RESEARCH PROGRAM ON Agriculture for Nutrition and Health

CGIAR

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CGIAR RESEARCH PROGRAM ON AGRICULTURE FOR NUTRITION AND HEALTH

Extension Proposal

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INTRODUCTION

Improving the nutrition and health of poor people, particularly young women, mothers, and children, is an economic and social imperative. Traditionally, improving nutrition and health have been the focus of specific public health interventions. In recent years, and especially in the midst of the recent food price and economic crises, it has become evident that other sectors, and especially agriculture, have to play a more important role in accelerating progress. Agriculture for Nutrition and Health (A4NH) is in large part a result of this new focus aimed at enhancing the nutrition-sensitivity of agriculture, and the CRP is making important contributions to understanding and operationalizing the concept of nutrition-sensitive agriculture and maximizing impacts on nutrition and health outcomes.

The four original flagships – Value Chains for Enhanced Nutrition (VCN), Biofortification, Agriculture-Associated Diseases (AAD), and Integrated Programs and Policies (IPP) – continue to make sense as the way to organize research. Within flagships, we have made some changes in clusters in order to better deliver outputs and engage partners. To better respond to the demand for food safety research, requiring new approaches in emerging and rapidly evolving food systems in low and middle income countries, we are integrating capacities in agricultural science, epidemiology and economics and expanding this work in two research clusters in the AAD flagship. Within the VCN flagship, we see we see potential to position ourselves to address key emerging issues in food systems, including the double burden of under-nutrition and obesity. One new area of research is around how best to partner with the private sector to promote healthy diets. Another is on working in local food systems with systems CRPs on nutrition-sensitive landscapes and sustainable diets. Advanced research areas like Biofortification and the IPP flagship are already delivering outcomes and impacts, as well as generating key lessons about the "science of delivery" that will help us expand our reach beyond successful pilots to increase probability of impact at scale through partnerships. All flagships will be supported by more work on ex ante analysis and on developing and using theory of change to guide research design, implementation and evaluation.

In planning the budget for 2015-16, we have assumed 1/3 funding from Window 1/Window 2 (W1/W2) and 2/3 from bilateral (including Window 3). Within our research portfolio, we look for opportunities for bilateral funding that fit the research agenda and how to best use W1/W2 funds to complement and catalyze bilateral investments. For more mature research and/or areas with strong demand, such as Biofortification and the IPP flagship, we use W1/W2 funding to leverage bilateral funding, providing approximately 20% of funding. Otherwise, W1/W2 funding is used selectively to: (1) provide initial funding in relatively new areas of research such as food systems (value chains for enhanced nutrition; nutrition-sensitive landscapes) and cross-sectoral policy processes; (2) to expand research areas with potential large impacts at scale, such as food safety; (3) to strengthen research quality and relevance, such as gender research; and (4) to catalyze partnerships, particularly with national and regional partners. In the extension period, we have proposed expansion of research in these new areas as well as some substantial acceleration of new partnership arrangements such as innovations in public-private-social entrepreneur partnerships and in expanding support to countries and regions, with a particular focus on Africa but also fostering south-south learning between Asian, African and Latin American partners.

1 INTERMEDIATE DEVELOPMENT OUTCOMES (IDOS), THEORIES OF CHANGE, AND IMPACT PATHWAYS

Through extensive engagement with researchers across the CRP and with partners, A4NH developed a results framework (**Figure 1**) that builds on existing evidence and experience about how agriculture can contribute to better nutrition and health outcomes. Agriculture improves **diet quality (IDO 1)** by increasing the supply and demand and reducing the cost of nutritious foods among the poor. Agriculture can also **reduce exposure to disease (IDO 2)** by improving food safety and the management of agricultural intensification processes. There is growing evidence that gender discrimination is a fundamental driver of poor nutritional outcomes. Because women play important roles in production and along value chains, agriculture has the potential, to date largely untapped, to **empower women and poor communities (IDO 3)** to make better food-, health- and care-related decisions for themselves and their families. Finally, nutrition-sensitive development by definition requires an enabling environment characterized by effective, evidence-based **cross-sector programs, policies, and investments (IDO 4).**

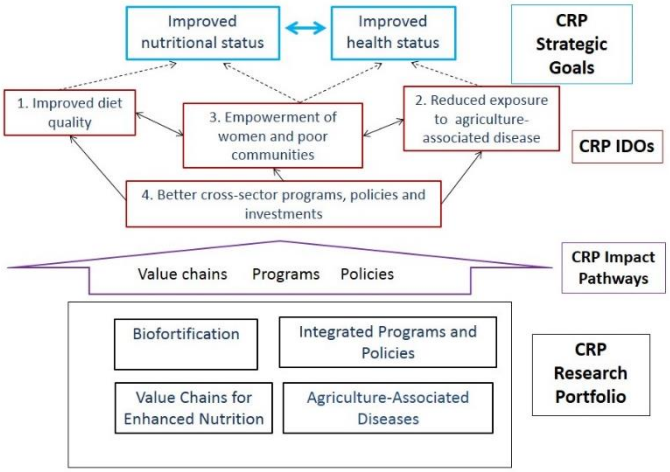

Figure 1. A4NH Results Framework

Three of our four IDOs (1, 3 and 4) contribute to CRP common IDOs on nutrition, gender and policies. For the common nutrition IDO, we have used this framework as the basis for work with the IDO Design Team and with individual CRPs to help define the IDO, identify indicators, and integrate agriculture-gender-nutrition linkages into CRP impact pathways and theories of change.

Table 1 presents the current status of A4NH indicators, metrics and targets for each IDO. The process of defining outcomes and targets has led to significant learning within A4NH and helped researchers with different thematic and disciplinary backgrounds to understand better how nutrition and health outcomes are measured and how agriculture can influence them. IDO indicators and targets will help researchers to focus attention on outcomes, communicate the size and scale of planned impacts support ex-ante analyses, and enable monitoring and evaluation to refine or modify impact pathways and theories of change to guide research, capacity building and partnership activities in the CRP.

Through its three main delivery pathways – value chains, integrated programs, and policies and investments (**Figure 1**) – A4NH research outputs will translate into outcomes towards achieving the IDO targets, either individually or, usually, in some combination. These pathways involve important partner groups and development processes that A4NH research needs to engage. While impact pathways have provided a useful platform for describing what research, partnerships and capacities A4NH should support, we also need to better understand how change occurs, how to measure progress and how we are contributing to it. Thus in 2013, we began investing in developing more detailed theories of change (ToCs) to guide how our research is planned, implemented and evaluated. The ToCs, which are being co-developed by A4NH staff and partners

Table 1. Indicators, metrics and targets for A4NH IDOs[†]

