Annexes: A4NH CRP

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3. Annexes

3.1 Partnership Strategy

OVERVIEW

The CGIAR Research Program (CRP) on Agriculture for Nutrition and Health (A4NH) is the CGIAR research program (CRP) specifically designed to address the CGIAR System Level Outcome (SLO) on improving nutrition and health. In taking on this challenge, A4NH recognizes that transformative partnerships will be central for success. Transformative change is required to:

- Forge cooperation between agriculture, nutrition, and health sectors based on the contributions that each sector can make to shared objectives;
- Strengthen the capacity of national research organizations and scientists in these sectors to provide knowledge, evidence, and direction to multi-sectoral actions to achieve country, regional and global development goals; and
- Build new relationships between researchers and development implementers and enablers for faster progress in achieving development outcomes and impacts.

Our assumption is that better nutrition and health outcomes and impacts cannot be achieved without transforming current partnership approaches. The intent of this annex is to explain the A4NH strategy for selecting and engaging with partners in Phase II.

TYPE OF PARTNERS AND ROLES OF PARTNERS IN A4NH

A4NH partnerships in Phase II will continue to be driven by the three impact pathways through which we expect A4NH research to deliver results: **agri-food value chains**, **development programs**, and **policies**. A4NH also recognizes that partners are critical at all stages of research from discovery through proof-of-concept to delivery at scale. A4NH's current partnership strategy summarizes the core principles and processes that A4NH will continue to build upon in Phase II. A4NH classifies partners into four broad categories, depending on their role in the impact pathway: researchers, actors in value chains, development program implementers, and enablers. The categories are not mutually exclusive; some individuals or organizations may fall into more than one partner category, often depending on the stage of research.

- **Research** partners include other CGIAR Centers and CRPs, advanced research institutes, and academic institutions that are involved in agriculture, nutrition and health research. Research partnerships are central in the A4NH theory of change (ToC) mainly for generating research outputs and enhancing capacity to do this (evidence, technologies and other innovations) with potential to go to scale but also for generating information about impact pathways and underlying assumptions that can inform how research is designed and delivered.
- **Agri-food value chain** partners include individuals, firms, public-private initiatives, and the organizations and association that represent them, all along the value chain, including input suppliers, producers, processors , transporters, wholesalers, retailers, marketers, regulators, and consumers. A4NH works with value chain partners in two main ways: (1) to develop and test value chains innovations (through the agri-food value chains impact pathway) and (2) to create and sustain an enabling environment for health, nutritious food systems (through the policies pathway).
- **Development implementers** include government ministries, the United Nations, and other global initiatives, NGOs, civil society organizations, and farmers' groups that all play roles in designing and implementing nutrition- and health-sensitive agricultural development programs. By generating

evidence on what works and translating it into operational guidance, A4NH supports development implementers to increase the effectiveness and cost-effectiveness of their programming.
- **Enablers** include policy- and decisionmakers, as well as investors involved in creating enabling environments at national, regional, and global levels. Where political will already exists to support nutrition-sensitive agriculture, A4NH works with initiatives like the Scaling Up Nutrition (SUN) Movement, governments, and with regional organizations (e.g., the Comprehensive Africa Agriculture Development Program (CAADP)) to enhance the capacity to develop and implement strategy and policy options.

Partner Roles in A4NH

The roles of A4NH partners will fall into three groups in Phase II: managing partners, strategic partners, and collaborating partners. The relative role of a partner can change over time with partners moving between the different groups. Partner performance will be monitored and evaluated and both the Independent Steering Committee (ISC) and Planning and Management Committee (PMC) will review partnership status annually.

Managing partners will be part of the A4NH PMC, recruit and co-manage flagship program (FP) and cluster leaders and key Center researchers, and actively support CRP-level resource mobilization, communication, and advocacy. Each managing partner will have a program participant agreement (PPA) with IFPRI that will include expectations for its responsibilities in A4NH overall and in specific FPs, and how both will be monitored and evaluated. There will be seven managing partners: IFPRI, as the Lead Center, plus Bioversity International, CIAT, IITA, ILRI, London School of Hygiene and Tropical Medicine (LSHTM), and Wageningen University and Research Centre (Wageningen UR), (Table 1).

Strategic partners will not participate in program management, but they will dedicate human and financial resources to a FP(s), and actively engage in planning and implementing research with others in A4NH. Potential strategic partners come from CGIAR (Centers and CRPs) and from other research institutes (e.g., Public Health Foundation of India, Hanoi School of Public Health), actors in value chains (e.g., seed companies, GAIN, Pulse Innovation Platform), development implementers (e.g., BRAC, Helen Keller International, World Vision), and enablers (e.g., national governments, CAADP, FAO, IFAD, OIE, PACA, WHO, World Bank). In some cases, strategic partners are engaged to lead clusters of activities in particular FPs, like the Institute of Development Studies and the Institute for Tropical Medicine, Antwerp will do for FP4. Each strategic partner will have a PPA or similar formal agreement (e.g., MoU) that describes annual expected results and how these will be monitored and evaluated. While in some cases strategic partners have been identified, in other cases they will be identified once Phase II begins and A4NH and the partner have reached a shared understanding of the responsibilities involved (Table 1).

