CGIAR Research Program on Agriculture for Nutrition and Health

Narrative of major planned work in 2015

Health and nutrition are important development outcomes. Increasingly the global community is recognizing that interventions designed specifically to address nutrition, or nutrition-specific interventions, can only take us so far, and so other sectors, including agriculture, must be leveraged if we are to achieve improved nutrition and health globally. In 2015, the CGIAR Research Program (CRP) on Agriculture for Nutrition and Health (A4NH) will continue to make important contributions to understanding and operationalizing how this concept of nutrition-sensitive agriculture can maximize impacts on nutrition and health outcomes. The CRP contributes to the CGIAR system level outcome: Improving Nutrition and Health. Research conducted in A4NH contributes to four intermediate development outcomes (IDOs):

1. Improved diet quality
2. Reduced exposure to agriculture-associated disease
3. Empowerment of women and poor communities
4. Better cross-sectoral policies, programs, and investments ("enabling environment")

The A4NH research portfolio is organized by flagship projects and clusters of activities. Three flagships - Value Chains for Enhanced Nutrition, Biofortification and Integrated Programs and Policies – focus primarily on research to contribute to improved diet quality. Agriculture-Associated Diseases focuses on research that will lead to reducing exposure to diseases associated with agriculture. All four contribute to the IDOs on empowerment and the enabling environment. The next section describes our 2015 activities by flagship. More detail on flagship and cluster, including key research outputs and outcomes A4NH expects to deliver in 2015 are described in Table 1.

Flagship 1: Value Chains for Enhanced Nutrition

This flagship continues to conduct research to characterize value chains for nutrient-dense foods, such as animal source foods, fruits and vegetables, and pulses, and to design, implement, and evaluate interventions addressing the supply and demand side constraints to value chains for nutrition. We will complete several assessments in a variety of contexts and a suite of evaluations on interventions targeting the entire value chain this year. In 2015, we will launch a new project in East Africa on food system dynamics in urban and peri-urban areas, specifically the value chains for beans and amaranth. In India, new research will investigate different forms of public-private models to meet the challenges of improving nutrition and health through agriculture and in developing sustainable and nutritious food systems to slow and reverse growing obesity and associated health problems. Since last year, we have added a new cluster of research in collaboration with the system CRPs to identify solutions which will optimize the multiple goals of food and nutrition security, sustainable use of natural resources and conservation of biodiversity, both for human health and environmental health. Referred to as nutrition-sensitive landscapes, this cluster will continue pilot studies in the Aquatic Agricultural Systems hub in Barotse, Zambia, and the HumidTropics action site in Western Kenya. Focused activities will target improving the enabling environment for nutrition by embedding nutrition into the work of the systems CRPs and by providing guidance to increase their capacity to deliver on the IDO on improved diet quality.

Flagship 2: Biofortification

Improving diet quality through the supply of key micronutrients through food staples defines the work in this flagship. Activities in 2015 will build on CGIAR breeding research and the discovery and development phases of the HarvestPlus program. This year marks the beginning of the second year of the five-year delivery phase; delivery activities for iron pearl millet, zinc wheat and rice, provitamin A cassava and maize, and high iron beans will expand and more partnerships will be established in our nine target countries (Bangladesh, DRC, Ethiopia, India, Nigeria, Pakistan, Rwanda, Uganda, and Zambia,). By the end of the year, our country teams aim to reach more than 3 million farm households with "proven" biofortified varieties, moving toward 14 million households by the end of the 5-year delivery phase in 2018. In addition to these HarvestPlus activities, breeding work on enhancing other micronutrients in staple crops, such as cowpea, and other roots and tubers will continue, as well as capacity strengthening of platforms for nutritional analysis of roots and tubers. Building upon momentum from the 2014 Kigali Declaration on Biofortified Nutritious Foods, we will support a series of international and regional stakeholder consultations on how biofortification fits into nutrition-sensitive agriculture and nutrition programming. Country-level advocacy activities will target the integration of biofortification into national policies and programs. We will continue efforts to establish international standards for biofortification through the Codex Alimentarius, which will ultimately (by 2018) result in clarification of the application of existing CODEX texts to the safety and nutritional assessment of biofortified foods. Results from last year's gender assessment will guide consideration of gender in research for scaling out, as well as inform the mainstreaming of micronutrients in breeding programs and nutritional assessments. Impact assessments, which will be implemented beginning this year will incorporate a modified version of the Women's Empowerment in Agriculture Index (WEAI) and will specifically consider the impact of biofortification on women, not only in terms of nutritional outcomes, but also potentially gendered adoption outcomes, such as time allocation, income, and market participation.

Flagship 3: Agriculture-Associated Diseases

In 2015, this flagship will continue to focus on mitigating the human health risks associated with agriculture, with research concentrated in three clusters: aflatoxin-related risks in staple crops, food safety risks in perishable foods, and risks from agricultural intensification (livestock systems and/or irrigation) and zoonoses. In 2015, a project aiming to protect 3% of the maize in Nigeria using biocontrol will continue and evaluations of aflatoxins in East Africa will be published as a special edition in the *African Journal of Food and Nutrition Development*. A book representing ten years of food safety research on informal markets in Africa will be launched, which will emphasize the importance of informal markets for the poor (as producers and consumers) and the important role gender plays in managing foodborne disease. An evaluation of the "training and certification" approach to improving food safety in dairy value chains will be finalized. Several publications will focus on the importance of zoonotic diseases in irrigated areas and on piloting traceability systems for safer food and better market access and disease control. Findings from a project on people and zoonoses in western Kenya will shed new light on the epidemiology of human and animal infectious disease transmission dynamics. In 2015, we will add new projects on understanding gender-disaggregated disease risks in intensifying and neglected agricultural systems to the A4NH portfolio. An external evaluation of food safety research will be complete and we will use the findings to assess our theories of change and guide plans for expanding food safety research into larger scale food safety activities. This year we plan to hold a series of regional consultations with public health stakeholders in South Asia and Africa, which will inform a global consultation. We will use these inputs to plan a joint program on agriculture and health with partners inside and outside the CGIAR.