IDO	Suggested indicator(s)	Metrics and measurement issues	Status of preliminary targets to which A4NH, along with many partners and other stakeholders, would contribute to achieving:
IDO 1 Diet quality	Dietary diversity	Individual dietary diversity score in women and other adults;[1] prevalence of minimum dietary diversity for infants and young children (6-23 months of age)[2] *This indicator is regularly collected in CRP-implemented surveys. At the country level, minimum dietary diversity is regularly collected by DHS, and women's dietary diversity is being considered for addition to DHS in the future due in part to efforts of IFPRI/A4NH.*	We estimate that improving the cost-effectiveness of integrated programming models can, at scale, increase women's mean dietary diversity by 1 food group and prevalence of children minimum dietary diversity by 10%. Work is ongoing to estimate the number of beneficiaries who could be reached working through program implementers. The Value Chains for Enhanced Nutrition flagship will also contribute to improving women's dietary diversity, however more work is needed to estimate the size of potential impacts, many of which will be through the other CRPs with which this flagship works, e.g., Grain Legumes, Dryland Cereals, FTA, and the systems CRPs.
	Dietary intake of select micro-nutrients	Individual dietary micronutrient intake for women and children; prevalence of inadequate micronutrient intakes *Micronutrient intake will be estimated from food consumption data. Food consumption data are regularly collected in CRP-implemented surveys, and are also available from secondary sources, usually at household but sometimes at individual level.*	HarvestPlus estimates that 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. In target countries, high-iron crops will provide 45-60% of daily iron needs of target consumers, an increase of 14-20% 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 will provide 25-100% of daily vitamin A needs; commonly grown varieties provide none.[3] These estimates will be incorporated into estimates of overall impact on dietary micronutrient intakes.
IDO 2 Reduced exposure to agriculture-associated diseases	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 *In the absence of secondary data sources for this indicator, we propose to use primary data collected by CRPs, possibly combined with other secondary data on, e.g., food consumption.*	In their joint work on food safety in ASF value chains, LaF and A4NH estimate that exposure to priority pathogens in ASF value chains will be reduced by 5% by 2020.[4] The benefits of reduced exposure will be felt by: 2 million mutton and goat consumers in Ethiopia and Mali; 217,500 dairy consumers in Tanzania and Nicaragua; 5.75 million pork consumers in Uganda and Vietnam. Targets for joint work on aflatoxins are still being defined. Bio-control technologies are targeted for delivery at scale in 9 countries in Africa by 2019 and work is underway to estimate potential impacts on aflatoxin exposure among A4NH target populations. We propose to work with Grain Legumes to estimate the impact on aflatoxin exposure of their targeted 10% increase in consumption, particularly by women and children, of low-aflatoxin groundnut in 2 countries in Asia and 10 countries in Africa.
	Direct exposure to pathogen/ hazard in agri-food system (zoonotic disease)	Prevalence of target disease in animal population on farm, at slaughter, at market Reduction in disease transmission opportunities	TBD

[1] Adult dietary diversity is measured using a 9 food group scale. Work is underway to establish a minimum dietary diversity score.
[2] Minimum dietary diversity is defined as the proportion of children 6–23 months of age who receive foods from four or more food groups; indicator used by the World Health Organization
[3] For some crops and/or countries, these targets are shared with the CRPs on MAIZE and Roots, Tubers and Bananas (RTB)
[4] Estimates provided by the CRP on Livestock and Fish (LaF)

IDO	Suggested indicator(s)	Metrics and measurement issues	Status of preliminary targets to which A4NH, along with many partners and other stakeholders, would contribute to achieving:
IDO 3 Women's empowerment	Degree of participation in decisions related to food, nutrition, and health	Scale, as measured by the perception of the individual *Self-reported measures of participation in decision-making in a wide range of areas are regularly collected in CRP-implemented surveys. At country level, DHS includes measures on decisions related to health, household expenditure and women's mobility.*	Targets for WEAI and for other empowerment indicators are still being defined, in collaboration with PIM and the working group on the common gender IDO. As an example, the USAID preliminary target for WEAI is to increase the value of the aggregate index by 10% in 5 years in Feed the Future target zones.
	Women's empowerment in agriculture index (WEAI)	Value of the index and main sub-indices *WEAI and its components are being used in many research and development projects including in CRPs. To date it is only available at the national level for Bangladesh.*	Countries where A4NH's work on women's empowerment is most advanced and most likely to contribute to changes in IDO indicators are Bangladesh, Burkina Faso, India, Tanzania, Zambia
IDO 4 Cross-sector policies, programs, and investments	CRPs, development or public health programs and/or donor investment portfolios influenced by A4NH outputs	# of countries, programs, investments (or donors) using evidence and methods developed by A4NH; type and degree of influence (qualitative assessment) *Policy change can be documented with secondary sources; type and degree of influence would be measured by CRP using theory-based, rather than statistical, approaches.*	A4NH research outputs and related activities contribute to: ***Increasing the share of nutrition-sensitive investments among select donors and lenders***. For IFAD, for example, the target is to increase the share of nutrition-sensitive investment to 20% of investment projects and 30% of country strategies. ***Mainstreaming nutrition in conventional crop breedin***g, measured as "biofortification as share of conventional breeding for staple crops in CGIAR centers." Targets for 2018: IRRI-35%; CIMMYT-35% for wheat and 15-20% for maize; IITA-50% maize and 60% for cassava; CIAT-40% for cassava and 60% for beans; ICRISAT-50-55% for pearl millet in Asia. Similar targets will be explored for NARS breeding programs. ***Nutrition- and health-sensitive policy change*** in at least 2 international/regional organizations responsible for policies or standards and at least 8 country policy processes in Africa, 3 in Asia (including state level), and 1 in LAC
	National, state or local policies or policy processes influenced by A4NH outputs		

†Abbreviations used in this table, not otherwise explained. ASF=animal source foods; DHS=Demographic and Healthy Surveys; FTA=Forests, Trees and Agroforestry; IFAD=International Fund for Agricultural Development; LAC=Latin America and the Caribbean; LaF=Livestock and Fish; PIM=Policies, Institutions and Markets; RTB=Roots, Tubers and Bananas; USAID=United States Agency for International Development

and which will be made publically available, will also provide the broader research and development communities with a deeper understanding of the impact-oriented development processes in which we are collectively trying to catalyze change.

For research in an early or "discovery" phase, such as in the Value Chains for Enhanced Nutrition flagship, work on ToC will generate frameworks for better understanding target systems and identifying potential entry points for research and for partnership. ToCs for research in the "pilot testing" phase will focus on building an evidence base to test the critical assumptions behind the hypothesized links in the pathway from output to development outcomes. Examples of outputs at this stage for which ToCs are being developed include trader-based schemes for improving food safety in informal markets for nutritious and highly-perishable foods (with the CRP on Livestock and Fish), farm-level interventions to mitigate aflatoxins (improved varieties and practices, bio-control) in key staple crops such as maize and groundnuts (with the CRPs on Grain Legumes and MAIZE), and an approach for strengthening evidence-based, cross-sectoral policy engagement. For research in "proof of concept/scaling up" phases, ToCs will be used as the basis for assessing impact of research at scale using theory-based approaches.[5] Examples include dissemination of biofortified crop varieties in target countries as part of HarvestPlus' delivery phase, and the uptake and use of evaluation findings by international NGOs implementing integrated agriculture-nutrition programming. As the A4NH portfolio evolves, new ToCs will be developed and existing ToCs will be updated to reflect new experience and evidence.

2 FLAGSHIP PROJECTS

In Phase 1 (2012-14 and the planned 2015-16 extension), A4NH has a portfolio of research areas to improve agriculture's contribution to nutrition and health. The flagships **Value Chains for Enhanced Nutrition (VCN)**, **Biofortification** and **Integrated Programs and Policies (IPP)** focus primarily on improving diet quality while **Agriculture-Associated Diseases (AAD)** focuses on reducing exposure to food-borne disease and to diseases with important agricultural risk factors. All four contribute to the empowerment of women and communities and to supporting an enabling policy environment. Gender considerations are critical for nutrition and health impacts and are integrated across the portfolio. These are currently well-addressed in the IPP flagship, and are being strengthened elsewhere. Locations of A4NH research projects can be found here.

A4NH flagships are designed around three main types of impact pathways – value chains, integrated programs, and policies and investments – and are supported by cross-cutting gender and evaluation research. A4NH's research on opportunities and risks in value chains cuts across and links the VCN, Biofortification, and AAD flagships. Rigorous impact evaluation methods complemented by operational research to understand program impact pathways have been developed by the IPP flagship and are used across the Biofortification, AAD and IPP flagships. Similarly, the gender research capacity developed under the IPP flagship supports all other flagships. For the policy pathway, the IPP flagship focuses on broader cross-sectoral policy process research that supports all four flagships; in turn, it is expected that over time, each individual flagship will develop more specific policy relevant knowledge and evidence that researchers and partners will, using tools and methods from the IPP flagship, feed into specific policy processes.

