



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

Led by IFPRI

PERFORMANCE REPORT

2013

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CGIAR RESEARCH PROGRAM ON AGRICULTURE FOR NUTRITION AND HEALTH (A4NH) ANNUAL PERFORMANCE MONITORING REPORT FOR 2013

A. KEY MESSAGES

A4NH focuses on the CGIAR system-level outcome (SLO) of improving nutrition and health. In 2013, A4NH made major progress in refining its [Strategic Results Framework](#) and in defining four Intermediate Development Outcomes (IDOs) and their indicators and targets that further orient A4NH future research to support nutrition and health impacts at scale. **IDO 1** focuses on **improved diet quality** as an appropriate nutrition outcome for agriculture. A4NH has worked with other CRPs on a **common nutrition IDO**, with diet diversity as a common indicator of diet quality. Likewise, A4NH was able to use well-established indicators, such as prevalence of pathogens in food at point of consumption, as indicators for **reducing exposure to agriculture-associated disease risks (IDO 2)**. However research and development practice show that two other IDOs will be crucial for improving nutrition and health for target beneficiaries. One is **on empowering women and poor communities (IDO 3)**. The other is creating an enabling environment through **cross-sector programs, policies and investments (IDO 4)**. A4NH has proposed initial indicators and targets for the **empowerment and enabling IDOs 3 and 4**, which can be improved with results from evaluation of development actions and on-going research.

A4NH research is organized into four research flagships: Value chains for enhanced nutrition, Biofortification, Agriculture-associated diseases (AAD), and Integrated programs and policies. Each of these flagships and their 2-3 research clusters are designed to focus on a group of immediate development outcomes that will contribute to IDOs and for which a critical mass of research and partners can be assembled. Through the three A4NH delivery pathways, (1) value chains, (2) integrated programs and (3) policies and investments, research outputs will translate into outcomes towards achieving the IDOs, either individually or in combination. While impact pathways have provided a useful platform for describing what research, partnerships and capacities A4NH should support, there is a need to better understand how change could occur and how to measure progress. Thus in 2013, investment began in developing more detailed [theories of change](#) for our research flagships, clusters, and outputs. Groups of A4NH researchers and partners will develop and refine these in 2014 and 2015. These detailed theories of change guide how research is planned, implemented and evaluated and provide development partners with a deeper understanding of the impact-oriented development processes in which they are trying to catalyze change.

- *Synthesis of the two most significant achievements/success stories in the year*

In 2013, *The Lancet* published its second seminal series of papers on maternal and child nutrition. Two of the four papers were led by IFPRI-A4NH researchers. "*Nutrition-sensitive interventions and programmes: how can they help to accelerate progress in improving maternal and child nutrition?*" [makes](#) the case for development programs to be nutrition sensitive in order to effectively combat malnutrition. The key development sectors highlighted included agriculture, social protection, early child development, education, and water and sanitation. Such an approach will allow for simultaneously addressing the critical underlying determinants of malnutrition such as income, food security, women's time, nutrition and empowerment. "*The politics of reducing malnutrition: building commitment and accelerating progress,*" [addresses](#) the challenge of cultivating and sustaining enabling political environments to

support nutrition-sensitive and nutrition-specific program interventions. Based on an extensive review of literature and experience, three core domains of an enabling environment were identified: knowledge and evidence, politics and governance, and capacity and finance. These inter-related domains were found to be important both for creating political momentum around under-nutrition and for converting that momentum into results, though the specific issues and challenges differ by stage. The authors propose a framework to help researchers and other stakeholders be more proactive about ensuring that an enabling environment is in place in contexts in which they are working.

There have been significant research achievements in aflatoxin control in 2013. For biocontrol, a commercial demonstration plant producing five tons per hour was completed in Nigeria and is supporting out-scaling in Nigeria through the [AgResults](#) Initiative. Research and partnerships for biocontrol, endorsed by the Program for Aflatoxin Control in Africa ([PACA](#)), are advancing in eight other African countries. Research coordination across three CGIAR research programs (A4NH, Grain Legumes and Maize) has continued with a [workshop](#) held in October, bringing together scientists from CIMMYT, ICRISAT, IITA, IFPRI, ILRI, and the Biosciences eastern and central Africa Hub at ILRI. Scientists shared current research activities and identified research gaps and opportunities, and areas for development. One significant product from this collaboration is a publication bringing together 19 policy [briefs](#) across the domains of agriculture, markets, health and policy / regulation. While much of the focus is on Africa, an agriculture, market and public health risk scoping study was initiated in South Asia and will be completed in early 2014.

- **Overall financial summary**

Compared to the proposal and PIA budgets, there has been faster overall growth and a slower transition from bilateral to CGIAR (W1 and W2) than predicted. In 2013, expenditures greatly increased from the CGIAR Fund while maintaining overall bilateral grant income and expenditures. As proposed in the A4NH 2012 annual report, expenditure growth has focused on new research in nutrition-sensitive value chains (+22%), aflatoxin control (+30%) and cross-sectoral policy processes (+10%). There was also considerable new spending in partnerships (approx. \$600,000). In 2012, biofortification received limited CGIAR funding, which was increased markedly in 2013. The plan is that the biofortification flagship would receive approximately 20% of its funding from W1/W2 during the current phase (2012-14).

2012 - 2013 Cumulative Financial Summary (US millions)	Planned expenditure (PIA or Consortium Financing Plans Cumulative)	Actual Expenditure Cumulative	Planned Expenditure 2013	Actual Expenditure 2013	Variance (PIA or POWB)
Total Expenditure	122	132.6	63.4	70	+8.0% (PIA)
Window 1 (\$5M)	49.9 (PIA)	33.4	32.8 (PIA)	26	-13.7% (FP)
Window 2 (16.7M)	38.7		21.7		
Window 3/Bilateral	72.1 (PIA)	99.2	30.6 (PIA)	44	+9.2% (FP)
	109.9		41.7		
Gender Research Expenditure (estimated) *				7.6	

- Estimated expenditure- Gender research expenditure is integrated within the themes

B. IMPACT PATHWAY AND INTERMEDIATE DEVELOPMENT OUTCOMES (IDOS)

In 2013, A4NH refined its [strategic results framework](#) and began to operationalize it through the development of a series of impact pathways and theories of change. These theories of change will be used for planning, implementing, and evaluating research, as well as for communicating with key partners and other stakeholders about how research is expected to contribute to impact. Further progress was made on defining IDO indicators and on gathering baseline data. Baseline data will be made available on the newly designed A4NH website in 2014. For some of the more advanced research areas, targets have been set.