Flagship 4: Integrated Programs and Policies

This flagship comprises a portfolio of high-quality evaluative research to support development and agriculture partners to improve the design and delivery of nutrition-sensitive programs. Research in two clusters – nutrition-sensitive agriculture and nutrition-sensitive development - continues to expand due to large demand for the evidence generated from evaluations and work on strengthening different models of interventions and programs targeted at improving nutritional outcomes for populations in the first 1000 days (pregnant women and children less than 2 years old). In 2015, we will complete several evaluations of integrated agriculture, nutrition and health models in Zambia, Burkina Faso, and Kenya and evaluations of other multi-sectoral programs in Bangladesh, Vietnam, Ethiopia, Burundi, and Guatemala. Several new evaluations will be starting this year in Africa and South Asia. The cross-sectoral policies research cluster will continue to focus on improving understanding and generating evidence of how policy makers and investors can enable nutrition-sensitive development and influence relevant policy processes. In 2015, we will build on partnership platforms such as *Transform Nutrition* and LANSA, and provide support to strengthening cross-sectoral approaches to nutrition in CAADP and through the SUN movement. This includes ongoing work to explore key issues in working multisectorally to improve nutrition and sharing lessons learned in what works or doesn't work. In 2015, we will expand coverage from primarily South Asia into East Africa. Two regional studies of enabling environments for nutrition-sensitive agriculture are aimed at improving understanding of East African and South Asian policy makers and investors on how to leverage agriculture for nutrition. The publication of 'Stories of Change,' a volume of case studies focused on countries that have successfully operationalized multi-sectoral approaches to improve nutrition will have a wide sphere of influence through the SUN movement and other networks. A number of activities and publications this year will build on the momentum of the release of the first Global Nutrition Report 2014 and the planned publication of the Global Nutrition Report 2015.

There is growing evidence that gender discrimination is a fundamental driver of poor nutritional outcomes. The **A4NH Gender Strategy** is based on the premise that because women play important roles in production and consumption, agriculture has the potential, to date largely untapped, to empower women and poor communities to make better food-, health- and care-related decisions for themselves and their families. In 2015, we will continue cross-CRP efforts to build capacity for gender and nutrition research through workshops and the online community of practice and blog, the Gender-Nutrition Idea Exchange. We will conduct cross-flagship research to add important evidence on the effect of women and men's time distribution in agricultural work on food consumption and nutrition and women's time use and nutrition, using data from the Women's Empowerment in Agriculture Index (WEAI). Two new projects in 2015 will begin: one in Bangladesh on links between gender and nutrition and the other in multiple sites to support agricultural programs with nutrition and health goals in adding a gender research dimension. New gender postdocs will be hired in 2015 through the CGIAR Gender Postdoctoral Fellowship Award, and will begin supporting cross-CRP gender work with the CRPs on Livestock and Fish, Grain Legumes, and Policies, Institutions and Markets. In the tables, we identify a number of outputs reflecting progress across the flagships in achieving the objectives outlined in our Strategy.

Table 1. Planned key activities for 2015 to produce IDOs and outputs, with associated planned budgets

FOR REFERENCE ONLY Level as described by OCS	Level of organization within the CRP	Description of planned key activities at each level of internal organization	Expected results of planned key activities	Planned budget
Level 3: theme, and Level 4: outcomes	**Level n-1:** **1: Value Chains for Enhanced Nutrition**	**Value Chains for Enhanced Nutrition** conducts assessments for nutritional quality from supply to demand, considering value chains from informal / local through dedicated public distribution chains to formal, global chains. Activities in two clusters largely focus on assessments and evaluations of value chain interventions to improve nutrition, conducted in collaboration with key value chains actors and enablers, including other CRPs, private enterprises, development banks, governments, other food distribution organizations, farmer organizations and civil society. The flagship includes a new cluster of research for nutrition-sensitive landscapes and provides support on nutrition to the CRPs on HumidTropics and Aquatic Agricultural Systems.	Our evidence and methods will help value chain actors, policy makers, farmers and NGOs to design, assess, and improve value chains for nutrition, contributing to the IDO on **improved diet quality** for women, infants and young children, and vulnerable groups. Characterizations and several interventions are targeted at understanding gender roles and/or improving women's participation in value chains, findings that will support the achievement of the IDO on **empowering women and vulnerable groups.** Support to the systems CRPs on the topic of diet quality will enhance the **enabling environment** for nutrition by embedding nutrition into their work.	$7,000,000 ($4,000,000 from W1/W2)
Level 5: outputs	**Level n-2:** 1.1 Value chain interventions for nutritious foods	**Objectives** 1. To design, implement, and evaluate gender-sensitive value chain interventions with value chain partners in order to change consumer behavior and increase nutritional awareness with value chain actors in nutrient-dense value chains, such as fruits, vegetables, animal source foods, and pulses. 2. To design, implement, and evaluate value chain interventions with value chain partners in order to improve quality and/or reduce prices for nutrient-dense foods **Locations** Bangladesh, Benin, Ghana, India, Kenya, Mali **Methods**	**Expected outputs** **Bold** outputs have strong gender research dimensions and/or target women. • **Reports on costs and effects of school feeding linked to agriculture and community development (Home-Grown School Feeding), a model assessed in Ghana and Mali** • Evaluation report on convergent innovation for pulse production in India • Business plans for food innovation-focused platform to support SMEs in India and **for enterprises to deliver fish-based complementary foods in Bangladesh** • Evaluation report of informal and formal vegetable seed value chains in Bangladesh • **Report and discussion paper on cooking contest intervention in Bangladesh**	$3,300,000

