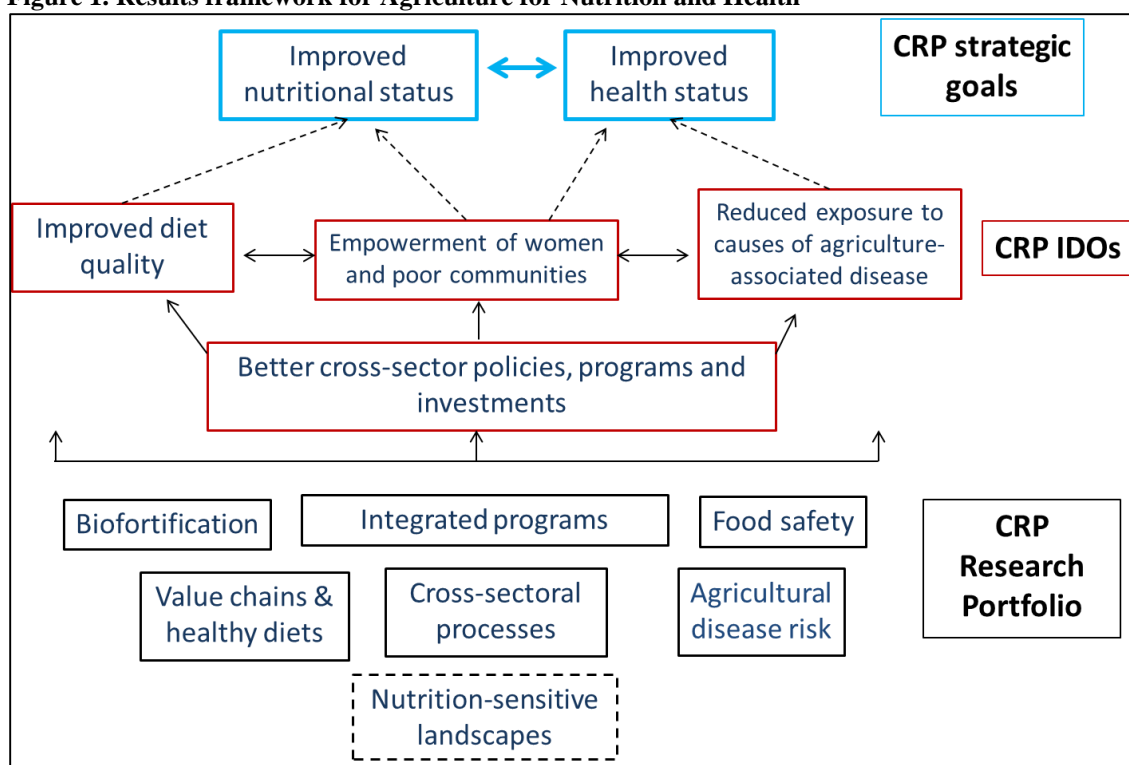
**Discussion Document**

**September 30, 2013**

# 1. Agriculture for Nutrition and Health (A4NH) Results Framework

The A4NH results framework (Figure 1) describes how research within the CGIAR Research Program (CRP) is expected to contribute to the strategic goals of improving the health and nutritional status of target populations, mainly women and children. Nutritional and health status, as measured by indicators such as micronutrient status, disease prevalence, or anthropometry<sup>1</sup> have important determinants outside of agriculture. Therefore, we define our intermediate development outcomes (IDOs) in terms of four determinants that are closely associated with agriculture – diet quality; exposure to agriculture-associated disease; the status of women and poor communities; and the extent to which agricultural policies, programs and investments recognize and support nutrition and health objectives. Three of our IDOs contribute to the CRP common IDOs on nutrition, gender, and policies and institutions. A4NH is one of only a few CRPs working on agriculture and health, and will have an important role in raising the profile of this issue across the system.