A4NH worked closely with the CGIAR IDO working group on identifying common IDOs, and on harmonizing IDO definition and indicator selection among CRPs with IDOs on nutrition. In addition to common indicators, it will also be important that the CRPs with nutrition IDOs have a shared understanding of the pathways through which agriculture influences nutritional outcomes, especially the crucial role that gender can play in several of these [pathways](#). In December 2013, A4NH held a [workshop](#) on gender, agriculture and nutrition. More than 40 specialists in gender, nutrition, and evaluation representing implementing partners and CRPs with a nutrition IDO attended the workshop (see Section D).

C. PROGRESS ALONG THE IMPACT PATHWAY

C.1 Progress towards outputs (2 pages)

During 2013, A4NH researchers have continued to produce quality outputs (compiled in Annex 1) under the four current flagships which contribute to the three impact pathways: value-chains, integrated programs, and policies and investments.

Along the value chain impact pathway, there have been three main types of research contributions. The first type is technologies. To mainstream and accelerate selection of high vitamin and mineral plants, low-cost and high-throughput methods, including x-ray fluorescence analysis (XRF) and iCheck Carotene for vitamin A crops have been developed, tested and used with national partners. This complements the on-going stream of new bio-fortified varieties from our research programs being released by public and private partners in 2013, such as zinc rice in Bangladesh, orange sweet potato in Uganda and Bangladesh, vitamin A maize in Nigeria, iron pearl millet in India and iron beans in DRC that is feeding into an aggressive delivery scale-out in eight target countries in Africa and Asia. Food safety technologies have also progressed. Aflasaft moved on from research-level production and testing to the commissioning and production in a pilot commercial production facility to support scaling-up of delivery in Nigeria. Technologies for safe milk in informal markets, water management and biosecurity have also reached the phase III release stage (Annex 1). The second type of research contribution is tools and approaches. As part of the scale-out for biofortified crop delivery, training manuals for community based organizations and extension workers who train farmers on the fully deployed vitamin A maize and vitamin A cassava, have been developed and used with partners. While at an earlier research stage, food processing technologies are also under development, including methods to incorporate orange sweet potato into baked goods in Rwanda by CIP, improvements to local processing of cowpeas, cassava and soybeans by IITA and fruits such as baobab and mango by ICRAF. Protocols for developing biofortified food products were created by partner CLAYUCA and a [workshop](#) to disseminate information on processing and development was organized in collaboration with CIAT and HarvestPlus. The third type of research contribution, providing knowledge and evidence for transforming value chains to provide healthier foods is in its infancy. Six rapid assessments of nutritional quality and food safety along animal source food value

chains have been implemented and results will be published in 2014-15. Initial development of value chain typologies and assessment frameworks were compiled and will be developed further with key partners in 2014 for a range of value chains from informal through commercial and also for structure value chains such as school feeding and food aid (e.g. purchase for progress).

For the integrated programs pathway, our main research contributions are in the area of knowledge and evidence. There are three main output types: developing robust and rigorous methods, process evaluation to improve program implementation and impact evaluation to provide evidence of efficacy and impact of interventions. Researchers supporting the Alive & Thrive (A&T) project produced two methods articles; the first one describes the evaluation methodology developed and used for impact evaluations of complex integrated programs. The paper uses the example of A&T, a multiple platform, health sector-based program aimed at improving child nutrition through improved infant and young child feeding in Bangladesh, Ethiopia and Vietnam. The second article describes the method of using a theory-driven process evaluation to understand how and why impacts have been achieved and how they can be replicated, building on past reports. Both papers appeared in the *Food and Nutrition Bulletin* and were presented at the 2013 International Congress on Nutrition. To respond to the demand from policy makers and investors, the portfolio of process and impact nutrition-sensitive development evaluations was further strengthened in 2013. Supporting this effort was the Lancet paper on nutrition-sensitive development and a [symposium](#) organized by A4NH researchers, hosted by A&T on “*generating evidence of impact for integrated programs aimed to improve child nutrition during the first 1000 days*” at the International Congress of Nutrition. In 2013, process evaluation results were presented to partners in the A&T project and with Helen Keller International in Burkina Faso.

In nutrition-sensitive agriculture, biofortified foods have the strongest evidence base, particularly for improving vitamin A levels. In 2013, important progress was made on evidence for improving iron levels. A 2013 efficacy study measured improvements in iron status among iron deficient women who consumed biofortified high iron beans; results will be published in 2014. At the International Congress on Nutrition Conference in 2013, an initial analysis summarizing four evaluation studies of high-iron crops, showing positive efficacy was presented. This meta-analysis and some of the recent iron efficacy studies, such as 2013 iron pearl millet bioavailability study, where [results](#) for children in India and women in Benin showed 70% of iron requirements were met, will be published in 2014-15 and provide solid evidence for improving iron levels to supplement already published results on vitamin A efficacy from biofortified crops. Results from just-initiated nutrition-sensitive intervention evaluations in the A4NH portfolio will become available in 2016 and 2017. Other knowledge and evidence outputs in 2013 included a [book](#) “Diversifying food and diets: using agricultural biodiversity to improve nutrition and health” led by Bioversity and integrating contributions from 50 authors from partner CGIAR Centers (CIP, ICRAF, and World Fish), UN agencies, NGOs, and Universities. The SPRING project presented to the World Health Organization (WHO) a [paper](#) on the economic feasibility of maize meal fortification using a Household Consumption and Expenditure Survey (HCES) as part of the WHO’s process of reviewing evidence informed guidelines for the fortification of staple foods as public health interventions.