Collaborating Partners include hundreds more entities with which A4NH works including those from within CGIAR with a valuable, but limited role in A4NH. Collaborating partners will not actively participate in CRP or flagship-level management. Collaborating partners, like strategic partners, can include all four A4NH partner types. Examples of potential collaborating partners include CGIAR Centers, NARS, universities or think tanks, NGOs, and the private sector. Some collaborating partners will have formal contracts with managing or strategic partners through which their contributions will be documented and monitored. Other collaborating partners may engage with A4NH through less formal arrangements, for example through participating in an A4NH community of practice (CoP).

PARTNERSHIP MODALITIES

How we will work with partners falls into three broad categories:

- Joint research with other CRPs on the priority topics identified in the five FPs and on strategic gender and equity issues undertaken by the Gender, Equity, and Empowerment (GEE) unit;
- Networking and mutual learning, including capacity development, conducted through FP-led activities like learning platforms or CoPs; and
- As a bridge between CGIAR and global, regional, and national nutrition and health communities.

KEY PARTNERSHIP ACTIVITIES

Some key partnership activities A4NH will undertake in Phase II are introduced briefly below and more are described in detail in Table 2. The activities we are highlighting here relate mainly to our plans in five focus countries and our role as an integrating CRP (ICRP).

Aligning and engaging with country processes. A4NH has identified five focus countries for Phase II, four of the highest priority countries for CGIAR Site Integration (**Bangladesh, Ethiopia, Nigeria, and Vietnam**) plus one high priority country (**India)**. In these countries, the new A4NH Country Coordination and Engagement (CCE) unit will support country teams comprised of A4NH FP researchers, other CRPs, and partners who will carry out joint research and take responsibility for the Site Integration Plans (when developed). For example, in Ethiopia, we would like to engage the Ethiopian Public Health Institute, the Ministry of Agriculture, the Ethiopian Institute for Agricultural Research, and the Ethiopian Development Research Institute in the team to work with the managing partners in Ethiopia to develop joint research. The country teams will be managed by one A4NH managing partner (IITA in Nigeria, ILRI in Ethiopia, CIAT in Vietnam and IFPRI in Bangladesh and India). The country teams will work on behalf of A4NH to ensure that our research complements national government strategies and investments, and that we have mechanisms or partnerships for tracking national-level indicators related to nutrition and health.

Partner consultation. The Global Conference on Agricultural Research for Development 3 (GCARD3) process was conducted in 2015-2016 and A4NH researchers participated in the consultations with the national governments and other stakeholders. Our priorities are aligned with country priorities for our focus countries. For more information about A4NH engagement in the GCARD3 processes, please refer to Annex 3.6. A4NH held stakeholder consultations related to the Phase II proposal, primarily related to our new FPs, such as a series of regional consultations on agriculture and health and a workshop with Ethiopian stakeholders on the food systems agenda in Ethiopia.

Aligning and engaging with regional organizations to strengthen leadership. At the country level, SUN and CAADP teams are expected to work collaboratively with A4NH; the need to mainstream nutrition within CAADP monitoring processes via ReSAKSS has created a unique opportunity to promote research uptake with the related country and regional structures for greater impact of agriculture on nutrition in Africa. A4NH, and specifically the third cluster on Capacity, Collaboration, Convening (3C) in FP4, will have responsibility to support countries to demand and use evidence. Activities will include the promotion of collaborative networks and institutional arrangements to support evidence generation and use cycles and regional learning events in focal countries.

Aligning and engaging with global initiatives and processes. More global coordination around agriculture-nutrition and agriculture-health is important. In Phase I, A4NH invested in a joint position with IFAD, with a view to strengthening agriculture-nutrition investment for countries. IFAD has placed much greater emphasis on nutrition in its Country Strategies, Grants and Loan portfolios for IFAD10

(2017-19). Through Bioversity and IFPRI, we plan to strengthen joint work with IFAD and with the other Rome-based food agencies, like FAO, WFP, REACH, and UNSCN. Other linkages A4NH will strengthen in Phase II will be with the Regional Strategic Analysis and Knowledge Support System (ReSAKSS) network and with WHO's Strategic and Technical Advisory Group on the control of zoonotic NTDs.

Networking and mutual learning, including capacity strengthening. A4NH will work with partners to support networking and mutual learning around agriculture, nutrition and health. Another example comes from the Agriculture, Nutrition and Health (ANH) Academy. A4NH and LCIRAH co-invested in the launch of the ANH Academy in 2015. Designed as an initiative to build capacity of ANH researchers, particularly those from the South, the ANH Academy will provide another avenue by which A4NH can engage with partners, primarily researchers, to support integrated research through development, testing and dissemination of improved methods and metrics. The A4NH external evaluation identified a demand from A4NH-afilliated researchers for opportunities to focus on the scientific research on nutrition and health. In response, A4NH will host an annual scientific event for our partners to engage with one another. To promote country engagement, the event will be held in one of the five focus countries in turn with associated side events around particular themes to engage sets of stakeholders.