[5] White, H. and D. Phillips. 2012. *Addressing attribution of cause and effect in small n impact evaluations: towards an integrated framework*. International Initiative for Impact Evaluation, Working Paper 15. New Delhi, India: International Initiative for Impact Evaluation c/o Global Development Network.

As noted in the previous section, research in the four flagships is at different stages of development. **Table 2** describes the evolution of the flagships from pre-A4NH through the current 3-year phase to the 2-year extension period.

Value Chains for Enhanced Nutrition (VCN) began in 2012. Its initial activities include developing evaluation frameworks and methods, and providing initial seed grants to pilot novel technical and institutional arrangements for improving nutrition through value chains with public and private sector partners. In 2015-16, researchers will apply and adapt value-chain assessment tools with partners to understand and enhance demand for nutritious foods, focusing on consumption of nutritious foods by the poor. The value chain focus will be on perishable nutritious foods in target value chains, which include pulses (including soybeans), fruits and vegetables, and animal source foods (ASF). Along those value chains, we assess the critical constraints that prevent access to and consumption of nutritious foods by the poor, focusing on factors related to the supply, marketing and demand for such foods. We will then work through either technical issues in the production and processing of foods, institutional arrangements (social enterprises, public-private partnerships), and/or policy innovations to increase the production and consumption of nutritious foods, particularly for women and young children. In 2015-16, we plan to develop a new research cluster in nutrition-sensitive landscapes, which will expand the value chain focus on nutritious foods to encompass the broader concept of healthy and sustainable diets in specific locations. This new initiative addresses the agriculture-nutrition-environment nexus with multiple partners and CRPs including the CRP on Forests, Trees and Agroforestry (FTA) and the three systems CRPs. Ecosystem services such as utilization of agro-biodiversity for dietary diversification serve as the A4NH entry point for this landscape-based approach.

The most advanced flagship is **Biofortification**, which began the first of a five-year delivery phase in 2014. In 2015-16 there will be a rapid expansion of delivery-at-scale research and development and inclusion of Ethiopia as the ninth target country. A recent MOU with World Vision marks the first of several anticipated major partnerships to scale up biofortification in additional expansion countries. In 2015-16, groundwork will be laid to support overall goals of the delivery phase: mainstreaming high-levels of micronutrients into multi-dimensional breeding programs of the CGIAR and partners; proven nutritional efficacy and public health acceptance; international regulatory agreement on biofortification; and integration of biofortification into national and regional policies and investment plans with successful scale-out in nine target countries and significant adoption and consumption of biofortified foods in expansion countries.

Research in **Agriculture-Associated Diseases (AAD)** looks at food safety and risks from other agriculture-related diseases, including both emerging risks and long-standing disease burdens in poor communities. The food safety research builds on some good quality long-term research in dairy value chains, particularly for informal markets, and in control of aflatoxin risks. In 2015-16, we plan to expand food safety research, particularly in aflatoxin control and safety of perishable food products (e.g., milk, meat, fish, fruits and vegetables), informed by a CRP-commissioned external evaluation in 2014. In the agricultural disease risks cluster, current research on emerging and endemic zoonoses is a mixture of discovery and proof of concept phases. In 2015-16, we plan to adjust the research focus and approach, based on research results and opportunities and on potential impact pathways. One focus will be on emerging disease risks associated with the intensification of systems (e.g., ecosystem interfaces, urbanization, irrigation and grey water). A second focus could be on agriculturally important neglected diseases, linked to larger community development efforts.

Table 2. Flagship contributions to A4NH†

Flagship 1: Value Chains For Enhanced Nutrition (VCN)			
Research Clusters	**2012-14 A4NH**	**2015-16 A4NH**	**Partner CRPs**
VCN-interventions: value chain interventions for nutritious foods	Research framework; nutrition-sensitive value chain pilot studies on technical or institutional innovations for nutritious foods	Expand research in specific value chains, such as pulses and grain legumes, fruits and vegetables, ASF, and complementary foods for young children (e.g., millet)	AAS, LaF, Grain Legumes, RTB, Dryland Cereals
VCN-assessments: assessing value chains for nutrition – understanding demand and supply constraints; assessing impact on specific outcomes	Assessment of different types of value chains, at different entry points (inputs, processing outputs), to enhance consumption of nutritious foods	Assess the potential of new institutional arrangements (public-private partnerships, dedicated value chains, social enterprises, ICT enabling) to deliver impact on a variety of outcomes including income, women's empowerment (where relevant) and nutrition	PIM
VCN-landscapes: nutrition-sensitive landscapes	*New in 2015-2016*	Framework and tools for multi-disciplinary research across agriculture-nutrition-environment and health; sustainable food systems and diet quality improvement and assessment	Dryland Systems, Humid Tropics, AAS, FTA
Flagship 2: Biofortification **Pre-A4NH.** Priorities and micronutrient targets; breeding pipeline of biofortified varieties; bioavailability, nutritional efficacy, ex-ante economic, and feasibility of delivery studies			
Research Clusters	**2012-14 A4NH**	**2015-16 A4NH**	**Partner CRPs**
Biofortification-breeding: High-yielding micronutrient enhanced varieties	Additional breeding of biofortified varieties; multiplication of released varieties; breeding research for some stage 2 crops (vitamin A banana/plantain, iron Irish potato, iron/zinc lentil, iron/zinc sorghum, and iron cowpea)	Continue breeding of biofortified varieties; expand multiplication of released varieties; expand testing for promising stage 2 crops; develop new methods for selection of multiple micronutrients and integrated breeding approaches with the application of genomic tools; develop recommended practices for production and processing of biofortified cultivars	GRiSP, MAIZE, Grain Legumes, Dryland Cereals, RTB, Wheat
Biofortification-nutrition: Bioavailability and nutritional efficacy; cost-effectiveness	Continued bioavailability and nutritional efficacy studies; ex-ante cost effectiveness studies	Conduct additional nutritional efficacy studies focusing on multiple micronutrients and impacts during the first 1,000 days; conduct population studies on micronutrient levels as delivery progresses	
Biofortification-delivery: Operational research and delivery at scale	Delivery plan; establish target country teams; gender research reviewed and strengthened; M&E system established; communications and public relations strategy designed; policy and regulation engagement; work with development partners in spillover countries; engagement with food companies	Expand delivery programs in 9 target countries and adaptation based on M&E system; engage with policy makers and regulators on investment opportunities and standard setting; develop strategies for engagement with NGOs and private sector food companies; work with development partners leading biofortification efforts in additional countries; evaluate cost-effectiveness of different delivery models	GRiSP, MAIZE, Grain Legumes, Dryland Cereals, RTB, Wheat

†Abbreviations used in this table, not otherwise explained. AAS=Aquatic Agricultural Systems; ASF=animal source foods; CAADP=Comprehensive Africa Agriculture Development Programme; CCAFS=Climate Change, Agriculture and Food Security; FTA=Forests, Trees, and Agroforestry; GRiSP=Global Rice Center Partnership; ICT=information and communications technology; LaF=Livestock and Fish; M&E=monitoring and evaluation; NGOs=non-governmental organizations; OSP=orange sweet potato; PACA=Partnership for Aflatoxin Control in Africa; PIM=Policies, Institutions and Markets; PRA=participatory rural appraisal; RTB=Roots, Tubers, and Bananas; SUN=Scaling up Nutrition; WLE=Water, Land and Ecosystems; WTP=willingness-to-pay