**Figure 1. Results framework for Agriculture for Nutrition and Health\***



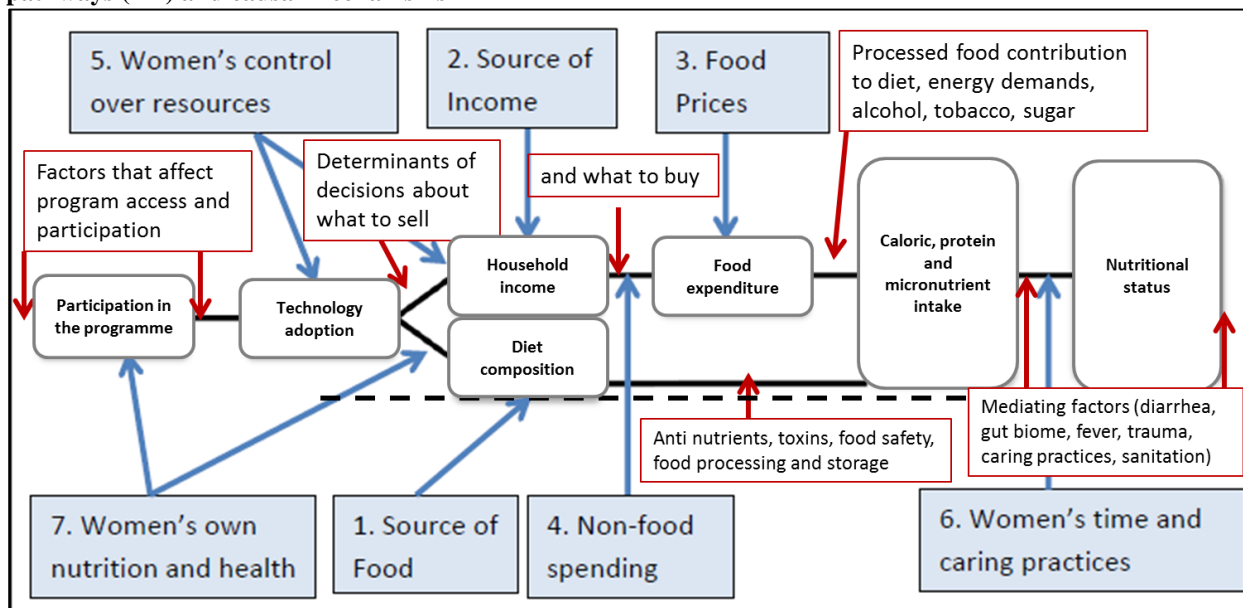
\*The dotted lines between the IDOs and goals reflect the fact that improvements in agriculture are not, in most cases, sufficient to influence goal-level indicators. Understanding, documenting, and scaling up lessons about how agriculture can better align with sectors like water and sanitation or social protection to reduce stunting, child mortality, or disease prevalence will be an important part of our research and our partnership agenda. The dotted line around the nutrition-sensitive landscapes research area reflects that this is new area that is still being developed.

For each IDO, there are multiple pathways through which aspects of agricultural and food systems can influence nutrition and health outcomes, and questions remain about how the pathways work and about their relative importance in different conditions and contexts ([Ruel and Alderman, 2013](#); [Webb 2013](#)). In

<sup>1</sup> Anthropometric measures are comparative measurements of the body. The most common indicators are stunting, wasting, or body mass index (BMI).

some cases there will be synergies between IDOs; in other cases, tradeoffs. The different pathways and mechanisms (Figure 2) suggest different avenues for influencing IDOs through research.

**Figure 2. Logical framework for assessing the impact of agricultural interventions on nutrition, with key pathways (1-7) and causal mechanisms<sup>2</sup>**



The proposed portfolio of “flagship” research areas shows where A4NH, working with partners and building on ongoing research, has the capacity and comparative advantage to make significant contributions to the IDOs at scale. While each research area is defined by a specific set of research questions, partnerships, and potential pathways to impact, it is possible that some areas could be combined as we further develop and operationalize the results framework. The research areas are:

**Breeding crops with enhanced levels of micronutrients (Biofortification).** Biofortification is a process used to breed staple food crops that are richer in micronutrients such as vitamin A, iron, and zinc, and can therefore improve nutrition when consumed. The premise of biofortification is that the diets of undernourished people are based primarily on a few staple foods, as poor people lack the purchasing power for a more diverse diet containing sufficient quantities of micronutrient-rich foods. Research in this area will lead to the development and dissemination at scale of nutritionally-enhanced crop varieties and processed food products and to the institutionalization of biofortification and nutrition-sensitive crop breeding in agricultural policy, programming, and research.