SUSTAINING PARTNERSHIPS

The **key principles** to guide partnerships in A4NH will include:

- Agreement of all partners on key goals and objectives;
- Commitment to engage in an inclusive, transparent, and trustworthy manner;
- Commitment to ensure that the partnership adds value to A4NH impact pathways;
- Identification of clear, mutual benefits for each partner;
- Adherence to mutual accountability and respect;
- Acknowledgement that roles and expectations are clearly understood among all partners; and
- Practice that shows that value addition matters, not seniority and hierarchy.

PARTNERING CAPACITY

The A4NH external evaluation found that partnership brokering skills were "unevenly distributed" in A4NH. Some Centers had strong partnership strategies while others approached partnership in a more *ad hoc* manner. Our approach in Phase II will be to increase our partnership capacity, through new managing and strategic partners who bring strong partnership capacity and address these inequities across the CRP. A4NH managing and strategic partners are well positioned to develop strong partnerships, particularly in areas where A4NH plans to expand, such as in food systems (Wageningen UR), with public health (LSHTM), the private sector (GAIN), in capacity and leadership (EVIDENT & ANLP), or in particular countries (BRAC in Bangladesh). In addition, A4NH will leverage our CGIAR managing partners' existing networks and skills in our focus countries, in particular.

APPROPRIATE RESOURCING OF PARTNERSHIPS

Resource commitments are critical to developing and maintaining partnerships. A4NH uses a mix of co-funding approaches and modalities to accommodate different partnership purposes and partner co-funding abilities. More than 30% of the total budget was expended by non-CGIAR partners in Phase I. In Phase II, Our estimated budget for partners is 33.5% of the total CRP budget from all funding sources and approximately 20% of the W1/W2 budget for the six-year Phase II period. This allocation will cover the activities described in Table 2 at the end of this Annex.

	PMU	FP1	FP2	FP3	FP4	FP5	Total	% of total
Partnership (in US$ millions)	1.0	16.98	154.05	16.41	12.38	6.29	207.11	33.5%

Table 1. List of managing partners and potential strategic partners involved in Phase II of A4NH

Flagship Programs (FPs)	Managing Partners Involved (lead in bold)	Potential Strategic Partners Involved
FP1: Food Systems	Bioversity, CIAT, IFPRI, IITA, ILRI, **Wageningen UR**	Researchers: other CRPs and their key Centers Enablers: national governments in focus countries Actors in value chains: (public-private platforms), GAIN Marketplace for Nutritious Foods, AIM, The Sustainability Consortium, Pulse Innovation Platform
FP2: Bioversity	**IFPRI/CIAT** (HarvestPlus)	Researchers: AFS-CRPs and their key Centers, NARS Implementers: World Vision, WFP, Mercy Corps Actors in value chains: Seed Co. (Zambia), Nirmal Seeds (India)
FP3: Food Safety	IFPRI, IITA, **ILRI**	Researchers: Royal Veterinary College, LCIRAH, University of Nairobi, Sokoine University of Agriculture, Public Health Foundation India, Hanoi School of Public Health, CRP Livestock, CRP Fish Enablers/Implementers: WHO, OIE, PACA, CTA
FP4: SPEAR	Bioversity, **IFPRI**	Researchers: IDS, University of Antwerp Implementers: BRAC (Bangladesh), Helen Keller International, PRADAN (India)
FP5: Improving Human Health	IITA, **ILRI, LSHTM**	Researchers: Swiss TPH, University of Liverpool, LCIRAH, Makerere University, Hanoi School of Public Health, Public Health Foundation of India Enablers/Implementers: Zoonotic Disease Unit (Gov't of Kenya), FAO, OIE, WHO

Table 2. Potential strategic partnership activities in Phase II of A4NH

Title of Partnership	**Improving Private Sector Engagement**
Convener of the partnership and their role	GAIN (Global Alliance for Improved Nutrition)
Specific focus and objective	To leverage existing collaborations and identify new opportunities for research collaborations with private companies involved in food systems.
Science agenda	To conduct operational research on the effectiveness of public-private partnerships in the context of healthier food systems and to collaborate with SMEs in the four key countries to develop healthier food products and portfolios.
Geographical focus / location	Bangladesh, Ethiopia, Nigeria, and Vietnam
Role of the CRP/FP in the partnership	FP1's role will be to convene research with CGIAR and existing public-private platforms. GAIN is also one of the cluster leaders of CoA2 in FP1.
Key CGIAR partner(s) and their role(s)	Bioversity, CIAT, IITA, and IFPRI roles in identifying the opportunities and then conducting operational research with private companies that leads to strategies for developing healthier food products and portfolios with potential to go to scale in target countries. AFS-CRPs have a role in joining the collaborative opportunities with private companies for healthier food products and portfolios involving AFS-CRP staple crops in target countries.
Key 'external' partner(s) and their role(s)	Existing public-private platforms include the Amsterdam Initiative for Malnutrition (AIM), the GAIN Marketplace for Nutritious Foods, COLEACP, The Sustainability Consortium (TSC), and the Pulse Innovation Partnership led by McGill University. Potential private companies include Nutreco, Unilever, DSM and FrieslandCampina may participate in operational research with researchers from FP1: Food Systems for Healthier Diets. Opportunities for consumer labels will be worked out with, for example, Choices International Foundation, Fair Trade, and Eco, to do the same within FP1.
Contribution to ToC and impact pathways	Evidence has shown that using public-private partnerships to anchor innovations in the food system – the process of making multiple connections – increases the chance that sustainable change can be realized. Operational research will be shared by food system stakeholders and researchers, so that all are involved in the development and evaluation of innovations. Early and full stakeholder engagement increases the likelihood that innovations are implemented by private companies and adopted by consumers in the focus countries.
Title of Partnership	**Mainstreaming biofortification into partners' crop development work**
Convener of the partnership and their role	HarvestPlus