Flagship 3: Agriculture-Associated Diseases (AAD) **Pre-A4NH.** Identification and testing of aflatoxin control technologies (bio-control, storage, breeding, diagnostics and integrated control in value chains); food safety in informal and formal dairy value chains (East Africa and South Asia)			
Research Clusters	**2012-14 A4NH**	**2015-16 A4NH**	**Partner CRPs**
AAD-food safety, aflatoxin	Efficacy testing in 2 countries; production facility for scaling out aflasafe™; testing of pull mechanisms for aflatoxin control in maize feed and food chains; scoping studies of aflatoxin risk and control in India; studies on aflatoxin risks, mitigation for animal feeds, and consumer WTP; diagnostics (e.g., rapid field tests)	Expand bio-control product development and testing across 8 African countries and 2 South Asian countries; support policy makers and value chain actors at regional and national levels on risks and mitigation options; stronger evidence on links between aflatoxins and stunting; pilot test control options for aflatoxins in animal feed; test rapid field diagnostics and pilot test control programs in high-risk areas	Grain Legumes, MAIZE, LaF
AAD-food safety, perishables	Rapid assessments of food safety in ASF value chains (with nutritional quality); synthesis of PRA cases; evaluation of past food safety interventions and plans for scaling out; pilot testing of food safety interventions in ASF value chains	Expand food safety research (fish in Bangladesh and Zambia; vegetables associated with wastewater); engage private sector on arrangements for food safety supporting participation of poor; strengthen burden and cost-benefit analyses	LaF
AAD-disease risks	Pathogen change and disease risk assessment for arbo-viruses supporting country risk mitigation; epidemiological studies of zoonoses in rural, peri-urban and urban areas; ecohealth/One Health approaches by partners supported	Refresh AAD research strategy; new collaborations on disease risk mitigation in peri-urban and urban agriculture; studies to assess agriculture intensification health risks, including gender dimensions and endemic zoonosis control in community development	LaF, WLE (proposed), CCAFS
Flagship 4: Integrated Programs and Policies (IPP) **Pre-A4NH.** Initial portfolio of evaluations of nutrition-sensitive agriculture programs(homestead food production systems, local diets; sustainable delivery of OSP) and other nutrition-sensitive development programs involving other sectors such as health, social protection and education; initiation of two knowledge, program and policy platforms, Transform Nutrition and Leveraging Agriculture for Nutrition in South Asia (LANSA)			
Research Clusters	**2012-14 A4NH**	**2015-16 A4NH**	**Partner CRPs**
IPP-nutrition-sensitive agriculture: evaluation and strengthening of nutrition-sensitive agriculture programs	On-going evaluations of nutrition-sensitive agriculture programs with implementing partners (international and local NGOs, and gov'ts), e.g., homestead food production systems, local sustainable diets, OSP linked to health care, programs for HIV-affected communities; expansion of evaluations in multi-country program in Africa	Most evaluations will continue through extension period; analyze and synthesize results on program delivery and impact in collaboration with program implementers; disseminate findings and lessons learned widely; share methods and approaches for evaluation, including strong gender research methods; explore opportunities for scaling-out results through other implementers	PIM, RTB
IPP-nutrition-sensitive development: evaluation and strengthening of multi-sectoral nutrition-sensitive development programs and of scaled up nutrition-specific programs	On-going evaluations of multi-country programs with implementing partners; new evaluations of social protection and health interventions for nutrition outcomes; multi-country evaluation of health-based programs in West Africa to link the prevention and control of severe acute malnutrition to the prevention of stunting	Almost all evaluations will continue through the extension period; share program delivery evaluation results with implementing partners to ensure improved program implementation and service delivery and potential for impact; expand program intervention evaluations to include a greater focus on maternal and newborn health and nutrition and to reaching adolescent girls through multi-sectoral programs	
IPP-cross-sectoral processes: developing tools, methods and approaches for understanding, influencing and evaluating cross-sectoral processes	Develop tools, methods and approaches for understanding, influencing and evaluating cross-sectoral processes; systematic review of gender in multi-sector nutrition outcomes	Apply tools, methods and approaches in selected contexts/countries to better understand how to influence cross-sectoral processes; expand partnership platforms in different regions of Africa together with CAADP, PACA and SUN	PIM

For **Integrated Programs and Policies (IPP)**, on-going work on the evaluation and strengthening of different models of nutrition-sensitive agriculture programs and of other integrated, multi-sectoral development programs aimed at improving nutritional outcomes during the first 1000 days (time between a woman's pregnancy and her child's 2nd birthday) continues to expand due to a large demand for such evidence. These evaluations are expected to generate a rich body of evidence with several research outputs coming out between 2015 and 2017, throughout and beyond the extension phase. Initial efforts to synthesize and disseminate the evidence generated and to facilitate the translation of results into lessons learned for governmental, non-governmental and United Nations program implementers and program investors will be made with a view to ensuring the scale-up of the most effective (and cost-effective) nutrition-sensitive program models.

Work on cross-sectoral policy process research is at an earlier stage of development and currently focuses on reviewing evidence, developing frameworks, tools and methods, and setting up baseline data collection. We plan to first, expand coverage of this work during the 2015-16 extension phase, from our current focus on South Asia into new work in Eastern/Southern and Western/Central Africa and with 1-3 focal countries in each African sub-region. Second, we will apply the tools, methods and approaches developed to date to different country contexts in order to document policy change and better understand how to influence cross-sectoral policy processes in future A4NH work. This policy research will be distinctive in the CGIAR, where research generally focuses on policy analysis rather than on understanding how evidence about agriculture, nutrition and health linkages can be used to create and sustain an enabling environment for improving the design and implementation of nutrition- and health-sensitive policies and investments (Gillespie et al., 2013). In Africa, this research will support broader efforts in agriculture through the Comprehensive Africa Agriculture Development Programme (CAADP), nutrition by Scaling Up Nutrition (SUN), and country investment programs supported by international development banks initiated during the 2015-16 extension period.

Across the A4NH research portfolio, we will be making a much more deliberate effort to emphasize health outcomes and link with health systems (*Health in A4NH*). Links with health are strong in the AAD flagship and will be strengthened in the other flagships.

3 GENDER

Achievements in integration of gender in research

A4NH will conduct **cross-cutting strategic research** on the impact of agricultural interventions on women's empowerment and nutrition- and health-related outcomes. We plan to build on our strong core capacity in gender research, expanding in several areas. Work on validating indicators and targets for assessing outcomes of interventions on women's empowerment will continue and expand to include more work on the impacts of interventions on women's time and on control of income and assets, two key pathways that mediate impacts of agriculture on nutrition and health outcomes. Specific attention will be paid to interventions with a value-chain focus, which past research has shown to be challenging in terms of delivering benefits and avoiding harm to women, and to testing strategies to enhance synergies and mitigate tradeoffs between different indicators of empowerment, reflecting the multiple pathways through which agriculture influences gender and nutrition and health outcomes. Work on empowerment will be conducted in collaboration with the CRP on Policies, Institutions and Markets (PIM) and the CGIAR Gender and Agriculture Research Network. We will also look at the implications of expanding the target population of interventions to include not only women of reproductive age, but also adolescent girls (see link to IPP flagship),

as a way to improve the impact of interventions on both women's long-term health as well as child nutritional outcomes.

An inventory of gender research in A4NH is currently being developed. As part of the inventory, **degree of integration of gender into research** was assessed. While results are still being analyzed, preliminary findings confirm variability across flagships and participating centers. Collection of sex-disaggregated data was reported to be common across A4NH participating centers – consistent with the fact that many IDO indicators are defined by sex and age - however the data are not always used to diagnose constraints nor to inform research plans. The strategic gender review currently being conducted in Biofortification is expected to make concrete recommendations to improve integration of gender in research and in delivery.

In response to the findings, and to the difficulties encountered in obtaining reliable data about gender for the inventory, changes have been made in the way A4NH collects information about gender integration in research. In the future, project descriptions will include an explicit statement on whether, how and by whom gender is being addressed and if not, why not. This information will be used both to identify and prioritize specific areas where projects can be supported to improve gender research, and also to monitor performance.