For the policies and investments pathway several outputs have contributed to understanding policy processes in target regions. In 2013, A4NH and the CRP on Policies, Institutions and Markets (PIM) co-hosted a three-day “[Workshop](#) on Approaches and Methods for Policy Process Research” during which more than 50 policy experts, researchers, and practitioners from the agriculture, natural resource management, nutrition, and health sectors gathered to develop a community of practice, working papers

and a toolkit (to be finalized in 2014). To assist interested national governments and implementing partners identify “highest opportunity” countries for expanding biofortification, HarvestPlus developed the [biofortification prioritization index](#) (BPI). The BPI was first used in a partnership with World Vision to plan the introduction of biofortified crops to five new countries in sub-Saharan Africa. In Vietnam, evidence reviews on food safety, slaughterhouse reform, and animal waste management were produced. Addressing evidence for policies for food safety in Vietnam, three aflatoxin briefs were produced and food safety reform for slaughterhouses, effects on livelihood generation for poor farmers, and management of human and animal waste were analyzed. Also at the International Congress on Nutrition, a [Symposium](#) on Sustainable Food and Diets with a major emphasis on exploring policy options for sustainable local food systems was supported by Bioversity. Leveraging Agriculture for Nutrition in South Asia (LANSA) worked on tools and approaches for policy impact and developed a stakeholder interview [guide](#) which is now being adapted for a new program, Leveraging Agriculture for Nutrition in East Africa (LANEA). Transform Nutrition completed its second full year of operation, and with partners produced policy evidence [reviews](#) and supported the launch of the Hunger and Nutrition Commitment Index ([HANCI](#)).

C.2 Progress towards the achievement of research outcomes and IDOs (List of [Publications](#))

To track progress towards the achievement of the four A4NH IDOs, the focus is on two more immediate research or development outcomes. The first is **improvements in capacity and performance** of key value chain actors, program implementers or national and international researchers. The second is support to policy makers and investors to create a more **enabling environment** for outcomes and impacts. Also for the outcomes towards IDOs for nutrition (IDO1 on diet quality) and/or health (IDO2 on reduced exposure to AAD), immediate outcomes need to be integrated with or linked to those for empowerment (IDO3) and enabling (IDO4).

In 2013 and to grow in subsequent years, the most rapid building of capacity and knowledge to improve **diet quality** is in biofortification delivery in eight target countries. Country delivery managers actively support national public and private sector actors. In Rwanda, the Rwanda Agricultural Board has greatly expanded its capacity to advise farmers and to deliver seeds as well as supporting private seed companies to ensure saturation coverage of high-iron beans. In Zambia, the national extension systems as well as private seed companies have knowledge and skills to deliver high-vitamin A maize. In India, the private sector seed company, Nirmal Seeds, has been supported and is rapidly increasing the supply of iron-pearl millet seeds. Previously, the gender empowerment dimensions of biofortification delivery have been overlooked but a gender assessment was commissioned in 2013 and will report in 2014 with recommendations on concrete actions to enhance the effectiveness of delivery with partners.

A major on-going research success, preceding and during A4NH, is supporting the knowledge, capacity and skills for program implementers in nutrition-sensitive agriculture. Key development implementers partnering with A4NH include Helen Keller International (HKI), BRAC, Concern and partners in the Preventing Malnutrition in under Twos Approach (PM2A), and Alive & Thrive (A&T) programs. Beyond nutrition-sensitive agriculture, implementation support includes nutrition education, gender empowerment, and social protection inputs. A [presentation](#) by HKI at the 2013 Science Forum provides a good example of such outcomes. The challenge is how to spread these capacities beyond the current group of willing development partners. In 2014, a collaboration with TANGO will identify the potential for supporting the knowledge, capacity and skills of more development implementers at greater scale.

Another key target group in which A4NH seeks to build knowledge and capacity is researchers in CRPs with nutrition IDOs. For the CRPs that share the common CGIAR nutrition IDO (11 CRPs), A4NH works with other CRPs in the CRP-IDO working group, successfully advocating for defining this IDO around improvements in diet quality, as well as supporting the evaluation and gender leaders of these CRPs (see workshop report) on impact pathways and theories of change for nutrition-gender outcomes. Bringing in the agricultural partner networks of other CRPs will greatly increase the spread of these approaches to partners.

Increased capacity outcomes for numerous country partners were also achieved towards IDO2 on **reduced exposure to causes of agriculture-associated disease**. Support over several years by ILRI and partners, has helped the Kenya veterinary department in developing and utilizing a decision support framework in planning emergency responses to outbreaks. Initial risk maps for Rift Valley fever have been disseminated and have helped the Kenyan government to focus surveillance efforts. Four universities in Africa and Asia have developed new modules and courses based on research outputs. 2013 marked the final year of EcoZD, a five-year Ecohealth capacity building project in Southeast Asia. The multi-disciplinary country teams gained practical policy communication experience through the process of identifying policy and practice-relevant messages from their research and sharing these messages through stakeholder workshops and briefs. The first Thai-language manual on Ecohealth was finalized and disseminated, which will be instrumental in increasing awareness, understanding and application to zoonotic disease control in the region. An Ecohealth [consultation](#) in South Asia was held in 2013, to build on and extend lessons and experiences from south-east Asia and new projects initiated.

For enabling the reduction of **exposure to foodborne disease** (IDO 2), in 2013, food safety regulators in Vietnam were informed and supported to draft guidelines. A number of food safety and zoonoses disease control research [outputs](#) have also been inserted into high-profile global processes such as, the Foodborne Disease Burden Epidemiology Reference Group (FERG), convened by WHO; and the Global Agenda of Action in Support of Sustainable Livestock Sector Development led by FAO.

The other major outcome contribution is in supporting key actors to provide a more **enabling environment** (IDO4) for nutrition and health sensitive agriculture and associated development actions. In 2013, there were important achievements in communicating nutrition-sensitive knowledge and evidence from research. In Brazil, research from Bioversity and partners supported a decision by the Government to include information on the nutritional value of 40 native species of current or potential economic value in the *Plano Nacional de Agroecologia e Produção Orgânica*. Researchers supporting A&T produced [a guide](#) for nutrition programs to work with journalists and media to meet child nutrition advocacy goals. Beyond scholarly [journals](#), research results have been widely disseminated through presentations at international conferences such as the 2013 International Congress of Nutrition, through blog postings such as Development Horizons, and media outlets such as BBC, National Public Radio and allAfrica.com. Together with other partners, there was a concerted [effort](#) in communicating the key messages from the Lancet papers highlighted above.