Specific focus and objective	To mainstream biofortification in agricultural research within CGIAR and NARS, together with AFS-CRPs, in order to scale and sustain the impact achieved in target countries during the delivery phase. More specifically, mainstreaming nutrition into breeding requires a two-pronged approach: (1) annually increasing the percentage of biofortified germplasm in CGIAR Centers' breeding programs, which are then distributed to NARS for further adaptation and eventual release, and (2) developing methods for reducing the costs of breeding for biofortified varieties (through marker-assisted selection and low-cost, high-throughput methods of measuring vitamin and mineral content).In addition, HarvestPlus will look at the incentives for mainstreaming, for example, estimates of potential benefits (net of costs) including supportive policies where needed.
Science agenda	To develop second and third waves of high-yielding, biofortified germplasm with higher nutrient content. These new lines will be distributed globally to NARS for further crossing, testing for adaptation to local conditions, and eventual release. Crop development activities will focus on Tier 1 biofortified staple crops (wheat, rice, maize, bean, cassava, and pearl millet), with some investment in secondary staples (banana/plantain, cowpea, lentil, potato, and sorghum). To develop (i) cost-saving breeding methods such as marker-assisted selection (identifying the specific genes associated with high mineral and vitamin content); and (ii) improved low-cost, high-throughput methods for measuring the mineral and vitamin content in seeds (in collaboration with universities in Australia, Europe, and North America).
Geographical focus / location	Nine target countries (for HarvestPlus) initially
Role of the CRP/FP in the partnership	FP2's role is to lead training and capacity development with NARS for the development and eventual release of biofortified varieties and work with CGIAR to realize its 2014 commitment to develop and implement a plan for mainstreaming.
Key CGIAR partner(s) and their role(s)	AFS-CRPs and key Centers have a role in the science agenda described above and in carrying out the training and capacity development activities.
Key 'external' partner(s) and their role(s)	The NARS and national breeding programs have a role in working with FP2 to strategize how to reach the eventual inclusion of biofortified traits within regular breeding programs, independent of specific FP2 funding.
Contribution to ToC and impact pathways	By developing and delivering cost-effective tools and techniques for mainstreaming nutrition in breeding, we expect a 2.5% annual increase in crop development efforts for target crop/ecologies that mainstream biofortified traits by 2022. As a result, crop breeders will have the incentive and capacity to incorporate nutritional traits into their breeding strategies.
Title of Partnership	**Scaling out biocontrol for aflatoxins in Africa**
Convener of the partnership and their role	PACA (Partnership for Aflatoxin Control in Africa)

Specific focus and objective	To provide leadership and coordination for Africa's aflatoxin control efforts, acting primarily as catalyst, facilitator, partnership and knowledge broker, project developer and information clearinghouse. To also advocate for the establishment of enabling policies and institutions, increased investment and the mobilization of resources, and ultimately, act as a grant maker to support priority aflatoxin control activities.
Science agenda	Developing and adapting technologies, generating evidence on effectiveness and potential impact, policy and political economy analysis.
Geographical focus / location	Target countries in Africa
Role of the CRP/FP in the partnership	FP3's role is provide evidence to PACA on the scale of aflatoxin contamination and the cost-effectiveness and impacts of different control options, like GAP or biocontrol. FP3 may collaborate with PACA and other partners to develop innovative capacity building packages.
Key CGIAR partner(s) and their role(s)	IFPRI, IITA, and ILRI: Researchers participate in high-level processes convened by PACA and conduct joint research with one another and with other CRPs (DCL and Maize) that inform PACA.
Key 'external' partner(s) and their role(s)	Governments in target countries approve large-scale production of aflasafe™ initially for research and later for commercial use. Private firms and industry associations participate in setting research agenda and in pilot testing innovations.
Contribution to ToC and impact pathways	By delivering evidence at high-level fora convened by PACA, we expect that standardized regulations related to aflasafe™ will be adopted in ECOWAS and PACA focus countries by 2021. As a result, at least 40 public sector agencies and agri-businesses will adopt aflatoxin mitigation technologies for reducing aflatoxin in crop value chains and private firms will be producing aflasafe™ in 3 countries.
Title of Partnership	**Capacity building for country ownership and leadership**
Convener of the partnership and their role	EVIDENT Network (Evidence-informed Decision-making in Nutrition and Health) and IFPRI through 3C cluster in FP4
Specific focus and objective	To enhance evidence-informed decisionmaking and policy-driven research in health and nutrition through North-South partnerships, by addressing the priority concerns and questions of decisionmakers from low- and middle-income countries through reviews of evidence, health technology assessments and locally-appropriate guidance, and facilitating the translation of evidence into policy.
Science agenda	There are three main questions: (1) What individual, organizational and systemic capacity and leadership gaps limit collaborative engagement, evidence generation and use across the policy, program development, and implementation continuum in focal countries and regionally; (2) What are effective mechanisms and innovative strategies to increase the capacity and leadership needed for effective evidence-informed decisionmaking; and (3) What can be learnt from the approach (internal process documentation) to support change.