In addition to its own research, A4NH has an important role to play in **supporting research on gender-agriculture-nutrition linkages in other CRPs with nutrition IDOs**. In 2013, A4NH convened a workshop with the gender and evaluation focal points of CRPs with nutrition IDOs. The workshop proposed common approaches to evaluating nutrition across CRPs and a common framework for considering gender in agriculture-nutrition impact pathways and theories of change. A range of qualitative and quantitative research tools were presented, with applications to agriculture-gender-nutrition issues. Annual workshops will continue in 2015 and 2016 to further this shared agenda, complemented by a blog to be launched in May 2014, and increased support to cross-CRP research on gender-nutrition linkages.

Gender in the workplace

Women are well represented on A4NH's governance body, the Independent Advisory Committee (IAC), and on its management committee, the Planning and Management Committee (PMC). Women are over-represented among the Center Focal Points and the Program Management Unit (**Table 3**). We plan to increase participation of people from developing countries in program governance and management by expanding the size of the IAC by two to include an additional member from Africa and from Asia. We will also recruit a representative of an African partner organization for the PMC and expand partner participation in our bi-annual center and partner focal point meeting.

Table 3. Participation in A4NH governance and management

	% women	% from developing counties
Independent Advisory Committee, 6 members	33%	33%
Planning and Management Committee, 8 members*	50%	13%
Center Focal Points, 9 members	78%	44%
Program Management Unit, 7 members	86%	29%

**one position currently vacant; total includes the CRP director*

4 PARTNERSHIPS AND REGIONAL COLLABORATIONS

The four A4NH partnership categories (**Figure 2**) have been consistently maintained. The A4NH partnership strategy is based on the reality that A4NH must partner with and add value to broader agriculture development efforts and link these to nutrition and health initiatives through the impact pathways of value chains, programs and policies. Capacity sharing and development is embedded in the partnership strategy. A4NH works with other research and capacity development organizations to share its knowledge and to learn from others. As partnerships are grounded in impact pathways and theories of change, we make explicit plans for capacity sharing and development as part of our plans for achieving nutrition and health outcomes and impacts at scale. Proposed changes to the IAC and PMC will help to align better the A4NH research portfolio to developing country priorities and facilitate identification of key partnerships.

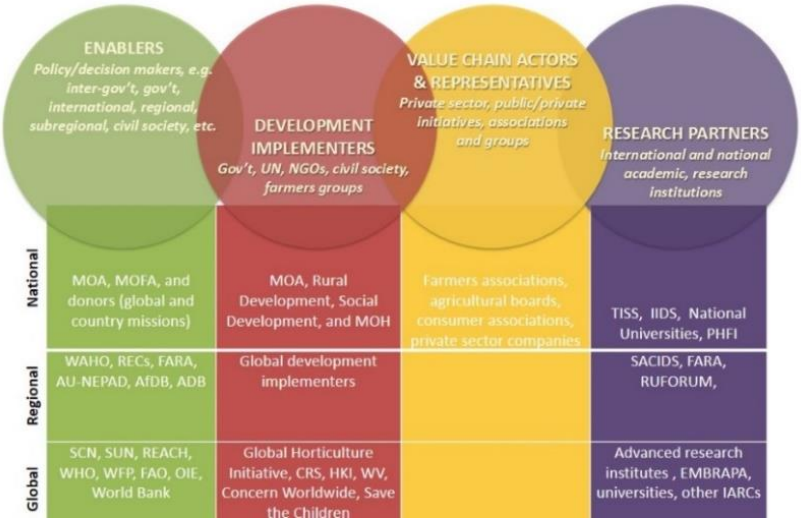

Figure 2. Strategic partners in A4NH impact pathways

From a nutritional quality and food safety perspective, our partnership focus with **value chain actors** is on those working on nutrient-dense non-staples and micronutrient-enhanced staples, with particular emphasis on improving nutrition for women and children. A small number of pilot studies with private partners, such as vegetable seed companies, and public partners, such as other CRPs and The World Vegetable Center (AVRDC), and national agricultural research institutes, have started with nutrient-dense foods (milk, fish, vegetables) which could expand upon on our newly established research capacity in the VCN flagship. A key linkage partner is the Global Alliance for Improved Nutrition (GAIN). In Biofortification, delivery systems for micronutrient enhanced staples are being ramped up through support to extension services as well as partnerships with both agri-business (seed and planting material adoption) and food processors in both public and private distribution networks.

We have learned that smarter and more focused engagement with the **private sector** is needed. Within the CGIAR, the value-chain perspective of A4NH is to assess back along the chain from consumption and food processing. This leads us to focus value-chain partnerships with private companies, such as Bühler, DSM and Firmenich, which link agricultural supply chains with food companies. We are exploring models with these companies and business school partners for supporting small and medium sized food companies for improved cereal-pulse foods in South Asia, and plan to seek funding to support such a public-private platform in 2015-16. Our challenge is leveraging the private sector's capacity, but requirement for profit, with our interest in targeting support to poor consumers, particularly women and children. We also plan to expand partnerships with the World Food Program and other providers including hybrid value chains with social entrepreneurs in targeted value chains for these beneficiaries. Since A4NH started, demand for food safety, including research, has grown dramatically. The partnership strategy for food safety in value

chains is similar, using public-private partnerships, particularly the World Bank's Global Food Safety Partnership, as a vehicle, starting with initial studies in Zambia.

A critical group of **partners for implementing** nutrition-sensitive agriculture and other development interventions for nutrition and health, leading to scaling out, are **NGOs**, whether national, such as BRAC, international, such as Helen Keller International (HKI), Concern Worldwide, and World Vision, or platforms and coalitions of international and national program implementers and communicators, such as Alive and Thrive, SPRING (Strengthening Partnerships, Results, and Innovations in Nutritional Globally) and TOPS (Technical and Operational Performance Support). There are some good and long-standing partnerships in which research is embedded in implementation of projects (e.g. HKI, Concern). These have helped in evaluating and shaping evidence on both program implementation and impact across a number of interventions to improve nutrition (agriculture, food security, health, care, gender, social protection) and on co-learning that will be essential to scaling-out with others. In 2015-16 we will seek to expand partnerships and the reach of the lessons learned based on work we are doing on impact pathways and TOCs with TANGO International in 2014. We are exploring expanding co-learning opportunities to other NGO partners, particularly to look at synergies of co-location of additional complementary interventions such as water and sanitation and early child development, to the current research portfolio.

International support to improving nutrition and health impacts is grounded in **country ownership of implementing programs and enabling actions** through better policies and smarter investments. A4NH focuses its research in Africa and South Asia and also has activities in Latin America and to a very limited extent in Central Asia. In **Latin America**, Embrapa coordinates regional activities, working closely with an expanding group of national programs and CGIAR Centers based in the region and linked to regional organizations such as the Pan-American Health Organization (PAHO). Research focuses on support to the development and use of biofortified crops in national food baskets. In **South Asia**, A4NH is involved in some broader research across the region in two consortia, LANSA (Leveraging Agriculture for Nutrition in South Asia) and Transform Nutrition. There is a concentration of research in Bangladesh that cuts across all flagships with both government and BRAC being key partners in most research activities. In India, there is research in all four flagships linked with a wide range of partners (national and state governments, NGOs, research institutes, private firms and social enterprises). POSHAN (Partnerships and Opportunities to Strengthen and Harmonize Actions for Nutrition in India), an initiative to build evidence about effective actions for nutrition and support its use in decision-making, is working to strengthen relationships with various stakeholders in the nutrition landscape in India.