**Improving maternal and child nutrition through integrated agriculture-nutrition-health programs (Integrated programs).** Although agriculture programs have been shown to improve household food security, income and, when gender-sensitive, to empower women and enhance their control over resources, evidence of impacts on nutritional outcomes is scant. Research in this area will test and rigorously evaluate new approaches and models to effectively integrate agriculture and nutrition interventions and to reach and empower women and communities. The research will lead to better understanding of how, how much, in what contexts, and at what cost, agricultural development programs can improve nutritional outcomes.

<sup>2</sup> Modified from [Gillespie et al., 2012](#); [Masset et al., 2011](#); in [Webb 2013](#), pp 5, 15, and 24.

**Managing key food safety risks facing poor consumers (Food safety).** The most risky food chains are for some of the most nutritious foods – animal-source foods and fresh vegetables. Among staple crops (maize, groundnuts, sorghum), the most serious food safety problem is aflatoxin contamination. This research area will focus on assessing and managing food safety risks. Where government systems to support food safety are emerging and where consumers’ choices are limited by income and information, the most important incentives to safe production – private demand and effective government regulation – are lacking. New approaches to mitigation that support and are supported by a range of incentives – social-, market-, or farm-based – need to be developed and tested to encourage farmers and other value chain actors to produce quality and safe products. New technologies and business innovations for detecting and managing hazards on-farm and post-harvest will also be developed, tested, and scaled up.

**Enabling nutrition and health-sensitive agricultural policy (Cross-sectoral processes).** The aim of this research area is to support the use of evidence about agriculture, nutrition and health linkages in agricultural policy processes in order to maximize the nutrition- and health-sensitivity of policies and investments ([Gillespie et al, 2013](#)). Research will focus on understanding and influencing cross-sectoral processes in different contexts. Functionally, it will comprise three core activities – research, capacity strengthening and communication. Thematically, the policy research will focus on three core domains: knowledge and evidence, politics and governance, and capacity and resources. This research area plays an important cross-cutting role in the A4NH program since many of the research areas seek to influence policy and investment outcomes as part of their impact pathways.

**Supporting value chains to deliver healthier dietary transitions (Value chains and healthy diets).** Given the many potential market failures in the demand and supply of healthy diets, it is not surprising that diet quality improvement does not track well with rising incomes. Country outcomes vary widely as they pass through this dietary transition, with some experiencing delays in reducing under-nutrition, especially for vulnerable groups, while others are experiencing early over-nutrition relative to their stage of development. How markets, price policies, and agricultural research investments shape diet quality, and ultimately nutrition, in the development process is still poorly understood. Research in this area will focus on identifying the value chain development needed to support improved diet quality; the most effective methods for informing and motivating changes in diet quality; and the public investments and price policies needed to support nutrient-rich food production and consumption. The focus on supporting a healthy dietary transition expands the current focus of work in this area from supporting better nutrition in vulnerable populations to addressing the growing double burden of over- and under-nutrition.

**Managing infectious disease risks associated with agriculture (Agriculture disease risks).** The intensification of agriculture increases the risk of infectious diseases. The greatest increases are through zoonoses from livestock and wildlife and water- and vector-borne diseases associated with intensive water use. In low-income countries, risks are greatest for the poor and are poorly managed by regulation. Initial experiences indicate that for the poor, appropriate incentives and capacity development are critical investments in mitigating risks. This research area will generate evidence and develop and test methods, tools and approaches that partners need to better support management of diseases associated with agriculture. Initially concentrating on select high-priority diseases, research will focus on mapping and rapid prioritization of diseases per systems context and developing and testing new diagnostic, detection and surveillance innovations. Through epidemiological studies and comprehensive health risk and socioeconomic assessments to identify critical control points and options, risk management innovations and delivery strategies can be designed, and then tested for efficacy, feasibility and sustainability.

**Supporting nutrition- and health-sensitive landscapes (Nutrition-sensitive landscapes).** This is a new research area we are exploring that targets specific communities that are nutritionally vulnerable but may not be easily or appropriately reached with common programming models or approaches. Building on ecosystem services concepts, research in this area seeks to improve knowledge and capacity about how

nutrition and health outcomes can be improved in contexts where natural resources are managed to achieve multiple objectives and where agriculture, aquatic systems, forestry, and other productive land uses compete with resilience, sustainability, and biodiversity goals. The research area builds on ongoing work in the nutrition-sensitive value chains theme of A4NH and will be developed with the natural resource management (NRM) and systems CRPs (Aquatic Agricultural Systems, Integrated Systems for the Humid Tropics, and Dryland Systems).