Geographical focus / location	Ten target countries
Role of the CRP/FP in the partnership	In FP4, the CoA3 (3C) will build on the conceptual work by Gillespie and Margetts (2013), and practical work undertaken by the EVIDENT team on nutrition-relevant capacity in Africa, to develop, test, and document approaches for strengthening capacity and leadership of key actors and organizations. It will also build on the capacity assessments undertaken in selected African countries under the ReSAKKS program.
Key CGIAR partner(s) and their role(s)	IFPRI will co-lead the 3C cluster in FP4 along with EVIDENT and include other partnership platforms, such as the African Nutrition Leadership Programme (linked to the Global Nutrition Leadership Platform) and the Agriculture, Nutrition, and Health Academy.
Key 'external' partner(s) and their role(s)	12 institutes make up the EVIDENT team. These institutes individually and collectively carry out the objectives of the EVIDENT network. North-West University in South Africa hosts the ANLP. EVIDENT and ANLP will work collaboratively with IFPRI to convene and facilitate learning processes and events at country and regional levels.
Contribution to ToC and impact pathways	The partnership between EVIDENT and FP4 will strengthen capacities necessary to address the disparity between research and local needs in nutrition and health in Africa. The process ensures societal relevance so that decisionmakers can make recommendations for policies adapted to their local context.
Title	**Establishing a Platform for Public Health and Agriculture Research Collaboration**
Convener of the partnership and their role	London School of Hygiene and Tropical Medicine (LSHTM)
Specific focus and objective	To carry out a specific program of engagement between agricultural and public health research communities in order to provide a cross-sectoral learning platform and opportunities for bridging activities and networking between CGIAR and public health.
Science agenda	To develop understanding and appreciation of research approaches and methods across sectors, and ideas for inter-sectoral research approaches and to jointly identify research problems where collaborative research will improve outcomes and impacts of interventions in either or both sectors.
Geographical focus / location	TBD among the list of target countries in FP5
Role of the CRP/FP in the partnership	FP5 will be co-led by ILRI and LSHTM. The initial activities of the Platform will take the form of theme-based symposia involving natural and social scientists from both sectors to identify and develop research areas that have been identified by the three clusters in FP5.
Key CGIAR partner(s) and their role(s)	ILRI, IFPRI, IITA and a selection of their appropriate partners will represent the agricultural research community
Key 'external' partner(s) and their role(s)	LSHTM and other public health partners including the Public Health Foundation of India, the Swiss Tropical and Public Health Institute, and the Institute of Infection and Global Health at the University of Liverpool will coordinate public health engagement in this

	platform, drawing on close links with non-academic health bodies, including WHO, Wellcome Trust, BMGF, Global Fund and The Lancet.
Contribution to ToC and impact pathways	Studies commissioned from inter-sectoral teams will guide development of new methods and research programs and consensus around action in both agriculture and public health will be reached to generate added value through joint research. An important part of this process will be the preparation of joint funding calls to targeted bilateral donors, which will provide more opportunities beyond these initial Centers within CGIAR to engage on agriculture-health issues.
Title	**Targeting and Measuring Nutrition Impacts across the CAADP Results Framework (2015-2025)**
Convener of the partnership and their role	ReSAKSS, (Regional Strategic Analysis and Knowledge Support System)
Specific focus and objective	ReSAKSS supports efforts to promote evidence and outcome-based policy planning and implementation as part of the CAADP agenda. More specifically, ReSAKSS provides data to facilitate monitoring under the CAADP Results Framework, as well as related analytical and knowledge products to facilitate benchmarking, review and mutual learning processes. ReSAKSS is organized as a network of three nodes among the major RECs in Africa. Each node, at the country level and Africa-wide, has set up a network of national, regional, and international partners that provide policy-relevant and timely analysis, data, and tools of the highest quality. The goal is to promote evidence-based decisionmaking, improve awareness of the role of agriculture for development in Africa, fill knowledge gaps, promote dialogue, and facilitate the benchmarking and review processes associated with the CAADP agenda. The CAADP Results Framework in 2015 included nutrition indicators creating an opportunity to enhance agriculture to nutrition linkages in the programme and related monitoring as part of the ReSAKSS process.
Science agenda	To conduct strategic analysis to fill knowledge gaps and assess policy and investment options for accelerating agricultural growth and reducing poverty and hunger and now also monitoring possible impact of agriculture on nutrition at country level.
Geographical focus / location	Africa
Role of the CRP/FP in the partnership	FP4 will cooperate with ReSAKKS to explore factors and processes that influence evidence demand, generation, and use for decisionmakers and will promote collaborative networks and institutional arrangements to support evidence generation and use cycles and convene regional learning events in focal countries. In addition, FP4 will work with stakeholders to develop and apply diagnostic and priority-setting tools, document real-time policy and program engagement processes, including CAADP, in focal countries, investigate approaches for ensuring horizontal (cross-sectoral) as well as vertical (intra-sectoral) coherence in nutrition-sensitive agri-food systems and policy processes, and conduct policy research to identify and resolve emerging context-specific challenges and trade-offs, and to understand the relative roles and benefits of different tactics in catalyzing change.