In its first year of full-scale implementation of the research and knowledge mobilization strategy, Partnerships and Opportunities to Strengthen and Harmonize Actions for Nutrition in India (POSHAN) made great progress in helping to strengthen relationships between various stakeholders in the nutrition landscape in India. In mid-2013, an event to share findings of the review on multisectoral actions for nutrition brought together senior staff from different ministries and the Planning Commission. The government has since come back to POSHAN with requests for meeting outputs and a policy note

summarizing key insights. In late-2013, the POSHAN team and key partners organized a technical workshop on improving nutrition in Odisha for the Odisha state government. POSHAN was invited to support the development of the vision document for the nutrition mission of Uttar Pradesh, the largest state in India.

Likewise, significant progress has been made in enabling biofortification. In 2013, HarvestPlus was invited to submit a discussion paper to the Codex Alimentarius Committee on Nutrition and Foods of Special Dietary Use (CCNFSDU). At the Committee meeting in November 2013 there was great support for continuing discussions on the subject of biofortification, and the committee requested that a revised discussion paper with an attached project document be prepared for the next session of the CCNFSDU. Because only a country can submit a project document, Zimbabwe and South Africa will jointly submit this with preparatory support from IFPRI/HarvestPlus. In addition, the Government of Nigeria in 2013 was supported to revise their Micronutrient Deficiency Control Guidelines to include biofortified crops and in DRC biofortification has been included in the government's Strategic Nutrition Plan.

C.3 Progress towards Impact

The most advanced flagship for achieving impact at scale is Biofortification. In 2013, HarvestPlus built and strengthened country programs in eight target countries: Rwanda, DRC, Uganda, Zambia, Nigeria, India, Bangladesh, and Pakistan, and delivered high iron beans to 210,000 households in Rwanda and 150,000 households in DRC. In total for all improved seed, across the target countries, biofortified crops have reached 632,000 households in 2013 and 1,374,100 households cumulatively.

Ethiopia will be added as a 9th target country, in 2014. Donor consultations were conducted to plan for the next phase to decide how best to allocate resources to position country programs for the 2014-2018 delivery phase. In assessing its delivery strategy at scale, HarvestPlus identified two gaps it began addressing in 2013. The first is the role of gender in delivery, adoption and consumption. An assessment was started in 2013 that will be completed in 2014. The second is on the implications of climate change for production and delivery of biofortified staples, for which a panel was formed to assess and advise. A [partnership](#) with World Vision will expand delivery to five additional countries: Burundi, Tanzania, Malawi, Ghana and Sierra Leone.

In the AAD flagship, an area of focus for accelerating progress toward impacts at scale is aflatoxin control. One very promising control measure is biocontrol. IITA and partners are rapidly progressing pilot activities with a view to delivery in nine African countries over the next five years. Progress is most advanced in Nigeria where a pilot production facility was completed that can produce 5 tons of Aflasafe™ per hour and a project under the World Bank AgResults Initiative was launched to stimulate commercial use. Researchers across a number of CGIAR Centers are conducting complementary research to fill knowledge gaps of delivery at scale related to economic incentives and willingness to pay, providing evidence on the public health benefits of control, diagnostics and evaluation methods and providing health, market and agricultural evidence for policy makers and regulators, initially in Nigeria and the East African community.

D. GENDER RESEARCH ACHIEVEMENTS

This year, A4NH took concrete steps to operationalize its approved [Gender Strategy](#). A Gender Research Coordinator was recruited with a budget of \$250K in 2013 (increasing by 20% in 2014) in addition to gender research already estimated for each research flagship. She will work with participating Centers, other CRPs and partners as both a researcher and member of the A4NH program management unit, coordinating both gender research capacity building activities and strategic gender research. She will also

lead the review and integration of gender in the detailed [theories of change](#) being developed. While the gender strategy describes the general strengths and weaknesses of gender research in A4NH, a more detailed assessment of gender research across the A4NH portfolio was started in 2013, in partnership with the Swedish Agricultural University (SLU). The inventory will describe the types of gender research questions being explored, methods and tools being used, and how technologies and interventions are being assessed for gender impact. It is also expected that this will help identify gaps in capacity that can be addressed in the coming years. Although the results will not be available until 2014, the process of completing this inventory has already helped the program management unit consider how improvements could be made to program monitoring systems and where and what types of gender research and research capacity need strengthening. A4NH initiated partnerships in two areas identified, gender in value chains with a post-doc from SLU, and the impact of agricultural interventions on women's time, being developed with the University of London (including two senior researchers and a post-doc). These are areas where agricultural development has in the past had unintended negative consequences for women and for nutrition and this research is designed to ensure that this does not happen in the future. For Biofortification, HarvestPlus' gender assessment, initiated in 2013, will provide recommendations to strengthen outcomes and impacts by explicitly addressing gender opportunities and constraints.

In addition to internal coordination, the Gender Research Coordinator will provide an important link to the CGIAR Gender and Agriculture Research Network and help A4NH provide strategic guidance to other CRPs with nutrition IDOs to think about where gender issues are important to consider along their impact pathways. To this end, the first [A4NH Gender-Nutrition Methods workshop](#) was held in Nairobi in December 2013. Representatives from all CRPs with nutrition or diet quality IDOs plus some research and implementing partners met to discuss and agree on a framework for nutrition outcomes that explicitly highlights gender issues, appropriate gender and nutrition indicators for outcomes as well as supporting capacity of different teams. A workshop report, presentations, and other resources were [disseminated online](#) to facilitate sharing with a wider global audience. Future plans for a community of practice, joint research and an annual learning event will be finalized and implemented in 2014.

In 2013, there were several major gender research accomplishments. Data from a major nationally-representative household survey for Bangladesh combining detailed production, consumption and other socioeconomic data, including components for calculating the Women's Empowerment in Agriculture Index (WEAI) and conducting other types of gender analyses, was made [publically available](#). The expanding portfolio of nutrition-sensitive development evaluations include baseline, progress and end-line gender-disaggregated data. For most of the flagship products, tools and technologies reported in Table 1, there is a lag in meeting requirements for gender-disaggregated data and additional lags for assessment of potential of gender impacts from research that was planned in earlier years.