A4NH will measure its contribution to the IDOs using specific indicators and metrics that are both valid indicators for the IDO and amenable to influence through the research, capacity building, and outreach activities of A4NH and partners. Our proposed indicators are in Table 1. We are currently working with other CRPs to align nutrition-related indicators and theories of change to facilitate cross-CRP collaboration and learning around agriculture-nutrition linkages. Examples of how contributions by research areas to changes in IDOs will be assessed can be found in Section 3.

**Table 1. Intermediate development outcomes, contributing research areas, proposed indicators and metrics<sup>3</sup>**

| IDO  | Research areas  | Indicator   | Metric   |
|--|---|---|--|
| <b>Better diet quality</b>                                 | Integrated programs; Value chains and healthy diets; Cross-sectoral processes; Nutrition-sensitive landscapes | Dietary diversity <sup>4</sup>  | Individual dietary diversity score; prevalence of low dietary diversity (<4 on a 7 food-group scale for infants and young children (WHO indicator); and <4 on a 9 food-group scale for adults) |
|  | Biofortification; Integrated programs; Nutrition-sensitive landscapes   | Intake of selected micronutrient(s)   | Nutrient intake from consumption of target food(s)/total nutrient intake from all foods consumed   |
| <b>Reduced exposure to agriculture-associated diseases</b> | Food safety   | Exposure to pathogen/hazard in target food at point of consumption (foodborne disease)  | Prevalence of pathogen in food X quantity consumed per capita by target beneficiaries  |
|  | Agricultural disease risk   | Direct exposure to pathogen/hazard in agri-food system (zoonotic diseases)  | Prevalence of target disease in animal population on farm, at slaughter, at market   |
|  |   |   | Reduction in disease transmission opportunities  |
| <b>Empowerment</b>   | Integrated programs; Cross-sectoral processes   | Women's empowerment in agriculture index (WEAI)   | Value of the index and main sub-indices  |
|  |   | Degree of participation in decisions related to food, nutrition, and health   | Scale, as measured by the perception of the individual   |
| <b>Better policies, programs, and investments</b>          | All   | # of countries whose policies or policy processes were influenced by A4NH outputs<br><br># of CRPs /development programs/public health programs/donor investment portfolios that are influenced by A4NH outputs | # of countries or programs<br><br>Measure of type and degree of influence  |

<sup>3</sup> Many research areas may contribute indirectly to other IDO indicators.

<sup>4</sup> In some cases, especially as part of research, total food intake will also be measured in addition to diet diversity.

## 2. Partnerships and Resources in the proposed A4NH Research Portfolio

The seven proposed research areas are designed to build on ongoing research in order to deliver impact at scale on the IDOs. Each research area has an institutional home in an A4NH research theme as well as links to other research areas, CRPs, CGIAR centers, and partners. The linkages across research areas within A4NH reflect collaboration on topics of mutual interest (e.g. impact evaluation methods) and support on cross-cutting issues (e.g. strategies for influencing cross-sectoral processes). Some A4NH research areas will be delivery mechanisms for outputs of other CRPs, e.g. Biofortification for some outputs of the CRP on Roots, Tubers and Bananas or other commodity CRPs. A4NH will deliver outputs to and through other CRPs; Food safety will provide health inputs to the CRPs on Livestock and Fish (LaF), Maize, and Grain Legumes. Beyond delivery of specific outputs, A4NH seeks to mainstream nutrition- and health-sensitive approaches in breeding and value chains analysis in other CRP and CGIAR center research.

While the research areas were designed to target the current priority research issues, they build on past research investments from the CGIAR and partners. For this reason, some research areas are more advanced than others, meaning that they have done more of the basic research, generated knowledge and technologies that are ready (or near ready) to go to scale, and are in the process of building relationships with the key implementers and enablers who will take them to scale. Other research areas, such as those responding to gaps in the current portfolio, need more time to refine research agendas, consult partners, and evaluate their potential for impact before making significant investments in generating outputs with a high probability of going to scale. The stage that different research areas are at is reflected in their overall budgets as well as in how that budget is allocated between different types of research and dissemination activities and partners (Table 2).