		Panel surveys, key informant interviews, **Gender research dimension** Design of interventions takes into account women as potential producers, improving incomes, and/or as consumers, helping to improve maternal and child nutritional status.	• Reports on development and testing of approaches to promote fruit consumption as part of diverse diets **Research outcomes** • Partners have a deeper understanding of the business sector challenges in pulse production in India	
	1.2 Assessing value chains for nutrition from demand to supply	**Objectives** 1. To characterize value chains for nutritious foods, including identification of constraints to supply and demand, nutritional quality, and food safety issues, particularly for the poor and women 2. To characterize and assess the potential of different arrangements to a) enhance the performance of value chain actors and to b) deliver on a variety of outcomes, including income, women's empowerment and participation, and nutrition 3. To develop methods, typologies and analytic frameworks to assess the structure and function of informal and formal value chains for nutrient-dense foods and their contributions to diverse diets for different target populations in different contexts **Locations** Bangladesh, Benin, Cameroon, Cote d'Ivoire, Ghana, India, Kenya, Malawi, Mali, Mozambique, Peru, Rwanda, Swaziland, Uganda, Tanzania, Zambia **Methods** Nutritional assessments, household surveys, key informant interviews, focus group discussions, food composition analysis **Gender research dimension**	**Expected outputs** **Bold** outputs have strong gender research dimensions and/or target women. • Publication on knowledge gaps for improving nutrition and food safety in dairy value chains in India • Case study describing a social enterprise for delivering nutrient-enhanced yoghurt in Bangladesh • Reports on fruit value chain assessments, including identification of value-added and nutrient-saving processing techniques in Kenya • **Reports on development and acceptance of fish-based complementary food for young children** • Publication on analysis of animal source foods in least cost nutritionally adequate diets in Nairobi • Report identifying production niches and measured performance of at least three micronutrient rich crops in Uganda and Tanzania • **Reports on local biodiversity and potential for use in complementary foods for young children in Benin** • Reports describing improvements to traditional processing methods and important contaminants in cassava value chain • **Reports on supply chain assessments and existing distribution channels that deliver beans and amaranth for poor urban and peri-urban consumers in Kenya and Uganda** • **Report on analysis of existing business models using LINK methodology to assess the degree of**	$3,200,000

		Assessments examine gender differences in nutritional status and consumption, roles of men and women along the entire chain from production to processing to sale and consumption, including gender-based differences in preferences and roles related to food preparation.	**inclusiveness and existence of nutrition objectives as a key value proposition in current business models for beans and amaranth** • **Framework to support the M&E of value chains for nutrition** • Tool for measuring impacts of value chain interventions on nutrition available on PIM value chains website • **Guidance developed, with IFAD, for design of nutrition-sensitive value chains**	
	1.3 Nutrition-sensitive landscapes	**Objectives** 1. To identify approaches which will optimize the multiple goals of food and nutrition security and ecosystem services both for human health and environmental health by testing methodologies in 3-4 pilot sites with system CRPs and partners 2. To improve the enabling environment for nutrition by embedding nutrition into the work of the systems CRPs **Locations** Kenya, Vietnam, Zambia **Methods** Nutritional surveys and agrobiodiversity assessments, focus group discussions, seasonal food availability calendars, land-use mapping by gender, incorporation of nutrition into farm systems analysis models **Gender research dimension** Research explores gender differences in perceptions of food availability, roles in landscape management, and dynamics of household decision making that influence consumption.	**Expected outputs** **Bold** outputs have strong gender research dimensions and/or target women. • Publication on incorporation of dietary intake data into farm and landscape models in the pilot nutrition-landscape sites • **Synthesis reports, with system CRPs, of pilot studies (nutritional surveys and assessments) in Zambia and Kenya** • Guidance for incorporating nutrition (IDO: improved diet quality) in impact pathways and theories of change for system CRPs • **Case study on gender norms and agency in Vietnam** • Research framework, implementation plan, and partnership strategy developed **Research outcomes** • System CRPs begin benchmarking the degree and type of nutrition and health mainstreaming in their programs and utilize common diet diversity indicators for monitoring	$500,000

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Level 3: theme, and Level 4: outcomes	Level n-1: 2: Biofortification	**Biofortification** focuses on improving diet quality through food based solutions for essential micronutrients. Activities build on past and current CGIAR breeding research and the completed discovery and development phases of the HarvestPlus program. Three clusters of activities each focus on activities for a critical stakeholder / partner group. The first is varietal development with a view to mainstreaming the breeding of high micronutrient varieties in multi-dimensional crop breeding of food crops in low-income countries and populations. This cluster also includes capacity strengthening of platforms for nutritional analysis of roots and tubers. The second is nutritional efficacy testing so that biofortification is adopted as appropriate in public health nutrition. The third is in establishing delivery programs at scale with key national and regional actors.	This year delivery activities will grow and more partnerships will be established in our nine target countries to reach more than 3 million farm households with "proven" biofortified varieties, contributing to the IDO on **improved diet quality**. In 2015, consultations with regional and international stakeholders, country-level advocacy, and coordination of an effort to establish international standards for biofortification through Codex Alimentarius will support the achievement of the IDO on the **enabling environment.** Applying recommendations from last year's gender assessment, gender will be considered in the adaptive research for scaling out and informing the mainstreaming of micronutrients in breeding programs and nutritional assessments, contributing to the achievement of the IDO on **empowering women and vulnerable communities**. Impact assessments that will begin in 2015 will consider the gender-differentiated impact of biofortification on outcomes such as time allocation, income, and market participation.	$51,000,000 ($7,000,000 from W1/W2)
Level 5: outputs	**Level n-2:** 2.1 High-yielding micronutrient enhanced varieties made available to NARES and implementing partners in target countries	**Objectives** 1. To improve availability of high-micronutrient staple crops in target countries through breeding 2. To increase adoption of high micronutrient varieties by target partners 3. To develop, verify and establish methods in target countries **Locations** Nigeria, DRC, Rwanda, Tanzania, Uganda, Zambia, Ethiopia, India, Pakistan and Bangladesh **Methods**	**Expected outputs** **Bold** outputs have strong gender research dimensions and/or target women. • **Varietal release of zinc wheat in Pakistan; 2nd wave of orange maize in Zambia** • **Next wave varieties in national varietal release trials in all target countries** • **Rapid screening technologies implemented with NARS** • **Zinc wheat commercialized in India; additional iron pearl millet varieties identified for commercialization** **Research outcomes**	$17,000,000