In addition two major areas of gender research were completed with other CRPs. The first are results from gender research in informal animal source food value chains with the Livestock and Fish CRP, were summarized in a number of conference presentations, a chapter in the *Safe Food Fair Food* book and in a special journal issue (to appear in 2014). The findings, based on 20 livestock and fish value chains, revealed that gender roles rather than biological differences were the more important determinants of health risk. Differences in risk were mainly due to differences in occupational exposure, and secondarily to differences in consumption patterns. Women are risk managers in realms of food consumption, preparation, processing, selling and, to a lesser extent, production. The results will be used to design future food safety research in A4NH. . The second is a successful collaboration between researchers from PIM and A4NH

produced a number of exciting outputs related to women’s empowerment in agriculture, nutrition and health. An [evidence review](#) of three types of interventions to improve women’s empowerment: cash transfer programs, agricultural interventions, and microfinance programs. They found that in general CCTs and in some cases agricultural interventions had positive impacts on women’s empowerment, as measured by participation in decision-making or control over income. Nutrition evidence was mixed, largely due to quality of evaluation design. A long-term impact assessment of projects in Bangladesh found that there may be tradeoffs between income gains in the short-run and long term poverty and nutrition impacts. Growing interest in the [Women’s Empowerment in Agriculture Index](#) (WEAI) has provided a number of opportunities for capacity building, and initial findings on associations between women’s empowerment and [nutrition in Nepal](#) and [food security in Bangladesh](#) were published. In general, the findings suggest that different aspects of empowerment matter for nutrition and food security in different contexts, underscoring the importance of understanding the context and the pathways through which gender affects nutrition outcomes.

The penultimate year of the Gender, Agriculture, and Assets Project (GAAP) generated preliminary findings on the impact of a variety of agriculture innovation and programs on women’s ownership and control over assets, with case studies related to [dairy value chain projects](#) in Bangladesh; [household dynamics and asset transfers](#), in Bangladesh and [Burkina Faso](#); and the [household decision-making patterns and adoption](#) of biofortified crops in Uganda, among others. In general, the studies found that while some interventions were able to increase women’s assets, their impacts on the gender-asset gap tended to be less positive for women. In some cases this had to do with how asset ownership was defined and measured. These results will have important implications for understanding and measuring women’s assets, an important indicator of women’s empowerment that has been proposed as an indicator for the gender IDO—and how they contribute to women’s welfare outcomes .

E. PARTNERSHIPS BUILDING ACHIEVEMENTS

An integral part of A4NH’s partnership [strategy](#) is establishing and strengthening partnerships with actors - development implementers, private industry, and policy enablers – that are essential for nutrition and health impacts. As many of the concepts in integrating agriculture and food systems with nutrition and health goals are relatively new, one important partnerships activity in 2013, has been in increasing awareness and knowledge among the very different groups that need to develop a common understanding and coordinate their efforts. One important event was the CGIAR Independent Science and Partnership Council [Science Forum](#) in Bonn. A4NH actively collaborated with the Forum organizers in planning and engaging key participants across the agriculture, nutrition and health communities. For A4NH, the Forum was very useful in increasing the understanding of nutrition and health issues within the CGIAR and with key development partners, researchers and donors. A4NH co-hosted other partnership convening with a range of key actors. Two examples were an event co-hosted with the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) for public and private partners at the Science Forum, and a dialogue with development partners and civil society, [co-hosted](#) with [1,000 Days Partnership](#).

In 2013, important progress was made in developing partnerships that will be critical for achieving impacts-at-scale. To better understand how to support development banks, an A4NH researcher was seconded to International Fund for Agricultural Development ([IFAD](#)) to support nutrition-sensitive strategy and programming. As described in section C2, there are a number of examples of progress in scaling-up biofortification with public-private delivery partnerships, including national programs and seed

companies in 8 target countries. Looking forward, A4NH is actively exploring partnerships to link agriculture with food systems. In 2013, A4NH has invested in collaborations with a coalition of business schools (McGill University and the India Institute of Management Bangalore), pulse grower associations and private sector processing equipment and ingredient companies to develop models for speeding up technical, marketing and policy innovations for producing more nutritious pulse-containing foods. Likewise, HarvestPlus has been discussing with food companies their testing and subsequent large-scale use of biofortified crops. We see these emerging partnerships as critical for a more coordinated support to developing small and medium sized enterprises in target countries that can accelerate both overall economic transformation through agri-food systems and the availability and accessibility of more nutritious foods to expanding urban and net-food purchasing rural populations.

Research collaborations continue to expand. Our priority is to work with other agriculture-nutrition-health (ANH) research partners in accelerating learning and evidence and to support the development of capacity for this research in Africa and South Asia. In 2013, a number of complementary actions progressed. A4NH discussed and provided a background paper to the West and Central African Council for Agricultural Research and Development (CORAF) for stakeholder discussion on how to include nutrition and health issues in CORAF's new implementation plan. To better understand the research needs and opportunities, A4NH began a collaboration with SLU researchers to engage Africa-based ANH researchers, institutions and networks. This will inform a number of consultations in Africa in 2014. Together with the Leverhulme Centre for Integrative Research on Agriculture and Health (LCIRAH), A4NH is working to stimulate cross-sectoral ANH research and support capacity building. In 2013, the development of an Agri-Nutrition-Health Academy progressed. The Academy is designed to provide a forum for sharing research learning more quickly and supporting the next generation of A4NH researchers in Africa and South Asia. In 2014, A4NH will continue to strengthen all of these critical linkages and will invest approximately \$2 million in partnership development.

F. CAPACITY BUILDING

A4NH-participating Centers and partners provided short-term trainings to more than 85,000 farmers, agricultural extension agents, frontline human and animal health workers, and research professionals in the use of new technologies, food production techniques, nutrition education, crop selection methodologies and aflatoxin detection and management. In addition, A4NH researchers mentored 120 Masters and PhD students, primarily female and from developing countries, including a nutrition leadership short [course](#) led by Transform Nutrition which plans to host two courses in 2014.

HarvestPlus and partners conducted numerous trainings through Training of Trainers (TOT) workshops, field days and [demonstrations](#) and formal residential training programs to impart knowledge and build skills in production and management practices of biofortified crops. HarvestPlus has focused on changing consumption patterns through targeted nutrition [education](#) of caregivers about balanced diets especially for children under five years of age and pregnant and lactating women. Trainings have been across seven countries in two regions, reaching more women than men.