Key CGIAR partner(s) and their role(s)	At the regional level, ReSAKSS is supported by three Africa-based CGIAR centers: ILRI in Kenya, IWMI in South Africa, and IITA in Nigeria. IFPRI, as leader of FP4, will conduct research that ensures systematic documentation of capacity strengthening processes, and thus also contribute to global public goods for nutrition action within the CAADP frameworks.
Key 'external' partner(s) and their role(s)	African Union Commission, the NEPAD Planning and Coordinating Agency (NPCA), the leading regional economic communities (RECs), and IFPRI facilitate ReSAKKS.
Contribution to ToC and impact pathways	FP4's partnership with ReSAKKS will generate key lessons on what works at country, regional, and CRP levels to increase demand, use and uptake of evidence through a systematic process documentation. The documented process will serve as a learning guide to increase the impact of nutrition-sensitive agriculture programs and policies. Furthermore, although capacity development is critical to the success of CAADP to impact nutrition, it is often undertaken without adequate documentation for meaningful lesson sharing and development of guidelines. FP4 research will ensure systematic documentation of capacity strengthening processes, and thus contribute to global public goods for nutrition action within the CAADP framework. It will also test effective mechanisms and innovative strategies to increase the capacity and leadership needed for effective evidence-informed decisionmaking along the A4NH impact pathways of policies and programs (development and implementation).
Title	**Conducting joint research on agriculture-gender-nutrition in Bangladesh**
Convener of the partnership and their role	Ministry of Agriculture, Bangladesh
Specific focus and objective	The Agriculture, Nutrition, and Gender Linkages (ANGeL) project is a three-year pilot project from 2015-2018 being implemented by the Ministry of Agriculture in Bangladesh. Its objective is to identify actions and investments in agriculture that can leverage agricultural development for improved nutrition, and make recommendations on how to invigorate pathways to women's empowerment—particularly within agriculture
Science agenda	The pilot is being implemented among 4000 households in 16 districts. The project's impact on agriculture production, improved nutrition and hygiene and women's empowerment will be measured.
Geographical focus / location	Bangladesh
Role of the CRP/FP in the partnership	Past research results and outcomes through the IFPRI-led Bangladesh team in FP4 were used by the Ministry of Agriculture in the design of this project. It is partially funded by USAID and the IFPRI-led CGIAR Research Program on Agriculture for Nutrition and Health (A4NH)
Key CGIAR partner(s) and their role(s)	IFPRI helped design the project and will provide support in analysis. The project will receive support through the second phase of the Gender Agriculture and Assets Project (GAAP2) coordinated by the Gender, Equity and Empowerment Unit of A4NH.

Key 'external' partner(s) and their role(s)	The Ministry of Agriculture is implementing the project. IFPRI's Bangladesh Policy Research and Strategy Support Program (PRSSP) and Helen Keller International (HKI) provide technical assistance.
Contribution to ToC and impact pathways	The ANGeL project explicitly recognizes the importance of gender along agriculture-nutrition impact pathways. It includes gender sensitization activities, based on a tool called Nurturing Connections, developed by HKI for use in Bangladesh at the community level with adult male and female household members (including grandparents) to foster communication, negotiation skills, mutual respect, and appreciation within families, even addressing topics such domestic violence and child marriage, and how they can be harmful to overall family health.

3.2 Capacity Development Strategy

OVERVIEW

Capacity development is an outcome in and of itself and often critical to the achievement of other development outcomes, as described in the Agriculture for Nutrition and Health (A4NH) results framework and individual flagship impact pathways. As an integrating CRP (ICRP), A4NH has a vital role to play in supporting networking and learning within CGIAR and bridging the space between CGIAR and the nutrition and health communities. Strategic investment in capacity development will be crucial to fulfilling these roles. A4NH cannot achieve these results alone, and how we will invest in working with partners, like other CRPs and those outside CGIAR, through a variety of mechanisms, is described more fully in the Annexes Partnerships (3.1) and Linkages with other CRPs and Site Integration (3.6).