		"Next generation" high-throughput breeding methods; quality analysis/proficiency tests in NARS labs; XRF equipment installed and staff trainings **Gender research dimension** Crop development activities incorporate participatory varietal selection, including potentially gendered preferences for varietal traits.	• Evidence generated on adaptability of biofortified varieties in new environments • World Food Programme incorporates biofortification into school feeding and other programs	
	2.2 Nutrition and health communities promote biofortified crops of demonstrated nutritional efficacy	**Objectives** 1. High-nutrient varieties have proven bioavailability: a. Zinc rice in Bangladesh 2. High-nutrient varieties have proven nutritional efficacy: a. Zinc wheat in India b. Provitamin A cassava in Nigeria c. Zinc rice in Bangladesh d. Multi-crop study in country TBD **Locations** India, Bangladesh, Nigeria, Zambia, Rwanda **Methods** Efficacy trials, bioavailability testing **Gender research dimension** All data is sex-disaggregated, with a focus on understanding women's roles in household food consumption and nutrition-related outcomes.	**Expected outputs** **Bold** outputs have strong gender research dimensions and/or target women. • **Completed study on zinc rice bioavailability** • **Completed trials (2) on zinc wheat in India** • **Feeding trial on provitamin A cassava in Nigeria begins** • **Background work completed and feeding trial begins for zinc rice in Bangladesh** • **Background work complete, partners and study location selected for multi-crop study** **Research outcomes** • Following Kigali Commitments, global stakeholder consultations build support for biofortification in the nutrition and health communities • Evidence published on efficacy of biofortified crops (iron beans, vitamin A maize, iron pearl millet)	$14,000,000
	2.3 Delivery programs establish progress in which farmers adopt and consumers eat biofortified varieties in target countries	**Objectives** 1. To incorporate biofortified varieties into distribution systems for seeds / planting materials 2. To prove effectiveness for provitamin A cassava and iron beans 3. Food processors adopt biofortified varieties	**Expected outputs** **Bold** outputs have strong gender research dimensions and/or target women. • **Interactive biofortification prioritization index is made available to the public** • **Provitamin A cassava: Develop subnational biofortification prioritization index to select sites**	$20,000,000

		4. To increase number and availability of food products incorporating biofortified varieties a. New products with beans, rice, and maize for Guatemala b. Maize products for Colombia, Mexico, and Brazil **Locations** Nigeria, West Africa, Uganda, Kenya, Guatemala, LAC region **Methods** Dietary assessment, impact assessment, market analysis **Gender research dimension** A gender assessment will develop tools to help identify gender issues, how to increase impact through examining gender constraints and opportunities along the impact pathway, recommendations for applying what has been learned, identify a set of indicators to monitor the effect of addressing gender issues on outcomes and impact, and guidelines for expanding, replicating what has been learned. (Target countries: Zambia, Nigeria, Rwanda and Uganda).	**for effectiveness study; develop RFP and select partners** • **Iron beans: Implement impact evaluation in Guatemala, implement impact assessment in Rwanda to measure adoption, diffusion, and intake of iron beans. Complete background studies for potential effectiveness studies in Uganda or Burundi.** • **Continue development of products in Brazil and Colombia, begin product development in Mexico in partnership with CIMMYT and Monterrey Tech** • **Monitoring, Learning, and Action system fully implemented in all target countries** **Research outcomes** • Private sector partnerships in marketing expanded to assess consumer perceptions of nutritious foods, health, and biofortification in Nigeria and in India and to utilize experiential marketing and regional advertising to build the HarvestPlus brand • New partnerships with NGOs and private sector explored to assess potential for incorporation of biofortification into more programs/product lines • Policy makers and regulators engaged on standard setting for biofortified foods • Farmers producing orange maize linked to millers as part of collaborative work with AgResults Zambia • Pilot school lunch program project in Nicaragua incorporates improved rice, beans and maize	

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Level 3: theme, and Level 4: outcomes	Level n-1: 3. Agriculture-Associated Diseases	**Agriculture-Associated Diseases (AAD)** conducts agricultural research, informed by socioeconomic, gender, and ecological thinking to improve understanding of the multiple burdens of AAD and identify and test successful management and control options. The flagship is organized into three clusters of research on food safety associated with aflatoxins, food safety of perishable products, and disease risks. Activities in all the clusters describe systems and priorities, which can be used to inform AAD policies, programs and research; improve our understanding of disease through epidemiology and socio-economics to inform the prevention and control of AAD in effective, equitable and sustainable ways; and build capacity for risk management by sharing evidence on innovation and risk- based and ag-based management for priority AAD.	Results from studies on the size of AAD risks in particular contexts will help decisionmakers, value chain actors, NGOs, and farmers to make informed decisions about investment of resources into evidence-based management and control options, contributing to the IDO on **reducing exposure to agriculture-associated diseases**. In particular, evidence, recommendations, and resources such as business models for producing biocontrol will be widely disseminated this year to partners to support an **enabling environment** for aflatoxin control. Evidence from food safety research in informal markets will be shared with value chain partners and decisionmakers to improve their understanding of the role of gender in improving food safety knowledge and practice and the role of informal markets for the poor, contributing to the IDO on **empowering women and vulnerable groups**.	$12,000,000 ($5,000,000 from W1/W2)
Level 5: outputs	**Level n-2:** 3.1 Food safety – aflatoxins	**Objectives** 1. To estimate, map, and predict aflatoxin contamination risks and evidence of impacts on income and health in maize, groundnuts, and milk, including differential impacts on women 2. To develop and test novel tests to detect aflatoxins for use by researchers, regulators, farmers, market agents, and other field staff 3. To test interventions to mitigate risk and reduce exposure to aflatoxins in value chains with special emphasis on gender 4. To understand demand (willingness-to-pay) for aflatoxin control and how control can be sustained through gender-sensitive technical, institutional and regulatory innovations 5. To pilot elements of aflatoxin control scale out	**Expected outputs** **Bold** outputs have strong gender research dimensions and/or target women. • Documentation and business plan for Aflasafe commercialization in Zambia • Design and plans for low cost, small capacity modular manufacturing facility for production of aflasafe KE01 in Kenya • Report with GIS maps of crops and aflatoxin risks for Malawi, Tanzania, Zambia • Reports describing prevalence of aflatoxins in select groundnut value chains in Malawi, Zambia and India and milk value chains in Kenya • Report on development and evaluation of simple cost effective aflatoxin lateral flow device based diagnostic assay for aflatoxins in crop products	$6,500,000