**Table 2. Estimated research area and linked development partner budgets (in USD millions per annum) for current and next phase research and subsequent development actions**

| Research areas                        | 2012 Total budget      | Estimated A4NH annual budget (2015-2017) <sup>5</sup> | A4NH budget to non-CGIAR partners (2015-17) | Budget of development partners to deliver and scale up (post-2018) <sup>6</sup> |
|---------------------------------------|------------------------|---|---|---|
| <b>Biofortification</b>               | 35.5 (3.7% fund)       | 50 (20% fund)   | 30%   | 300   |
| <b>Integrated programs</b>            | 10.3 (13% fund)        | 30 (30% fund)   | 30%   | 300   |
| <b>Food safety</b>                    | 4.6 (38% fund)         | 20 (50% fund)   | 50%   | 250   |
| <b>Agriculture disease risks</b>      | 4.2 (39% fund)         | 10 (50% fund)   | 50%   | 100   |
| <b>Cross-sectoral processes</b>       | 1.5 (27% fund)         | 5 (50% fund)  | 30%   | 15  |
| <b>Value chains and diet quality</b>  | 3.2 (55% fund)         | 10 (50% fund)   | 30%   | 150   |
| <b>Nutrition-sensitive landscapes</b> | 1.6 (55% fund)         | 5 (50% fund)  | 30%   | 15  |
| <b>Total</b>                          | <b>60.9 (15% fund)</b> | <b>130 (35% fund)</b>                                 |   | <b>1130</b>   |

<sup>5</sup>Assuming strong demand for nutrition and health research from governments, donors and development implementers.

<sup>6</sup> Annual budget estimates for aligned development actions is based on expected level of activity post-2018. It is expected that these investments would commence at lower levels as soon as possible. Estimates are based on experience that approximately 10% of overall budgets for Integrated programs is required for research. We assume similar levels for food safety, zoonoses and value chains. For food safety and value chains, we also assume \$50 million matching investment from other CRPs. For cross-sectoral processes and nutrition-sensitive landscapes most partnerships will be linked to other CRPs (PIM for policy and FTA for landscapes) and their partners.



Partners outside of the CGIAR play essential roles in every research area, as reflected by their significant share of the A4NH budget (Table 2). A4NH is committed to a partnership process that incorporates strategic thinking, systematic processes with partners, innovative behaviors and resources, and implementation of best partnership performance practices (see A4NH draft [Partnership Strategy](#)). Though research plays an essential and catalytic role in the achievement of nutrition and health development outcomes and impacts, researchers must partner with and support others effectively for progress to be achieved. One way that this is achieved is through the alignment of development budgets to support effective scaling up of research outputs (Table 2).

Depending on their roles, partners are classified into four broad categories: **enablers, development implementers, value chain partners, and research partners**. Some partners can play different roles at the same time. **Enablers** include policy and decision makers as well as investors who are all involved in the creation of enabling environments at different national, regional, international, and global levels. **Development implementers** such as government departments and ministries, the United Nations and other global initiatives, NGOs, civil society organizations, and farmers’ groups, play critical roles in development programming. Also included in this category are value chain partners such as private-sector companies, public-private initiatives, associations, and groups that focus on the quality and safety of foods in value chains. **Research partners** include both advanced and developing-country research institutes and academic institutions at the national and international level that are involved in agriculture, nutrition, and health.

### 3. Estimates of impact and return on investment

Three of the seven research areas – Biofortification, Integrated programs, and Food safety, which account for the majority of A4NH budget – are already in a position to make estimates of their potential impact by 2023 or in some cases sooner (Table 3). Biofortification has been shown to be a “highly-cost effective” investment in both *ex ante* ([Meenakshi et al., 2010](#); [Stein et al., 2010](#)) and *ex post* ([HarvestPlus, 2012](#)) assessments.