The purpose of this annex is to describe the role capacity development will play in the second phase of A4NH, including its expected outputs and outcomes. This annex describes in more detail the strategic capacity development actions A4NH will prioritize which are in line with the 10 elements of the CGIAR Capacity Development Framework. This annex supplements CRP Section 1.10 in the Full Proposal. For more information, see the A4NH Capacity Development Strategy.

CAPACITY DEVELOPMENT IN IMPACT PATHWAYS AND THEORIES OF CHANGE

Capacity development is a critical part of the three impact pathways through which A4NH research outputs and other activities contribute to development outcomes. A4NH contributes to the cross-cutting issue on Capacity Development through all four of the sub-IDOs (see Table C in the Performance Indicator Matrix). Within each impact pathway, capacity development also features among the research outcomes that are necessary to achieve the development outcomes (Figure 1).

In addition to identifying capacity development outcomes along its nested impact pathways (at CRP, flagship and cluster levels), A4NH also needs to take steps to ensure that the outcomes will be realized. A4NH may invest in:

- contributing to the capacity change outcome directly;
- identifying and working with partners who can ensure that capacity change outcomes happen at scale; or
- doing research on what type of interventions are effective in strengthening capacity or in testing the assumptions that underlie capacity change in the impact pathway(s).

Table 1 provides examples of the actions A4NH will take, by flagship, to implement the 10 elements of the CGIAR Capacity Development Framework.

In addition to building capacity for development outcomes, A4NH, as an ICRP, plays a role in building capacity of agricultural researchers, inside and outside the CGIAR, to do agriculture, nutrition, and health research and to engage with nutrition and health research and development communities. To fulfill this role, A4NH plans to support communities of practices (CoPs) or learning platforms on gender and nutrition, on food systems, and on agriculture and health that work with other CRPs and partners to identify capacity needs and engage in targeted research and capacity strengthening to meet them. Following the advice of the A4NH external evaluation, ToCs will be developed for these CoPs in collaboration with the AFS-CRPs. For an example of what this could look like, see the part of CRP Section 1.9 on “Monitoring and evaluation of gender integration in A4NH research.”

STRATEGIC CAPACITY DEVELOPMENT ACTIONS AND ALIGNMENT WITH OTHER ANH INITIATIVES
While A4NH invests in all elements of the Capacity Development Framework, two are of highest priority for the CRP: ***design and delivery of innovative learning materials and approaches*** **(Element #2)** and ***institutional strengthening*** **(Element #6)**.

A4NH will work with partners to strengthen the capacity of national and CGIAR researchers and research institutes to conduct high-quality agriculture, nutrition and health research. A4NH will do this through the ***design and delivery of innovative learning materials and approaches*** **(Element #2)**. All of A4NH's flagships will be engaged in some degree in designing and delivering learning materials and approaches. For example, through FP3: Food Safety, we will work with universities to upgrade curricula to include training on risk-based approaches for improving food safety. Based on recommendations from a study on how large INGOs use research results and evaluation findings, FP4: SPEAR will work more with in-house and external *knowledge brokers*, the communication specialists or other specialized staff who work in close collaboration with researchers on evidence synthesis, knowledge translation and knowledge mobilization, in order to communicate operational implications of evaluation findings to development program implementers in this case. This makes it more likely that the findings on *how* and *how much* integrated agriculture and nutrition programs can improve nutrition outcomes can be incorporated into the design of new programs and the scale-up of future programs, enhancing their coverage and effectiveness. The A4NH Gender, Equity and Empowerment Unit (GEE) unit will develop curricula and training materials based on the project-level Women's Empowerment in Agriculture Index (also known as the pro-WEAI). The curricula and training materials will be developed in collaboration with African Women in Agriculture Research and Development (AWARD), BRAC University, and the new Gender-responsive Researchers Equipped for Agricultural Transformation (GREAT) initiative funded by the Bill and Melinda Gates Foundation and organized by Cornell University's College of Agriculture and Life Sciences in conjunction with Makerere University. The outputs will then be used by their affiliated researchers to reach more researchers working on agriculture, nutrition and health topics in our A4NH target regions of Africa south of the Sahara and South Asia. Lastly, A4NH has co-invested with LCIRAH in the launch of the Agriculture, Nutrition and Health Academy (ANH Academy). The ANH Academy is a global research network in agriculture and food systems for improved nutrition and health to serve as a platform for learning and sharing. The ANH Academy aims to facilitate the sharing and adapting of methods and metrics developed through IMMANA Grants and Fellowships[1], in addition to fostering a community of researchers, particularly young researchers from the South, working at the intersection of agriculture, nutrition, and health. In addition, the ANH Academy will be leveraged to provide capacity strengthening to the efforts of the African Union Commission to mainstream and monitor nutrition related indicators as part of the Comprehensive Africa Agriculture Development Programme (CAADP) process at country and regional levels through the CAADP Results Framework.