ICRISAT has disseminated evidence-based aflatoxin management guidelines to more than 3,800 female and 3,300 male farmers and extension agents. Across six countries in two regions, [trainings](#) have covered integrated aflatoxin management strategies pre and post-harvest often targeted female farmer groups. Participants were trained with demonstration plots in partnership with local NGOs. National Agricultural Research Systems (NARS) researchers and research technicians from Sokoine University in Tanzania and

Agricultural Research Institute Homolo were [trained](#) in ELISA-based assays for aflatoxin detection, integrated management and Good Agricultural Practices (GAPs).

Under value chains, IITA conducted a series of trainings and awareness raising [activities](#) to promote introduction of soybean to traditional foods, improve nutrition knowledge and promote novel soybean products in Zambia. Trainings consisted of two-day hands-on workshops where participants, both male and female, in rural community agriculture camps, learned about soybean processing and utilization. In Mozambique, community based [demonstrations](#) and exhibitions have been held weekly on soybean nutrition and usage reaching, over the course of six months, over 3,400 people. Local entrepreneurs were trained in business skills in order to participate in the trade of soybean based products and monthly mentorship is on-going.

More strategically, A4NH is considering capacity building as part of its partnerships for impact and theories of change. While there are multiple demands for capacity development (for example in Gender and Nutrition), capacity development focus would be on contributions linked to priorities for impacts at scale.

G. RISK MANAGEMENT

1. Partnerships are essential to meet impact expectations. A4NH relies on adding nutrition and health benefits to agriculture and cross-sectoral development actions of others. Research and development partnerships are complex. Current partnerships with BRAC and HKI serve as good working models. However, partnerships are also required with more diverse partners such as agricultural and development planners and private sector firms with different goals and less knowledge or interest in nutrition and health outcomes. Beyond good partnership practices, the major partnership risk mitigation is to jointly develop the impact pathways and theory of change in discussion with key partners as described in Section E. In these tasks, capacity needs for essential national partners will be identified and plans made.
2. Clarity in expectations of results is essential. One of the major efforts has been to clarify that agriculture can be directly accountable for improving diets but that reductions in stunting require more joint interventions including water and sanitation, gender empowerment, poverty reduction and social protection. This clarity will then need to translate into the individual research programs and research clusters. For example, in the value chain pathway, research can expect to inform actions of value chain actors that can lead to improving the availability and access of safe and nutritious foods. A more complex step is how these foods are combined into improved diets. For mothers and infants, the availability and accessibility of more nutritious foods needs to be integrated with health care to improve diet quality.
3. Performance management and research coordination is the third key element of risk management. A4NH involves 12 CGIAR Centers and numerous partners, with a mixture of capacities and experience. In early 2014, an internal audit of A4NH will be completed to provide recommendations into strengthening and better implementing the current monitoring and evaluation system that can be acted on in 2014 and beyond.

H. LESSONS LEARNED

Analysis of variance from what was planned:

- i. Estimate the overall level of confidence/uncertainty of the indicators provided in Table 1.*

The actual indicators compiled in Table 1 for 2013 are underestimated, reflecting both the conservative application of evidence criteria for achievement and the inexperience of some researchers in documenting the evidence required. The 2013 and 2014 targets estimated in the 2012 annual report were overoptimistic. Actual achievements completed in 2013 reflected a lag in outputs based on new CRP investments. This should have been anticipated given the time that new research investments take to produce flagship products and tools, databases, publications and other indicators in Table 1.

- ii. Description, if relevant, of research avenues that did not produce expected results, and description of actions taken by the CRP, such as new research directions pursued and their expected outputs and outcomes*

At this early stage, the issue is more with delayed results rather than unexpected results. For newer areas of research, lags are associated with time to recruitment, CGIAR and partner capacity gaps and in particular the time and effort required to develop new partnerships and ways of working. One example is in the Value chains for enhanced nutrition flagship. Given new funding in 2013, an additional USD 1.3 million was committed for 2013 to recruit new staff, build new partnerships and provide initial research grants. However, due to the unexpected departure of the research leader (recruited in 2012), time required to recruit new staff and a few other delays, many anticipated outputs for 2013 will now be completed in 2014. A number of actions have been taken to accelerate results including identification of a replacement leader, new research partnerships and forming a cross-center nutrition-sensitive value chain working group. For partnerships with value chain actors, this will be an area of expansion in 2014; however, it is difficult to predict which initiatives will succeed and when. On the other hand, for some areas of A4NH, progress was faster than expected. Aflatoxin research in biocontrol now has critical mass and the improved coordination with different CGIAR research teams and partners has potential to meet need to better understand market incentives and health risks if this research is to lead to impacts at scale.

Another area of over-achievement was in supporting partners in the CGIAR and outside with nutritional expertise. A4NH worked with evaluation and gender leads in other CRPs with nutrition outcomes in realigning nutrition indicators to focus on diet quality and providing frameworks for how these can be achieved in different CGIAR research areas. A4NH will continue to support this CGIAR-wide activity in the next few years. This is vital given the past weakness of agriculture research relative to nutrition and gender outcomes. Negotiating cross-CRP work is taking time. The 2015-16 extension proposal will lay out specific priorities for joint CRP work that there is hope to expand in Phase 2.

- iii. Lessons learned by the CRP from its monitoring of the indicators and from its qualitative analyses of progress*

Increased monitoring of gender is helping to identify areas to strengthen. In A4NH, gender research is strong in the Integrated programs and policies flagships. However in some research projects and teams, gender research is weak and even basic sex-aggregated hypotheses and data are lacking. Specific activities for gender research strengthening are described in the gender section above.

In analyses of indicators in different flagships, much is being learned about what agriculture interventions can do for improving nutrition outcomes in what time periods. For health risks in the AAD flagship, there is a demand for more food safety research that we will evaluate in 2014, including evaluation of outcomes from current research. This will be extending to other areas of AAD research in 2015.