**Table 3. Estimates of the size and scale of impact on IDO indicators from the three most advanced research areas (italics indicate indicators for which targets are still being defined)**

| IDO: Better diet quality                                  |   |   |
|---|---|---|
| Indicator   | Size of impact on indicator   | Scale of impact   |
| Dietary diversity   | Mean dietary diversity increased by 1 food group; Low dietary diversity in young children (6-24 mos) reduced by 10% (Integrated programs)   | <i>These will be based on analysis of number of beneficiaries who could be reached through improving the cost-effectiveness of integrated programming models as well as by increasing investment in nutrition-sensitive agricultural programming. For example, currently 12% of World Bank agricultural programming is nutrition sensitive.</i> |
| Intake of selected micronutrient(s) by women and children | In target countries, high-iron crops will provide 45- 60% of daily iron needs, an increase of 14% and 20% compared to commonly grown varieties. High-zinc crops have a goal of providing 60-80% of daily zinc needs, a 20-35% increase. High-vitamin A crops <sup>7</sup> will provide 25-100% of daily vitamin | 25 million micronutrient deficient people will be reached by biofortification by 2018 in 8 target countries in Africa and Asia; by 2035 1 billion people will have been reached   |

<sup>7</sup> For some crops and/or counties, these targets are shared with the CRPs on Maize and RTB.

|  |  |   |
|--|--|---|
|  | A needs; commonly-grown varieties provide almost none.   |   |
| <b>IDO: Reduced exposure to causes of agriculture-associated diseases (AADs)</b>   |  |   |
| <b>Indicator</b>   | <b>Size of impact on indicator<sup>8</sup></b>   | <b>Scale of impact<sup>7</sup></b>  |
| Exposure to pathogen/hazard in target food at point of consumption   | Exposure to priority pathogens in animal source food (ASF) value chains will be reduced by 5% 2020. <sup>9</sup>   | The benefits of reduced exposure will be felt by: 2 million mutton and goat consumers in Ethiopia and Mali; 217,500 dairy consumers Tanzania and Nicaragua; 5.75 million pork consumers in Uganda and Vietnam |
| <b>IDO: Empowerment</b>  |  |   |
| <b>Indicator</b>   | <b>Size of impact on indicator</b>   | <b>Scale of impact</b>  |
| Women's empowerment in agriculture index (WEAI) and other measures   | <i>To be determined. This is an active area of research to which A4NH will contribute, working with the CRP on Policies, Institutions, and Markets (PIM) and other CRPs</i>  |   |
| Degree of participation in decisions related to food, nutrition, and health  | <i>To be determined. As an example, an evaluation of an homestead food production project in Bangladesh found that the % of women who had "full participation in small household decision making" increased from 14% to 50%" (<a href="#">Hillenbrand, 2010</a>)</i> |   |
| <b>Better policies, programs, and investments</b>  |  |   |
| <i># of countries that enact biofortification programs</i><br><i># of breeding programs that include nutritional content in varietal evaluation criteria</i><br><i># of NGO programs that incorporate lessons learned and findings from A4NH research into their agriculture-nutrition programming</i><br><i># of CRPs that incorporate appropriate food safety objectives and components</i><br><i># of countries and donors whose policies and investments in target regions support cost-effective, risk-based approaches to managing food safety</i> |  |   |

Each research area is in the process of developing detailed impact pathways and theories of change to guide scaling up and monitoring and evaluation. The following sections provide brief descriptions of elements of their impact pathways and theories of change, along with outputs and outcomes that could be expected over the next 3, 6 and 9 years.

**Biofortification** will work through value chains, through nutrition and health programs, and through policy to achieve its IDO targets. Varietal deployment strategies will engage both the public and private sectors at the national level in target countries. Varieties developed by CGIAR centers and partners have achieved high rates of coverage in the past, however it is recognized that complementary strategies will be required to ensure that nutritional information is delivered along with the varieties and that it reaches

<sup>8</sup> These targets are shared with the CRP on Livestock and Fish

<sup>9</sup> This estimate likely underestimates the impact since production is expected to grow by 22% for small ruminants, 73-100% in dairy and 60% in pork over the same period. In the absence of improved food safety, exposure would likely have increased dramatically.



the appropriate members of the household, especially women who are a critical target group because of the multiple roles they play as producers, retailers and caregivers of young children (HarvestPlus 2012). HarvestPlus is working closely with development partners to design, implement, and assess alternative delivery strategies. Researchers and partners will also engage with nutrition and health communities to promote use of biofortified crops and food products in programs targeted at nutritionally vulnerable populations such as women and children.