		6. To scale out interventions including application and assessment of innovative institutional arrangements and delivery mechanisms 7. To promote appropriate regulations and policy and plans for investment opportunities to enable scaling-out for aflatoxin control and reduce market and public health risks **Locations** Burkina Faso, Burundi, Ghana, India, Kenya, Malawi, Mali, Mozambique, Niger, Nigeria, Rwanda, Senegal, Tanzania, Uganda, Vietnam, Zambia **Methods** Surveys/surveillance, diagnostics, risk assessment, impact evaluation, RCTs, consumer acceptance studies **Gender research dimension** Research on aflatoxin technology development and dissemination assess gender differences in access to information/comparative responsiveness to marketing information; decision-making and impact on demand for and use of post-harvest technologies; preferences; constraints to adoption; and issues with use and impact.	• Position papers and accompanying briefs provided and discussed with East African Community (EAC) policy makers • **Assessment of package of aflatoxin control measures for mitigating risk and reduced exposure in groundnut value chains, with special emphasis on gender and vulnerable groups** • Publication on willingness-to-pay for aflatoxin safe maize in Kenya • **Paper on theories of change for aflatoxin control** **Research outcomes** • Network of nine businesses in AgResults network in Nigeria expand overall AflaSafe usage by 4.4K farm households / 6.5K ha. Expected reduction in aflatoxin contamination of 90% based on experimental field data • Factory design, manufacturing process and standard operating protocols for large-scale manufacturing of Aflasafe made available to engage businesses for out-scaling Aflasafe use across Africa • EAC policy makers finalize policy recommendations for aflatoxin control in East Africa across the health, agriculture, trade and environment sectors • Value chain actors and other partners trained to use diagnostic assay and apply the test as part of aflatoxin control decision making process • Ecological – Toxicological Dossier used by stakeholders for registration of a Zambia-specific Aflasafe product in Zambia	
	3.2 Food safety – perishables	**Objectives** 1. To identify potential food safety hazards (sometimes with nutritional benefits) and mitigation measures in different animal source food value chains in different countries and roles for different target groups (poor, women, children)	**Expected outputs** **Bold** outputs have strong gender research dimensions and/or target women. • Guidelines published for risk assessment in informal markets for pork in Vietnam	$3,500,000

		2. To estimate food safety / health risks in informal and formal animal source food value chains in Africa and Asia disaggregated by age-gender target groups 3. To assess innovative surveillance and data capture and sharing methods 4. To test communication tools and message formats for food safety risks for different clients 5. To identify, design, implement, and assess value chain and enabling environment innovations for mitigating food-borne diseases 6. To evaluate the sustainability of food safety risk-based incentives and capacity building in informal markets **Locations** Egypt, Ethiopia, India, Kenya, Senegal, Tanzania, Uganda, Vietnam, Zambia **Methods** Surveys/surveillance, participatory appraisal, diagnostics, risk assessment, impact evaluation, RCTs, consumer acceptance studies **Gender research dimension** Research on food safety in brings attention to gender-based differences in perceptions and exposure to risk. This research also examines how gender is associated with differences in preferences related to food acquisition, consumption, and preparation.	• Briefs on safe food production, healthy livestock and improved public health prepared and disseminated through seminars with policy makers • Report on assessment of efficacy and acceptability of food safety interventions for dried fish in Zambia • Report on antibiotic use in agriculture and implications for antimicrobial resistance in developing countries • Publication on drivers and impacts of zoonotic, foodborne and animal diseases in Africa • Reports on assessments of 5-10 interventions for management of foodborne disease in value chains • **Manual and collection of tools for assessment of value chain made available to value chain actors and other partners** • Quality assurance framework for development and sustainable deployment of SMS on agriculture for nutrition **Research outcomes** • Recommendations for management of foodborne disease taken up by L&F/AAS value chain leaders • National Food Safety Task Force in Vietnam uses risk assessment guidelines for formulation of policy and guidelines to improve food safety	