Annex 1: CRP indicators of progress, with glossary and targets

CRPs concerned by this indicator	Indicator	Glossary/guidelines for defining and measuring the indicator, and description of what the CRP includes in the indicator measured, based upon the glossary	Deviation narrative (if actual is more than 10% away from target)	2012		2013		2014
				Target (if available for 2012)	Actual	Target	Actual	Target
KNOWLEDGE, TOOLS, DATA								
All	1. Number of flagship "products" produced by CRP	Vitamin A maize - Zambia Vitamin A cassava - Nigeria, DRC Vision 2020 Aflatoxin Briefs - Global Intensification & Disease Emergence Framework - worldwide "Diversifying food and diets: using agricultural biodiversity to improve nutrition and health" Book 2 Lancet papers in the 2013 Lancet Series on Maternal and Child Nutrition			6	13	7	8
All	2. % of flagship products produced that have explicit target of women farmers/NRM managers	2 Lancet Series Papers : http://globalnutritionseries.org/ Aflatoxin brief #4 : http://www.ifpri.org/sites/default/files/publications/focus20_04.pdf			67	0	43	67
All	3. % of flagship products produced that have been assessed for likely gender-disaggregated impact	2 Lancet Series Papers : http://www.ifpri.org/blog/lead-g8-launch-lancet-seminal-series-undernutrition			17		29	50
All	4. Number of "tools" produced by CRP	CIP's NQAEN project produced 2 manuals on sampling, sample preparation and beta-carotene and mineral analysis in potato and sweet potato.			13	26	20	22

		<p>CIP's OFSP Bangladesh project produced 4 manuals: 1) root crop plantation technology; 2) vine multiplication strategy; 3) seed systems study framework; 4) nutrition manual for community nutrition scholars</p> <p>HarvestPlus 5 manuals/protocols: 1) training for vit A maize; 2) training for vit A cassava; 3) XRF protocols for mineral crops; 4) i-Check protocols for vit A crops; 5) protocols for developing biofortified food products</p> <p>ILRI developed 3 Ecohealth training manuals;</p> <p>Alive & Thrive journalist/media guide for advancing child nutrition advocacy.</p> <p>LANSA stakeholder Interview Guide</p> <p>IITA 3: 1) Guide for aflasafeKE01 application in the field to control aflatoxin contamination; 2) Protocols for sample collection of aflasafe treated maize; 3) Manual/guideline document for collecting and preserving soil and samples for the identification of micro-organisms of medical importance in environmental investigations</p> <p>Biofortification Prioritization Index (BPI)</p>						
All	5. % of tools that have an explicit target of women farmers	<p>Food product protocols:</p> <p>OFSP Bangladesh</p> <p>EcoHealth</p> <p>BPI</p> <p>LANSA stakeholder interview guide</p> <p>A&T media/journalist advocacy guide for child nutrition</p>			46	46	55	67
All	6. % of tools assessed for likely gender-disaggregated impact	<p>BPI:</p> <p>http://www.harvestplus.org/sites/default/files/working%20paper%20_11_web.pdf</p>			8	12	5	50
All	7. Number of open access databases maintained by CRP	Case studies; Cassava delivery dissemination tracking; Farmer survey data for aflatoxin contamination; Biorepository: Bangladesh HH data survey			6	3	5	7
All	8. Total number of users of these open access databases				unknown	unknown	unknown	unknown
All	9. Number of publications in ISI journals produced by CRP				115	72	93	115
1,2,3, 4, 6	10. Number of strategic value chains analyzed by CRP	Senegal nomadic dairy value chain India dairy value chain			12	14	25	25

		Bangladesh dried fish in complementary food value chain Bangladesh fortified yogurt value chain (Grameen Danone) Kenya urban slum ASF value chain Bangladesh vegetable seed value chain Peru mango value chain Kenya mango value chain Bangladesh sweet potato planting material value chain Rwanda OFSP baked product value chains Nigeria cassava value chain Vietnam pork chain Vietnam rice value chain Ethiopia sheep and goat chain Uganda pig value chain Tanzania dairy value chain Cote d'Ivoire livestock and fish value chain Abidjan Kenya livestock value chain in Nairobi Western Kenya livestock value chains Kenya dairy chain Thailand poultry value chain Indonesia poultry value chain Laos pig value chain South Africa informal sector livestock chains						
CAPACITY ENHANCEMENT AND INNOVATION PLATFORMS								
All	13. Number of trainees in short-term programs facilitated by CRP (male)	Glossary: The number of individuals to whom significant knowledge or skills have been imparted through interactions that are intentional, structured, and purposed for imparting knowledge or skills should be counted. This includes farmers, ranchers, fishers, and other primary sector producers who receive training in a variety of best practices in productivity, post-harvest management, linking to markets, etc. It also includes rural entrepreneurs, processors, managers and traders receiving training in application of new technologies, business management, linking to markets, etc., and training to extension specialists, researchers, policymakers and others who are engaged in the food, feed and fiber system and natural resources and water management. Include training on climate risk analysis, adaptation, mitigation, and vulnerability assessments, as it relates to agriculture. Training should include food security, water resources			37,092	10,148	39,273	40,600

		management/IWRM, sustainable agriculture, and climate change resilience Best practices in productivity, pre and post-harvest management, new technologies, nutrition education, marketing. .						
All	14. Number of trainees in short-term programs facilitated by CRP (female)	Best practices in productivity, pre and post-harvest management, new technologies, nutrition education, marketing.			12,718	10,116	50,732	50,650
All	15. Number of trainees in long-term programs facilitated by CRP (male)	Masters: 25; PhD: 23			34	20	48	50
All	16. Number of trainees in long-term programs facilitated by CRP (female)	Masters: 51; PhD: 29			42	15	80	70
TECHNOLOGIES/PRACTICES IN VARIOUS STAGES OF DEVELOPMENT								
All	18. Number of technologies/NRM practices under research in the CRP (Phase I)	Glossary: Technologies to be counted here are agriculture-related and NRM-related technologies and innovations including those that address climate change adaptation and mitigation. Relevant technologies include but are not limited to: <ul style="list-style-type: none"> • Mechanical and physical: New land preparation, harvesting, processing and product handling technologies, including biodegradable packaging • Biological: New germplasm (varieties, breeds, etc.) that could be higher-yielding or higher in nutritional content and/or more resilient to climate impacts; affordable food-based nutritional supplementation such as vitamin A-rich sweet potatoes or rice, or high-protein maize, or improved livestock breeds; soil management practices that increase biotic activity and soil organic matter levels; and livestock health services and products such as vaccines; • Chemical: Fertilizers, insecticides, and pesticides sustainably and environmentally applied, and soil amendments that increase fertilizer-use efficiencies; • Management and cultural practices: sustainable water management; practices; sustainable land management practices; sustainable fishing practices; Information technology, improved/sustainable agricultural production and marketing practices, increased use of climate information for planning 			188,002	175,007	150,018	150,010