To ensure the longer term sustainability of biofortification, capacity will be built at both the CGIAR and National Agriculture Research System (NARS) levels to measure and mainstream nutritional breeding, with fellowships for young breeders and cooperation with regional crop improvement centers in Africa, such as the African Centre for Crop Improvement and the West Africa Centre for Crop Improvement, to build local capacity for nutrition-sensitive breeding. Additionally, HarvestPlus is focused on building the institutional foundation for bringing biofortification to global scale. By establishing commitment among key stakeholders to work together and take shared responsibility for scaling biofortification, a post-2018 common agenda will be developed. To enable integration of biofortification into policy and practices, supporting (global) mechanisms, incentives and practical tools will be developed and provided. Scientific evidence on the impact of biofortification in terms of effectiveness, nutrition policy, and food technology will be consolidated and rendered widely accessible.

**Table 4. Selected outputs and outcomes by phase for Biofortification**

|                         | <b>Outputs</b>  | <b>Outcomes</b>  |
|-------------------------|---|--|
| Phase 1<br>(2015-2017)  | New biofortified varieties developed and released in target countries                   | New varieties released in 12 countries, with nutrient content included in varietal release process   |
|                         | Technical support to organizations disseminating varieties in target countries          | Varieties disseminated by public and private sector actors; adopted by farmers and consumed by target beneficiaries  |
|                         | Nutritional research conducted for new varieties  | Lab analysis capacity built in in-country partners, evidence available to and used by implementers and advocates   |
|                         | Economic impact evaluations   | Evaluation capacity built in in-country partners, evidence available to and used by implementers and advocates   |
|                         | Market research conducted for biofortified crops  | Farmers linked to markets, biofortified crops and foods available in markets and consumed by target beneficiaries  |
|                         | Upstream research conducted to mainstream biofortified traits at CGIAR centers and NARS | CGIAR and NARS breeders have capacity to implement marker assisted selection; markers available for breeding research; breeders implement marker-assisted selection; biofortified varieties are bred with more speed and precision |
|                         | Advocacy conducted to mainstream biofortified traits at CGIAR centers and NARS          | CGIAR centers and NARS mainstream biofortified traits; biofortified traits are considered in varietal release process; biofortified crop varieties fill the development pipeline at NARS and CGIAR centers                         |
|                         | Research and information sharing tools developed  | Biofortification data is easily accessed by all partners   |
|                         | Biofortification conference   | All partners in biofortification research and delivery are aware of activities and communicate with one another  |
|                         | Global scale-up strategy developed  | Strategy available and key actors identified and engaged   |
| Phases 2<br>(2018-2020) | New biofortified varieties developed and released                                       | Varieties disseminated by public and private sector actors, adopted by farmers and consumed by target beneficiaries  |
|                         | Global scale-up strategy implemented  | Biofortified traits mainstreamed at CG centers and NARS  |
|                         | HarvestPlus successor organization determined   |  |

**Integrated Programs** that combine agriculture, nutrition and community health components are designed to reach poor rural households and their nutritionally vulnerable members, including pregnant and lactating women, children 6-24 months of age, adolescent girls, and women of reproductive age. These target groups are unlikely to benefit from agricultural interventions designed to improve on-farm productivity or upgrade agricultural value chains. Therefore, achieving impact at scale will require influencing the way that development organizations design and deliver programs in this area.

It is anticipated that this will happen most directly when staff in partner organizations apply and share what they learn from participating in the evaluations. While spontaneous diffusion is important, reaching a wider group of development organizations, investors, and policymakers will be necessary to achieve and sustain impact at scale. This will require a deliberate strategy that combines dissemination of evidence with raising awareness and building capacity to use new knowledge. An example of an element of this strategy is the placement of a senior A4NH researcher in IFAD to work with staff on identifying, adapting and mainstreaming nutrition-sensitive interventions within their agricultural development programs. This research area will work closely with the Cross-sectoral processes area to design, implement and evaluate the effectiveness of strategies to influence key decision makers and scale up results.