In **Africa**, there is a variety of research in all flagships. A cornerstone of partnerships with African countries is through two multi-country processes, CAADP and the SUN movement. CAADP is highlighting nutrition as a priority in its new 10-year plan. In 2015-16, we plan to expand support to the CAADP process by linking to the on-going ReSAKSS network that supports CAADP monitoring and evaluation, regionally and nationally. PACA (Partnership for Aflatoxin Control in Africa), based at the African Union (AU), provides a continental program for enabling aflatoxin control. A4NH researchers at IITA sit on the PACA management committee and provide an entry point for technical and policy support, which we will further strengthen during 2015-16. In 2014, we are working with the Swedish University of Agricultural Sciences (SLU) to better understand capacity across Africa for agriculture, nutrition and health research to help inform our future partnerships. Within countries, we will work with processes, often coordinated by NGOs or UN agencies, that link CAADP and SUN. For example, in partnership with the AU and FAO in Ethiopia, Kenya, Tanzania and Uganda, we are working to strengthen agriculture-nutrition linkages and the options for nutrition-sensitive agriculture investments in countries. We are also working to better coordinate research

within countries. For example in Zambia, we are linking, the scaling-up of orange maize with improving nutrition in the sites of the CRPs on Aquatic Agricultural Systems (AAS) and FTA, and with support to integrated district programs linked to SUN and linked to food safety research on aflatoxins and livestock and fish value chains (linked to the Global Food Safety Partnership). Avenues are being explored for south-to-south exchanges between Brazil and Kenya and the inclusion of Kenya in Brazil's food purchase program. We will explore linkages with the African Orphan Crop Consortium (AOCC) to better understand and exploit the potential of indigenous crops to improve diets.

In supporting countries and looking for opportunities to link research to impact, **development banks** are critical. In 2013, we initiated a relationship with IFAD with the secondment of a scientist to support increased nutrition capacity in the Policy and Technical Advisory Division. We are also providing research inputs and support to design and evaluation and gender research to World Bank teams in different countries. Clearly, IFAD and the World Bank are in a strong position to help make research knowledge, technologies and evidence influence country policy and investment discussions.

In **research partnerships**, we are building relationships with a number of advanced research institutes (University of London, SLU, Wageningen and a number of U.S. universities through the USAID Innovation Labs for Nutrition, Horticulture, Peanut and Mycotoxin, Legumes, and Livestock and Climate Change. With the University of London's LCIRAH initiative (Leverhulme Centre for Integrative Research on Agriculture and Health), we are jointly developing an agriculture, nutrition and health academy to share research more quickly globally and to mentor the next generation of Africa, and Asian researchers in this area. Given the importance of evidence and metrics for monitoring and assessing progress towards IDOs, we are working closely with Harvest Choice, long-term health panel data collectors (e.g. Community Empowerment Lab in India, Wellcome Trust and CDC in Kenya), FAO, World Bank and others to connect agriculture, nutrition and health data and analyses.

5 PHASED WORK PLAN COVERING THE 2 YEAR EXTENSION PERIOD UNTIL 2016

The work plan for the 2015-16 extension period is presented by flagship and research cluster in two parts (**Table 4**). The first part represents planned and on-going work for which we have confirmed or are confident of getting restricted funding linked to maintaining a small growth in W1/W2 funding. The second part proposes additional priority research for which additional bilateral and W1/W2 funding would be required. Largest areas of growth would be in the VCN flagship, including nutrition-sensitive landscapes, delivery at scale of micronutrient-enhanced staples, food safety, and country partnerships in Africa.

Table 4. Major outputs, outcomes, and impacts for each flagship and cross-cutting research area in A4NH†

Clear cells indicate basic activities and light blue cells indicate expanded activities and budget

AREA OF RESEARCH	$ MILLION BUDGET (W1/W2 FUNDING)
FLAGSHIP: VALUE CHAINS FOR ENHANCED NUTRITION (VCN)	**$28.4 M ($17.6 M)**
Cluster: Value chain interventions for nutritious foods (VCN-interventions)	
– Identify entry points and design value chain interventions, including nutrition knowledge and consumer behavior and emphasizing gender, with actors in vegetable, fruit, pulses (including grain legumes), milk and meat value chains – Complete at least five pilot studies on improving supply, quality and/or price of nutritious foods (fruits/vegetables, pulses, ASF products) • **Outputs**: Typology of interventions and entry points, including geographical study suggesting types of appropriate interventions for specific countries or regions; evidence generated from pilot studies on impacts of value chain interventions and scaled up potential • **Outcomes**: Evidence used to target additional work on value chain interventions using appropriate entry points and to strengthen the design of value chain interventions for nutritious foods	$7 M ($4.4 M)
➢ Complementary foods for young children – public-private partnerships, feasibility, diet quality and micronutrient evaluations; understand roles of policies, markets and agricultural research in contributing to nascent over-nutrition problem in some LDCs; three additional ongoing or completed impact evaluations on nutritious crops (fruit/vegetables, pulses, ASF products)	$5 M ($3 M)
Cluster: Assessing value chains for nutrition from demand to supply (VCN-assessments)	
– Develop package of gender and nutrition methods for assessment and testing of nutritional quality and food safety interventions – Generate evidence on the impacts and cost effectiveness of dedicated value chain projects (e.g., school feeding) on consumption of nutritious foods, – Provide technical, marketing and policy support for food innovations by SMEs through a pulse innovation partnership with firms – Develop initial impact evaluation of interventions including behavioral components on consumption of nutritious products, in northern Ghana • **Outputs**: Tools produced for assessing role of gender in value chain interventions focused on nutrition; knowledge created from the pulse innovation partnership to understand how to develop further partnerships; evidence generated on specific methods of delivery of nutrition foods (e.g. school feeding); impact evaluation results from soy value chain intervention in northern Ghana • **Outcomes**: New partnerships created, tools and evidence used by researchers and practitioners to design additional projects that can achieve better results	$6.4 M ($3.8 M)
➢ Develop additional partnerships modeled on the pulse innovation partnership for marketing innovative inputs/outputs associated with VCN; conduct additional evaluations of value chain interventions and assessments of pulse, vegetable and/or milk value chain innovations including technical (IT) and institutional innovations	$6.4 M ($3.8 M)
Cluster: Nutrition-sensitive landscapes (VCN-nutrition sensitive landscapes)	
– Develop a research and funding plan and partnership engagement strategy for an expanded program on nutrition-sensitive landscapes – Design and implement pilot studies with system CRPs • **Output**: Strategic plan for expanded program on nutrition-sensitive landscapes in 2015-16 • **Outcome**: nutrition better integrated into FTA and systems CRPs	$0.6 M ($0.6 M)
➢ Pilot interventions to improve dietary diversity and quality in four countries in Africa and Asia with AAS and Humid Tropics; generate evidence on the relationship between ecosystem services, agricultural management and human nutrition	$3 M ($2 M)
FLAGSHIP: BIOFORTIFICATION	**$114 M ($30.6 M)**
Cluster: High-yielding micronutrient enhanced varieties (Biofortification-breeding)	
– Mainstream breeding for mineral and vitamin traits in CGIAR and national programs; develop next wave varieties • **Outcome**: Next wave varieties with full target nutrient levels for all crops in the breeding pipeline by 2016 – Support multiplication of released varieties by public and private sector partners; strengthen seed systems for biofortified varieties • **Outcome**: Biofortified planting materials available to more than 5 million farming households by 2016	$60 M ($14 M)