		<p>disaster risk strategies in place, climate change mitigation and energy efficiency, and natural resource management practices that increase productivity and/or resiliency to climate change. IPM, ISFM, and PHH as related to agriculture should all be included as improved technologies or management practices.</p> <p>New technologies or management practices under research counted should be only those under research in the current reporting year. Any new technology or management practice under research in a previous year but not under research in the reporting year should not be included.</p> <p>Biological: Kenya, Mali, Niger, Malawi, India, DRC, Zambia, Bangladesh Cultural practice: aflatoxin control in India Management practices: Vietnam, Ethiopia</p>						
All	19. % of technologies under research that have an explicit target of women farmers	The papers, web pages, blog stories, press releases and policy briefs supporting indicator #x must have an explicit focus on women farmers/NRM managers to be counted			0	0	0	50%
All	20. % of technologies under research that have been assessed for likely gender-disaggregated impact	Reports/papers describing the products should include a focus on gender-disaggregated impacts if they are to be counted			0	0	0	50%
All, except 2	23. Number of technologies /NRM practices field tested (phase II)	<p>Glossary; Under “field testing” means that research has moved from focused development to broader testing (pilot project phase) and this testing is underway under conditions intended to duplicate those encountered by potential users of the new technology. This might be in the actual facilities (fields) of potential users, or it might be in a facility set up to duplicate those conditions.</p> <p>Management: Bangladesh, Rwanda, Kenya Biological: Zambia, DRC, Bangladesh</p>			1548	1209	1050	1000
All, except 2	27. Number of technologies/NRM practices released by public and private sector partners globally (phase III)	Glossary: In the case of crop research that developed a new variety, e.g., the variety must have passed through any required approval process, and seed of the new variety should be available for multiplication. The technology should have proven benefits and be as ready for use as it can be as it emerges from the research and testing process. Technologies made available for			10	6	16	19

		<p>transfer should be only those made available in the current reporting year. Any technology made available in a previous year should not be included.</p> <ul style="list-style-type: none"> - Training, branding and certification for safe milk in informal markets – India - Community delivered vaccination for poultry diseases - Tanzania, Kenya - Optimising rabies vaccination – Indonesia - Water management for safety – Vietnam - Biosecurity in backyard systems - Nigeria - High zinc rice – Bangladesh - 2 varieties of OFSP – Uganda - 2 varieties of vit A maize – Nigeria - Open-pollinated variety of pearl millet – India - 5 varieties of iron bean - DRC 						
POLICIES IN VARIOUS STAGES OF DEVELOPMENT								
All	28. Numbers of Policies/ Regulations/ Administrative Procedures Analyzed (Stage 1)	<p>Number of agricultural enabling environment policies / regulations / administrative procedures in the areas of agricultural resource, food, market standards & regulation, public investment, natural resource or water management and climate change adaptation/mitigation as it relates to agriculture that underwent the first stage of the policy reform process i.e. analysis (review of existing policy / regulation / administrative procedure and/or proposal of new policy / regulations / administrative procedures). Please count the highest stage completed during the reporting year – don't double count for the same policy.</p> <p>Market standards and regulations; agricultural enabling environment regulations; natural resource management; public investment</p>			9	59	12	15
All	29. Number of policies / regulations / administrative procedures drafted and presented for public/stakeholder consultation (Stage 2)	<p>..... that underwent the second stage of the policy reform process. The second stage includes public debate and/or consultation with stakeholders on the proposed new or revised policy / regulation / administrative procedure.</p> <p>1. Revision of the Micronutrient Deficiency Control Guidelines to include biofortified crops - Nigeria</p>			2	2	6	7

		<ol style="list-style-type: none"> 2. Strategic Nutrition Plan – DRC 3. Strengthen multisectoral nutrition approaches in India 4. Stakeholder mapping Odisha, India for state-government 5. Revision to national recommendations of the Nutrition Coalition – India 6. WHO's evidence inform-guidelines for the fortification of staple foods as public health interventions (specific to maize meal) - global 						
All	30. Number of policies / regulations / administrative procedures presented for legislation(Stage 3)	<p>: ... underwent the third stage of the policy reform process (policies were presented for legislation/decre to improve the policy environment for smallholder-based agriculture.)</p> <ol style="list-style-type: none"> 1. National Nutrition Strategy - Zambia 			1	1	1	1
All	31. Number of policies / regulations / administrative procedures prepared passed/approved (Stage 4)	<p>: ...underwent the fourth stage of the policy reform process (official approval (legislation/decre) of new or revised policy / regulation / administrative procedure by relevant authority).</p> <ol style="list-style-type: none"> 1. Four districts that are part of the Rwandan Crop Intensification Program included sweet potato as a priority crop - Rwanda. 			0	1	1	1
All	32. Number of policies / regulations / administrative procedures passed for which implementation has begun (Stage 5)	<p>: ...completed the policy reform process (implementation of new or revised policy / regulation / administrative procedure by relevant authority)</p> <p>Clearly identify in this cell the type of policy and the country/region concerned</p>			0	0	0	1
OUTCOMES ON THE GROUND								
All	33. Number of hectares under improved technologies or management practices as a result of CRP research	Bangladesh - new or continuing, unknown			unknown	unknown	231	unknown
All	34. Number of farmers and others who have applied new technologies or management practices as a result of CRP research	<p>East Africa, India, Ethiopia, Uganda, Kenya, Bangladesh, Rwanda, DRC, Zambia, Nigeria</p> <p>New or continuing area: unknown</p> <p>34 (a) number of women farmers concerned</p> <p>34(b) number of male farmers concerned</p>			203,972	304,600	<p>Total: 645,075</p> <p>5075</p> <p>1000</p>	<p>Total: 1,128,200</p> <p>18200</p> <p>10000</p>