**Table 5. Selected outputs and outcomes by phase for Integrated programs**

|  | <b>Outputs</b>  | <b>Outcomes</b>  |
|--|---|--|
| Phase 1<br>(2015-2017)                       | Methods and tools to design, implement, and evaluate programs                                       | Methods and tools developed and used in current and future evaluations   |
|  | Capacity built among researchers and partners to use the tools to evaluate integrated interventions |  |
|  | Evidence of impact and cost-effectiveness of integrated program models                              | Results of studies incorporated into ongoing research and development activities   |
|  | Scaling up strategy developed and implemented   | Capacity built among implementers and investors; better, more cost-effective program models used; better, stronger evaluation methods used |
| Phases 2<br>(2018-2020)<br>and 3 (2021-2023) | Evidence regarding replicability and scale up of successful models in different contexts            | Improved understanding of constraints to, and successful factors for scale up  |
|  | Evidence synthesized and disseminated   | Improved knowledge and ability to use evidence for decision making; effective programs successfully scaled-up                              |

**Food Safety** research will contribute to a reduction in exposure to the causes of AADs by reducing exposure to pathogens and hazards in the foods consumed by target beneficiaries. Many of the outputs of this research will be inputs for or delivered through other CRPs. Therefore we will document how outputs from A4NH are taken up and used in their research, capacity building, and outreach activities. In addition to engaging in specific sectors and value chain through other CRPs, A4NH will play a convening role in generating, synthesizing, and disseminating evidence and building awareness and capacity among national, regional and global policy makers and donors who support them. A4NH will also engage with the public health community to raise awareness about the importance of aflatoxins and the options for managing potential health risks.

**Table 6. Selected outputs and outcomes by phase for Food safety**

|   | <b>Outputs</b>   | <b>Outcomes</b>   |
|---|--|---|
| Phase 1<br>(2015-2017)                          | Risk profiles and assessments conducted and shared with researchers and partners   | Greater awareness of the evidence and burden of diseases used to prioritize and manage risks  |
|   | Evidence of where aflatoxins are present and in what quantities and with what consequences generated and shared                                      | Better understanding will inform research within this CRP and others; health community aware of importance of aflatoxin risks and have tools necessary for risk assessment  |
|   | Incentive-based control options identified and characterized and evidence of effectiveness of promising risk-management options generated and shared | Actors in 7 LaF and vegetable value chains and in sectors where aflatoxins are important are aware of evidence incentive-based risk management and have access to and are able to use effective technologies and practices  |
|   | National and regional policy task forces established in countries where LaF works  | Policymakers are aware of research, have access to evidence and understand what market institutions and public investments will support effective risk management   |
|   | Aflatoxin-resistant varieties developed and tested   | Varieties released and disseminated as part of aflatoxin control strategy (with commodity CRPs)   |
|   | Economic assessments and policy analyses related to benefits and costs of alternative mitigation and control options                                 | Results inform risk management strategies and investments by policy makers and value chain actors and contribute to prioritizing research and outreach within the research area, including estimates of returns to research |
| Phases 2<br>(2018-2020)<br>and 3<br>(2021-2023) | Strategies developed and implemented to scale up and out promising approaches to risk management in target ASF value chains                          | Private sector, NGOs and donors involved in the LaF value chains have the capacity and resources to use new technologies and practices and improve risk management  |
|   | Strategies for disseminating resistant varieties and other aflatoxin mitigation and control options  | Public and private actors in seed systems and along value chains are aware of and use the improved varieties and options; varieties and options widely disseminated   |
|   | National and regional policy task forces strengthened and expanded   | Policymakers in LaF countries and in 5 countries targeted for aflatoxins use A4NH research results in their work  |
|   | Development and testing of mitigation and control options over time and in new value chains  | New value chains identified and assessed; long term effects of validated options assessed   |

#### *4. Next Steps*

We will continue to refine the results framework and develop the research areas, impact targets, and impact pathways and theories of change. This will serve as the basis for discussions with a wider range of partners about organizing work for the remainder of Phase 1 and for development of proposals for Phase 2. To improve our ability to engage with partners and bring evidence to bear to help frame the international discussion on agriculture-nutrition-health linkages, we will also be upgrading our communications capacity. For more information on topics covered in this document, on our partners and projects, or on other issues related to the role of agriculture in improving nutrition and health outcomes for vulnerable women and children in developing countries, please visit [www.a4nh.cgiar.org](http://www.a4nh.cgiar.org).