– Test stage 2 crops (vitamin A banana/plantain, iron Irish potato, iron/zinc lentil, iron/zinc sorghum, and iron cowpea) through CGIAR centers and NARS in additional countries • **Outcome**: Evidence generated on adaptability of biofortified varieties in new environments – Test best management practices for production of biofortified cultivars • **Output**: Package of recommended production practices for biofortified cultivars • **Outcome**: Higher retention of micronutrient content and extended shelf life for processed products	
➢ Make released varieties available to more farming households; assess adaptability of existing varieties and stage 2 crops for additional locations and environments; intensify efforts to identify QTLs and implement marker assisted selection; expand efforts to breed for longer shelf life, lower phytate levels, better micronutrient retention, etc.	$8 M ($1.6 M)
Cluster: Bioavailability and nutritional efficacy (Biofortification-nutrition)	
– Develop further evidence on biofortification per the 2013 *Lancet* recommendation to show the potential of biofortification for first 1000 days • **Outputs**: Preliminary results of efficacy studies for infant consumption of: OSP, maize, pearl millet, and wheat; preliminary results of efficacy study examining vitamin A and iron interaction	$10 M ($3 M)
➢ Assess adoption, nutrition, gender, and income outcomes that occur as a result of a biofortification intervention; measure adoption and nutrition impacts at the population level under current production and consumption conditions	$4 M ($0.8 M)
Cluster: Operational research and delivery at scale (Biofortification-delivery)	
– Expand delivery programs supported by M&E • **Outcome**: More than 5 million farming households in nine countries reached by biofortified planting materials – Engage with policymakers to strengthen cross-sectoral collaboration for biofortification at the national level across agriculture, education, and health • **Outcome**: National governments identify how biofortification can be integrated into comprehensive efforts for food and nutrition security – Engage with regulators on development of global and national standards and guidelines on biofortification • **Outcome**: Biofortification is recognized in national and international standards agencies – Develop and test demand creation mechanisms at points along value chains with value chain actors, NGOs, and private sector food companies • **Outcome**: Recommendations made to enhance demand creation for biofortified food and products, strategies developed for engagement with private sector food companies and NGOs – Engage partners in expansion countries to develop, evaluate, and disseminate biofortified staple food crops • **Outcome**: Farmers reached with biofortified crops in at least 6 additional countries – Evaluate cost-effectiveness of various delivery models (diffusion, pull mechanisms, private and public sector incentives, etc.), including differential effects for male and female farmers • **Outcome**: Recommendations made for scaling up	$30 M ($4 M)
➢ Accelerate delivery of target and non-target crops to reach additional households with biofortified crops; determine impact potential of biofortified feed and byproducts on livestock productivity; conduct additional evaluation of delivery model effectiveness, especially in relation to intra-household dynamics, food allocation, and decision making, as well as women's income, assets, and time allocation	$12 M ($2.4 M)
FLAGSHIP: AGRICULTURE-ASSOCIATED DISEASES (AAD)	**$42 M ($19.6 M)**
Cluster: Food safety – aflatoxins (AAD-food safety, aflatoxins)	
– Work by 4 CGIAR partners (IITA, ICRISAT, ILRI, IFPRI) on problem assessment and discovery, development and delivery of control options: investigating impacts of aflatoxins on human and livestock health in Kenya, Nigeria and Senegal; prevalence and exposure assessments in Zambia and Ethiopia; further development of diagnostics; risk and economic assessments in Kenya and Nigeria; laboratory testing of aflatoxin binders; field testing of mitigation strategies based on resilient varieties and good agricultural practices (GAP); expansion of biocontrol program in sub Saharan Africa; policy engagement with EAC and PACA • **Outputs**: data sets and peer-reviewed publications; methods and tools; innovative technology and practices for development and delivery at scale	$11.2 M ($4 M)

• **Outcomes**: evidence on the health and economic burdens of food borne disease; technologies and practices being used at medium scale and with potential for large scale; influence on policy context at regional level and policy implementation in Kenya and Nigeria	
➢ Assessments in Ethiopia, Zambia, Vietnam, India and Bangladesh used to prioritize investments; field testing of control options for livestock feed; more rapid expansion of biocontrol application (5 countries); expand work to design and test alternative models for improving delivery of technological and institutional innovations to reduce exposure to aflatoxins; weather based forecasting of aflatoxins in Kenya and Vietnam; support the ECOWAS and other regional policy organizations to strengthen cross-sectoral, evidence-based policy making around aflatoxins	$8.8 M ($4 M)
Cluster: Food safety – perishables (AAD-food safety, perishables)	
– Work by 4 CGIAR partners on problem assessment and, discovery, development and delivery of control options: contribute to first global assessment on attribution of food borne disease; develop rapid, low-cost diagnostic tools (for cysticercosis and others) and traceability systems; design and test alternative models for improving delivery (in pilots and at scale) of technological and institutional innovations to improve food safety in perishable value chains (in LaF value chains and in CRP systems research sites); document lessons learned on how to foster and sustain pro-poor policy and regulatory environments that improve food safety outcomes in informal markets; engage with FAO, EAC and ECOWAS on food safety policy; influence curricula development; build capacity among implementers in risk based approaches • **Outputs and outcomes** same as above in the first cluster, with focus on countries where LaF and systems CRPs work	$8.8 M ($4 M)
➢ New research activities on the 4 areas above: assessing the relations between food safety, gender and nutrition; expansion of food safety activities in value chains; assessing impact of capacity-building; formalization and incentives as a central approach for upgrading food safety in informal value chains	$7.2 M ($4 M)
Cluster: Agriculture disease risk (AAD-disease risks)	
– Mapping and understanding linkages between agricultural intensification, agro-ecosystem change, and disease emergence and persistence. Conduct assessments of the multiple burdens of agriculture- associated diseases in different countries; conduct studies on changing disease risk in peri-urban and urban agriculture; target and test control measures for emerging and zoonotic diseases, including traceability; target and test surveillance methods for zoonotic and emerging diseases • **Outputs**: data sets and peer-reviewed publications; surveillance methods; control measures • **Outcomes**: evidence informs policy and investments, tools and methods used by researchers and program implementers	$5 M ($2.6 M)
➢ Reassess agriculture associated disease risk strategy in 2015, including review current program and develop plans for research in emerging diseases associated with agricultural intensification and linking agriculturally important neglected diseases to larger community development efforts ; pilot priority assessments or control strategies identified from ongoing work in 2015-16	$1 M ($1 M)
FLAGSHIP: INTEGRATED PROGRAMS AND POLICIES (IPP)	**$38.3 M ($13.9 M)**
Cluster: Evaluation and strengthening of nutrition-sensitive agriculture programs (IPP-nutrition sensitive agriculture)	
– Work on five ongoing impact evaluations of integrated agriculture and nutrition programs in partnership with program implementers (NGOs, GO) • **Outputs**: data sets and peer-reviewed publications; methods and tools to carry out complex ag-nutrition program impact evaluations • **Outcomes**: evidence generated on impact, design, delivery and cost-effectiveness of nutrition-sensitive agricultural programs and used to: (1) strengthen program design and operations; (2) achieve greater impacts and cost-effectiveness; and (3) stimulate investments in replicating, adapting and scaling-up agriculture-nutrition programs; capacity strengthened among partners in designing gender-sensitive and nutrition-sensitive programs and using impact pathway analysis methods for program strengthening and decision-making	$8.8 M ($3.6 M)
➢ New research on at least one of the following areas: (1) importance of integration versus co-location of interventions from different sectors; (2) reaching adolescent girls with nutrition interventions through agriculture programs; (3) incorporating early child development interventions in agriculture and nutrition programs; (4) integrating social protection and agriculture interventions	$2 M ($0.6 M)
Cluster: Evaluation and strengthening of multi-sectoral nutrition-sensitive development programs and scaled up nutrition-specific programs (IPP-nutrition sensitive development)	
– Work on five ongoing evaluations of integrated multi-sectoral programs including social protection, health, education, WASH and nutrition in partnership with program implementers (NGOs, Governments and UN institutions)	$12 M ($2.8 M)