	3.3 Disease risk	**Objectives** 1. To estimate and map health risks and impacts (e.g. DALYs) associated with different agricultural practices disaggregated by key age-gender target groups 2. To understand and assess drivers of pathogen population dynamics and disease emergence associated with agricultural intensification, climate change, urbanization and other large-scale agro-ecological or social drivers 3. To assess innovative surveillance and data capture and sharing methods **Locations** Egypt, Ethiopia, India, Kenya, Laos, Senegal, Tanzania, Uganda, Vietnam, Zambia **Methods** Surveys/surveillance, participatory appraisal, diagnostics, risk assessment, impact evaluation, RCTs, consumer acceptance studies **Gender research dimension** Research on disease risk examines how gender influences differences in vulnerability to risk, impacts of risk on different groups, and capacity to manage risk. The gender dimension of this research takes into account the role of both gender norms and biological sex in relationship to disease risk.	**Expected outputs** **Bold** outputs have strong gender research dimensions and/or target women. • Framework for intensified *T. solium* control prepared with WHO/OIE/FAO • Risk-based framework for predicting and managing disease risks in Vietnam and Laos • Publications and reports including vulnerability maps, impact assessments, and control options for Rift Valley fever • Publications describing findings on epidemiology of zoonoses in urban Nairobi and western Kenya, plus policy briefs on control and prevention options • **Publication on brucellosis risk factors in NE Kenya and social /gender determinants of exposure to mosquito borne disease and non-malaria fevers of unknown areas in irrigated and non-irrigated areas of NE Kenya** • Publication on mapping of urban milk value chains • **Reports/publications mapping health risks associated with intensified agriculture and irrigation in various agro-ecological zones, including gender disaggregated results on exposure, involvement in agricultural activities, and awareness of risks and preventive measures in Benin and Cameroon** • Paper on climate and disease for the UN Framework Convention on Climate Change	$2,000,000

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Level 3: theme, and Level 4: outcomes	Level n-1: 4: Integrated Programs and Policies	**Integrated Programs and Policies** provides a) high-quality evaluative research to support nutrition-sensitive development partners more broadly as well as nutrition-sensitive agriculture more specifically, and b) evidence, approaches and tools for strengthening cross-sectoral policy and investment processes for nutrition-sensitive development. Research is done collaboratively, usually within the programs of development partners including governments, international agencies, NGOs and development banks. Gender research is fully integrated into all research. Activities in the cross-sectoral policies research cluster focus on improving understanding and generating evidence of how policy makers and investors can enable nutrition-sensitive development and influence relevant policy processes and will add several new activities and expand their focus to East Africa this year.	Results from the portfolio of program evaluations provide evidence for development partners and investors on agriculture-nutrition linkages and recommendations that will improve the design and implementation of multi-sectoral development programs that will contribute to the IDOs on **improved diet quality** and **empowering women and vulnerable groups**. Evidence from the Global Nutrition Reports, regional and country-specific case studies, and other resources for tracking and analyzing policy impacts will help policy makers and investors to develop and maintain an **enabling environment** for sustained nutrition improvements.	$18,000,000 ($4,000,000 from W1/W2)
Level 5: outputs	**Level n-2:** 4.1 Evaluation of nutrition-sensitive agriculture	**Objectives** 1. To assess the impact and cost-effectiveness of strengthening agriculture and nutrition linkages 2. To strengthen partnerships, results and innovations to improve nutrition globally 3. To assess how agriculture practices can be leveraged to improve nutrition outcomes **Locations** Burkina Faso, Kenya, Tanzania, Uganda, Zambia **Methods** Panel and cross-sectional household surveys, anthropometric measurements, use of biomarkers tests for micronutrient status, key informant	**Expected outputs** **Bold** outputs have strong gender research dimensions and/or target women. • **Impact evaluation of integrated agriculture, nutrition and health program to reduce stunting in Zambia** • **Process evaluation report describing the implementation of an enhanced homestead food production (e-HFP) program in Burkina Faso** • Uganda household dataset made publicly available • **Final report on the impact of OFSP interventions on vitamin A, iron, and anemia status of mothers and their infants and their utilization of OFSP** • **Report on cost-effectiveness of linking orange-fleshed sweet potato to ante-natal care services for pregnant women**	$5,000,000

		interviews, process evaluation, impact evaluation, cost and cost-effectiveness analysis **Gender research dimension** Analyses of gender differences in asset ownership, agricultural production, nutrition knowledge, and women's empowerment and her own health and nutritional status, and the associated impacts on nutrition.	• Framework and analysis of how development implementers take up and use research and evaluation results in their nutrition-sensitive development programing **Research outcomes** • Implementing partners strengthen program design and operations and achieve greater impacts and deliver programs more cost-effectively • A4NH research stimulates 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 decisionmaking	
	4.2 Evaluation of broader nutrition-sensitive and direct nutrition development sectors	**Objectives** 1. To assess the impact of integrated nutrition-sensitive programs from different sectors (e.g., social protection, health, water and sanitation, gender) on maternal and child diets, infant and young child feeding (IYCF) practices and nutritional status 2. To assess the cost effectiveness of different models of nutrition-sensitive programs from different sectors 3. To generate a body of knowledge on what and how nutrition-sensitive programs from different sectors can contribute to improving nutrition and document the key pathways of impact **Locations** Guatemala, Haiti, Burundi, Burkina Faso, Ethiopia, Mali, Nigeria, Senegal, Uganda, Bangladesh, India, Vietnam **Methods** Secondary data analysis, evaluations (impact, program impact pathway analysis, process	**Expected outputs** **Bold** outputs have strong gender research dimensions and/or target women. • **Final evaluation report on the impacts of the Preventing Malnutrition in Children Under 2 (PM2A) approach on maternal and child health and nutrition in Burundi and Guatemala** • **Impact evaluations on implementation of the Alive & Thrive (A&T) program to improve infant and young child feeding (IYCF) practices at scale in: Ethiopia, Bangladesh and Vietnam** • **Implementation costing reports/ publications on implementation of IYCF interventions at scale in: Ethiopia, Bangladesh and Vietnam** • **Report/publication documenting changes in policy environment and policy processes following the A&T intervention (advocacy, policy engagement and inter-personal communication) focused on improving IYCF practices at scale in: Ethiopia, Bangladesh and Vietnam** • **Two publications on lessons learned from evaluation of Helen Keller International's homestead food production system and behavior**	$7,000,000