• **Outputs and outcomes** same as above in the first cluster	
➢ New research on nutrition-sensitive development programs that complement current research portfolio and generates evidence on additional questions (see above): (1) integration versus co-location; (2) reaching adolescent girls; (3) integrating early child development interventions in nutrition-sensitive development programs such as social protection programs	$2 M ($0.6 M)
Cluster: Developing tools, methods and approaches for understanding, influencing and evaluating cross-sectoral processes (IPP-cross sectoral policies)	
− Apply previously-developed tools, methods and approaches in selected contexts/countries to document positive change and improve understanding of drivers of change, and how enabling environments and policy processes can be cultivated and sustained − Continue work via Transform Nutrition and LANSA platforms on cultivating and sustaining nutrition-enabling policy environments through incorporation of new knowledge into discourse, and begin to develop more "pro-nutrition" attitudes, behaviors and practices − Strengthen engagement and collaboration with CAADP and SUN – as well as with PIM –so that SUN movement becomes better able to support agricultural ministries in strengthening the nutrition-relevance of their policies and plans − Open a "responsive window" facility (call for proposals) to incentivize partnerships and collaborations, strengthen local ownership of the A4NH agenda and build research capacity • **Outcomes**: AU-NEPAD CAADP policy processes become more nutrition-sensitive through improved capacity to use evidence and information, and apply tools, methods and approaches to strengthen policy	$10 M ($2.8 M)
➢ Increase support to regional and national programs in Africa through nutrition expertise at continental and regional (3) levels linked to the ReSAKSS network	$4 M ($2 M)
CROSS-CUTTING RESEARCH AREAS	**$10.2 M ($10.2 M)**
Gender (in addition to gender research in flagships)	
− Improve measurement of women's empowerment, including definition of outcomes, validation of indicators, and establishment of targets − Build the evidence base on the impacts of agricultural interventions on nutrition and health outcomes − Support a gender-nutrition community of practice to understand and incorporate evidence and tools about agriculture-gender-nutrition linkages in design and implementation of research and development interventions • **Outputs**: data sets, peer-reviewed and other publications, methods and tools, workshops and trainings • **Outcomes**: researchers in A4NH, other CRPs and partners appropriately integrate gender in their research and development projects	$1.4 M ($1 M)
➢ Expand the number of interventions evaluated and strategies tested	$1 M ($1 M)
Evaluation	
− Develop impact pathways and theories of change use them to plan, monitor and evaluate research, and share lessons learned − Commission and conduct an external evaluation of IPP flagship and an external review of A4NH, use findings in design of Phase 2 of A4NH • **Outputs**: peer-reviewed and other publications, methods and tools • **Outcomes**: findings and methods used by A4NH and other nutrition- and health-sensitive agricultural research and development programs to improve impact orientation	$1.2 M ($1.2 M)
Partnerships and Capacity Development	
− Develop an Agriculture, Nutrition and Health Academy with research partners − Provide support to implementing partners for nutrition monitoring and evaluation of their programs • **Outcomes**: better understanding of agriculture, nutrition and health linkages, increased capacity to monitor and evaluate impacts of programs on nutrition- and health-related outcomes	$3 M ($3 M)
➢ Open competitive funding for partner research as part of African and Asian networks	$4 M ($4 M)

6 BUDGET 2015-16: Additional details are given in Table 4 above and in the separate cover note.

Agriculture for Nutrition and Health (A4NH)
Budget (in millions)

No.	Flagship/ Cluster	2015 Regular Budget		2015 Expansion Budget		2016 Regular Budget		2016 Expansion Budget		2015-2016 Total Regular Budget		2015-2016 Total Regular plus Expansion Budget	
		W1/W2	Total from all Sources	W1/W2	Total from all Sources	W1/W2	Total from all Sources	W1/W2	Total from all Sources	W1/W2	Total from all Sources	W1/W2	Total from all Sources
1	**Value chains for Enhanced Nutrition (VCN)**												
	VCN-intervention	2.2	3.5			2.2	3.5			4.4	7.0	4.4	7.0
	VCN-assessment	1.9	3.2			1.9	3.2			3.8	6.4	3.8	6.4
	VCN-nutrition sensitive landscapes	0.3	0.3			0.3	0.3			0.6	0.6	0.6	0.6
	★New Initiatives			**4.4**	**7.2**			**4.4**	**7.2**			8.8	14.4
	Gender research in flagship (2%)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.4	0.6
	Sub-Total	**4.4**	**7.0**	**4.4**	**7.2**	**4.4**	**7.0**	**4.4**	**7.2**	**8.8**	**14.0**	**17.6**	**28.4**
2	**Biofortification**												
	Biofortification-breeding	7.0	30.0			7.0	30.0			14.0	60.0	14.0	60.0
	Biofortification-nutrition	1.5	5.0			1.5	5.0			3.0	10.0	3.0	10.0
	Biofortification-delivery	2.0	15.0			2.0	15.0			4.0	30.0	4.0	30.0
	★New Initiatives			**4.8**	**12.0**			**4.8**	**12.0**			9.6	24.0
	Gender research in flagship (2%)			0.1	0.2	0.2	1.0	0.1	0.2	0.4	2.0	0.6	2.5
	Sub-Total	**10.5**	**50.0**	**4.8**	**12.0**	**10.5**	**50.0**	**4.8**	**12.0**	**21.0**	**100.0**	**30.6**	**124.0**
3	**Agriculture-Associated Diseases (AAD)**												
	AAD - food safety, aflatoxins	2.0	5.6			2.0	5.6			4.0	11.2	4.0	11.2
	AAD-food safety, perishables	2.0	4.4			2.0	4.4			4.0	8.8	4.0	8.8
	AAD-disease risks	1.3	2.5			1.3	2.5			2.6	5.0	2.6	5.0
	★New Initiatives			**4.5**	**8.5**			**4.5**	**8.5**	0.0	0.0	9.0	17.0
	Gender research in flagship (10%)			0.5	0.9	0.5	1.3	0.5	0.9	1.1	2.5	2.0	4.2
	Sub-Total	**5.3**	**12.5**	**4.5**	**8.5**	**5.3**	**12.5**	**4.5**	**8.5**	10.6	25.0	19.6	42.0
4	**Integrated Programs and Polices (IPP)**												
	IPP-nutrition sensitive agriculture	1.8	4.4			1.8	4.4			3.6	8.8	3.6	8.8
	IPP-nutrition sensitive development	1.4	6.0			1.4	6.0			2.8	12.0	2.8	12.0
	IPP-cross sectoral policies	1.4	5.0			1.4	5.0			2.8	10.0	2.8	10.0
	★New Initiatives			**1.1**	**2.5**			**3.6**	**5.0**	0.0	0.0	4.7	7.5
	Gender research in flagship (50%)			0.6	1.3	2.3	7.7	1.8	2.5	4.6	15.4	7.0	19.2
	Sub-Total	**4.6**	**15.4**	**1.1**	**2.5**	**4.6**	**15.4**	**3.6**	**5.0**	**9.2**	**30.8**	**13.9**	**38.3**
	Cross-Cutting												
	Gender	0.5	0.5			0.5	0.5			1.0	1.0	1.0	1.0
	Evaluation	0.5	0.5			0.7	0.7			1.2	1.2	1.2	1.2
	Partnerships/CD	1.5	1.5			1.5	1.5			3.0	3.0	3.0	3.0
	★New Initiatives			**1.5**	**1.5**			**3.5**	**3.5**	0.0	0.0	5.0	5.0
	Management	2.0	2.0			2.2	2.2			4.2	4.2	4.2	4.2
	Sub-Total	**4.5**	**4.5**	**1.5**	**1.5**	**4.9**	**4.9**	**3.5**	**3.5**	**9.4**	**9.4**	**14.4**	**14.4**
	Grand Total	**29.3**	**89.4**	**16.3**	**31.7**	**29.7**	**89.8**	**20.8**	**36.2**	**59.0**	**179.2**	**96.1**	**247.1**
	Projected carryover	**1.5**				**1.5**							
	W1/W2 allocation	**26.7**		**28.0**		**28.0**		**32.0**		**53.0**		**60.0**	

Total Budget 2012-2016

2012 Actual	2013 Actual	2014 Budget
$60M ($9M(W1/2)	$69.9M ($23.4M(W1/	$78.1M ($28M(W1/2)

2015 Total Budget	
Regular	$89.6M ($29.3M (W1/2)
Regular & Expansion	$121.3M ($45M(W1/2)

2016 Total Budget	
Regular	$90.0M ($29.7M (W1/2)
Regular & Expansion	$126.2M ($59M(W1/2)