		evaluation, cost-effectiveness), panel and cross-sectional household surveys, stakeholder mapping/analysis, key informant interviews, focus group discussions, biomarker tests for micronutrient status **Gender research dimension** Analyses of gender differences in decision-making, nutrition knowledge, and women's empowerment and her own health and nutritional status, and the associated impacts on nutrition.	**change communications program in Burkina Faso (impacts on maternal and child nutrition and on women's empowerment)** **Research outcomes** • Implementing partners strengthen program design and operations and achieve greater impacts and deliver programs more cost-effectively • A4NH research stimulates 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 decisionmaking	
	4.3 Enable cross-sector policy analysis, formulation and implementation	**Objectives** 1. Enabling environment: To generate knowledge, develop capacity, and investigate approaches to cultivate and sustain enabling environments for nutrition-sensitive development 2. Agri-food policy: To identify approaches to improve cross-sectoral knowledge, capacity and processes for strengthening the nutrition-sensitivity of agri-food policy and investments 3. Scaling-up impact: To understand how to scale up the impact of multisectoral actions for nutrition at country-level. 4. Accountability and monitoring of global action on nutrition: tracking progress, identifying cross-sectoral actions and opportunities, and strengthening accountability around commitments to reducing malnutrition. **Locations** Brazil, Sri Lanka, India, Pakistan, Bangladesh, Afghanistan, Nepal, Kenya, Ethiopia, Uganda, Zambia Turkey; plus regional work in South Asia and East Africa	**Expected outputs** **Bold** outputs have strong gender research dimensions and/or target women. • Regional reviews for East Africa and South Asia describing stakeholder perceptions of enabling environment for leveraging agriculture for nutrition • Regional evidence review of agriculture and nutrition links in East Africa • **Country-specific case studies on agriculture and nutrition evidence and policy: Kenya, Ethiopia, Uganda, Bangladesh** • **"Stories of Change" for Bangladesh, Nepal, India, Zambia and Ethiopia, and methods paper** • **Evidence reviews on scaling up, women's empowerment, nutrition surveillance and private sector engagement in nutrition** • **Papers and policy briefs on undernutrition in Bangladesh and recommended multisectoral actions (LANSA)** • **"How to" guide for developing a cross-sectoral policy framework for food and nutrition security developed in collaboration with FAO** • **Case studies on lessons learned from IFAD experiences in mainstreaming nutrition into their**	$6,000,000

		Methods Evidence reviews, mapping exercises, secondary data analysis, econometric analysis, case studies, focus group discussions, key informant interviews, "stories of change" **Gender research dimension** Research on women's empowerment, gender inequality and trends over time.	**investments: cross-sectoral programs and cross-sectoral policy engagement at national level** • **Global Nutrition Report 2015 published along with issue brief, article in leading nutrition journal, and several roundtable events around the world** • Monitoring system in place to measure changes in agrobiodiversity products purchased by the National School Feeding Programme in Brazil • Voluntary guidelines for mainstreaming biodiversity for food and nutrition produced and presented to Commission on Genetic Resources for Food and Agriculture (CGRFA15) **Research outcomes** • Evidence and enabling environment reviews, stories of change and policy-relevant analytical tools and methods lead to more nutrition-sensitive, cross-sectoral policy and action for nutrition • 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. • Global Nutrition Reports lead to strengthened accountability on nutrition (e.g. N4G compact, ICN2, SUN commitments, private sector engagement), raised profile of nutrition in SDGs, prioritization of nutrition data gaps and identification of opportunities to fill them • Member states adopt IFAD nutrition action framework, including engagement strategy developed with evidence-based inputs from A4NH • Greater recognition and support for the role of agro-biodiversity for human nutrition by country decision makers in Brazil, Kenya Sri Lanka, Turkey	

Table 2. Planned CRP gender research budget for 2015: Expected gender research results and associated budget

Level of organization within the CRP	**Expected Gender research results as described in Table 1**	**Planned gender research budget ($ 000s)**
Level n-1: Flagship Projects that contribute to the CRP gender IDO and if relevant other IDOs that have a gender dimension.	*Expected progress toward the CRP's gender IDO and if relevant other IDOs that have gender equity dimension. Indicate, where relevant, the geographical areas of focus*	
Cross-flagship gender activities	Two literature reviews on gender and selected impact pathways for biofortification and aflatoxins	$20,000
	One gender training event to build capacity for gender research and analysis in other CRPs that collaborate closely with A4NH	$40,000
	Two reports on capacity building activities related to gender research and analysis in other CRPs that collaborate closely with A4NH	$40,000
	Gender-Nutrition Idea Exchange blog, which provides resources and advice on addressing gender in agriculture, nutrition, and health programs.	$10,000
	One rigorous review on "What is the effect of women's and men's time distribution in agricultural work on food consumption and nutrition?"	$50,000
	Two cross-country papers on women's time use and nutrition using WEAI data	$30,000
	Support to integration of gender in A4NH research projects	$120,000
	CGIAR Gender Postdoctoral Fellow (led by A4NH, Grain Legumes, and Livestock and Fish)	$50,000
	CGIAR Gender Postdoctoral Fellow (shared with Policies Institutions and Markets)	$25,000
Level n-2: Cluster of activities *Use one row per relevant Cluster of activities* *For instance:* *Cluster of activities 1.3 (title)*	**Expected research outcomes and outputs that have a gender/equity dimension** (from Table 1). o Gender research outcome 1.3.a : (title) o Gender output 1.3.b: (title) **Note: Gender research is integrated in the A4NH research portfolio. To estimate gender research budgets we use the budget estimation method in the approved A4NH Gender Strategy.**	
1.1 Value chain interventions for nutritious foods	1.1b Reports on costs and effects of school feeding linked to agriculture and community development (Home-Grown School Feeding), a model assessed in Ghana and Mali 1.1b Business plan for enterprises to deliver fish-based complementary foods in Bangladesh 1.1b Report and discussion paper on cooking contest intervention in Bangladesh	$33,000
1.2 Assessing value chains for nutrition from demand to supply	1.2b Reports on development and acceptance of fish-based complementary food for young children 1.2b Reports describing local biodiversity and potential for use in complementary foods 1.2b Reports on supply chain assessments and existing distribution channels that deliver beans and amaranth for poor urban and peri-urban consumers in Kenya and Uganda 1.2b Report on analysis of existing business models using LINK methodology to assess the degree of inclusiveness and existence of nutrition objectives as a key value proposition in current business models for beans and amaranth 1.2b Framework to support the M&E of value chains for nutrition	$32,000

	1.2b Guidance developed, with IFAD, for design of nutrition-sensitive value chains	
1.3 Nutrition-sensitive landscapes	1.3b Synthesis reports from pilot studies (nutritional surveys and assessments) in Zambia and Kenya, with system CRPs 1.3b Case study on gender norms and agency in Vietnam	$50,000
2.1 High-yielding micronutrient enhanced varieties made available to NARES and implementing partners in target countries	2.1b Varietal release of zinc wheat in Pakistan; 2nd wave of orange maize in Zambia 2.1b Next wave varieties in national varietal release trials in all target countries 2.1b Rapid screening technologies implemented with NARS 2.1b Zinc wheat commercialized in India; additional iron pearl millet varieties identified for commercialization	$170,000
2.2 Nutrition and health communities promote biofortified crops of demonstrated nutritional efficacy	2.2b Completed study on zinc rice bioavailability 2.2b Completed trials (2) on zinc wheat in India 2.2b Feeding trial on provitamin A cassava in Nigeria begins 2.2b Background work completed and feeding trial begins for zinc rice in Bangladesh 2.2b Background work complete, partners and study location selected for multi-crop study	$140,000
2.3 Delivery programs establish progress in which farmers adopt and consumers eat biofortified varieties in target countries	2.3b Interactive biofortification prioritization index is made available to the public 2.3b Provitamin A cassava: Develop subnational biofortification prioritization index to select sites for effectiveness study; develop RFP and select partners 2.3b Iron beans: Implement impact evaluation in Guatemala, implement impact assessment in Rwanda to measure adoption, diffusion, and intake of iron beans. Complete background studies for potential effectiveness studies in Uganda or Burundi. 2.3b Continue development of products in Brazil and Colombia, begin product development in Mexico in partnership with CIMMYT and Monterrey Tech 2.3b Monitoring, Learning, and Action system fully implemented in all nine target countries 2.3b Senior Gender Specialist in HarvestPlus guides plans for gender integration into delivery implementation plans in the nine target countries	$200,000
3.1 Food safety – aflatoxins	3.1b Assessment of package of aflatoxin control measures for mitigating risk and reduced exposure in groundnut value chains, with special emphasis on gender and vulnerable groups 3.1b Paper on theories of change for aflatoxin control	$650,000
3.2 Food safety – perishables	3.2b Manual and collection of tools for assessment of value chain made available to value chain actors and other partners	$350,000
3.3 Disease risks	3.3b Publication on brucellosis risk factors in NE Kenya and social /gender determinants of exposure to mosquito borne disease and non-malaria fevers of unknown areas in irrigated and non-irrigated areas of NE Kenya 3.3b Multiple reports/publications mapping health risks associated with intensified agriculture and irrigation in various agro-ecological zones, including gender disaggregated results on exposure, involvement in agricultural activities, and awareness of risks and preventive measures	$200,000

4.1 Evaluation of nutrition-sensitive agriculture	4.1b Impact evaluation of integrated agriculture, nutrition and health program to reduce stunting in Zambia 4.1b Process evaluation report describing the implementation of an enhanced homestead food production (e-HFP) program in Burkina Faso 4.1b Final report on the impact of OFSP interventions on vitamin A, iron, and anemia status of mothers and their infants and their utilization of OFSP 4.1b Report on cost-effectiveness of linking orange-fleshed sweet potato to ante-natal care services for pregnant women	$2,500,000
4.2 Evaluation of broader nutrition-sensitive and direct nutrition development sectors	4.2b Final evaluation report on the impacts of the Preventing Malnutrition in Children Under 2 (PM2A) approach on maternal and child health and nutrition in Burundi and Guatemala 4.2b Impact evaluations on implementation of the Alive & Thrive (A&T) program to improve infant and young child feeding (IYCF) practices at scale in: Ethiopia, Bangladesh and Vietnam 4.2b Implementation costing reports/ publications on implementation of IYCF interventions at scale in: Ethiopia, Bangladesh and Vietnam 4.2b Report/publication documenting changes in policy environment and policy processes following the A&T intervention (advocacy, policy engagement and inter-personal communication) focused on improving IYCF practices at scale in: Ethiopia, Bangladesh and Vietnam 4.2b Two publications on lessons learned from evaluation of Helen Keller International's homestead food production system and behavior change communications program in Burkina Faso (impacts on maternal and child nutrition and on women's empowerment)	$3,500,000
4.3 Enable cross-sector policy analysis, formulation and implementation	4.3b Country-specific case studies on agriculture and nutrition evidence and policy: Kenya, Ethiopia, Uganda, Bangladesh 4.3b "Stories of Change" for Bangladesh, Nepal, India, Zambia and Ethiopia, and methods paper 4.3b Evidence reviews on scaling up, women's empowerment, nutrition surveillance and private sector engagement in nutrition 4.3b Papers and policy briefs on undernutrition in Bangladesh and recommended multisectoral actions (LANSA) 4.3b "How to" guide for developing a cross-sectoral policy framework for food and nutrition security developed in collaboration with FAO 4.3b Case studies on lessons learned from IFAD experiences in mainstreaming nutrition into their investments: cross-sectoral programs and cross-sectoral policy engagement at national level 4.3b Global Nutrition Report 2015 published along with issue brief, article in leading nutrition journal, and several roundtable events around the world	$3,000,000
TOTAL GENDER BUDGET FOR THE CRP (SUM OF ALL CELLS ABOVE)		$11,210,000