In its work on ***institutional strengthening*** **(Element #6)**, A4NH focuses on two groups: (1) enablers, such as policymakers and other stakeholders engaged in national policy processes in target countries or regional organizations, and (2) CGIAR researchers. A4NH's work with these two groups spans from national to global levels.

[1] Innovative Methods and Metrics for Agriculture and Nutrition Actions (IMMANA) is a new research initiative funded by the UK Department for International Development (DFID) and coordinated by the Leverhulme Centre for Integrative Research on Agriculture and Health (LCIRAH). IMMANA aims to accelerate the development of a robust scientific evidence base needed to guide changes in global agriculture and food systems to feed the world's population in a way that is both healthy and sustainable. More information: http://immana.lcirah.ac.uk/about-us

Enablers at national level. For FP4: Supporting Policies, Programs and Enabling Action through Research (SPEAR), capacity strengthening will be an explicit component of their research framework and of their third cluster, Capacity, Collaboration, Convening (3C). The team will focus on strengthening capacity to use and demand relevant evidence, as well as providing a crucial bridge to other flagships, CRPs, and relevant national, regional, and global processes and opportunities to maximize the impact of our work and unleash the potential of agriculture to improve nutrition and health. Part of this will include building capacity of national champions, including research leaders and policy analysts in national institutions, which is aligned with global and regional efforts – such as the Scaling Up Nutrition (SUN) Movement and CAADP – to support country performance for improving nutrition and health and hosting learning events in focal countries. In addition, FP4: SPEAR will work with country SUN and CAADP teams to enhance leadership capacity and capacity for collaborative engagement. In this work, national level knowledge/academic institutions will be strategically involved to impact curriculum development and long term sustainability.

In its four target countries – Bangladesh, Ethiopia, Nigeria, and Vietnam – FP1 will work with national partners to build capacity in the analysis of diet change data and in the use of nutrition-sensitive agriculture and healthy diet tools. It is expected that the strengthened capacity will lead to the development of individual and institutional food system champions in the focus countries. Also in Vietnam, FP3 will continue to work with animal and human health officials to build capacity to understand and use risk-based approaches in the management of food safety. These have already been accepted as the standard in international and national policy, however unless national staff can appropriately implement them they will not lead to expected benefits in terms of cost-effective reduction in the burden of food safety. FP2 will, in selected countries, coordinate with IFPRI country programs to identify opportunities to increase the capacity for the priority setting process in the NARS and develop seed policy capacity to speed up the process of seed multiplication.

Enablers at regional level. FP3 will invest in building capacity of policymakers in the East Africa Community (EAC) to understand and appropriately manage aflatoxins across a range of relevant policy areas from trade to agriculture maternal and child health. During Phase I, researchers in FP3 working on the mitigation and control of aflatoxins in Africa south of the Sahara responded to an invitation from the EAC to develop a set of technical briefs. In Phase II, these initial efforts will be extended to translate evidence on aflatoxin risk into innovative capacity building packages for the EAC, plus networks in the African Union and the Partnership for Aflatoxin Control in Africa (PACA).

CGIAR Researchers. The successful A4NH gender and nutrition CoP that started in 2013 will be expanded in Phase II under the GEE unit in order to provide more support to the evaluation and gender staff in other CRPs. The goal is help make CGIAR researchers more aware of gender and agriculture and nutrition linkages and state-of-the-art frameworks, methods and tools for assessing gender and nutrition in agricultural projects and to increase the appropriate use of these tools. This is done through the Gender-Nutrition Idea Exchange blog, an annual workshop on topics that are identified by the CoP, and technical assistance to agriculture and nutrition research projects looking at gender issues. To date, the CoP has included a mix of researchers (including training institutions) and development implementers, which has helped ensure tools are being used and programs are better designed, so we can achieve equitable nutrition and health improvements. FP4: SPEAR will host annual learning events for other CRPs to disseminate knowledge generated through the CGIAR system and help enhance the nutrition-sensitivity of research programs. In addition, FP4 will synthesize lessons and develop guidelines for the CGIAR system to help other CRPs address knowledge gaps, capacity and leadership along the agriculture-to-nutrition impact pathways.

INDICATORS THAT TRACK PROGRESS AND CONTRIBUTION TO CAPACITY DEVELOPMENT SUB-IDOs

All five of the A4NH FPs have identified capacity development sub-IDOs to which their 2022 outcomes will contribute (see PIM Table C). A4NH research will make contributions to all four of these sub-IDOs during Phase II. Indicators for the sub-IDOs are still being identified at CGIAR level. Our Phase II Results Based Management (RBM) system will include SMART (specific, measurable, attainable, relevant, time bound) indicators that CRP and flagship leaders can use to assess progress in achieving capacity development outcomes. Here are some potential indicators that A4NH could use in Phase II to track progress and contribution to the capacity development sub-IDOs (see also CRP Section 1.10).

- For Element #2, we could track annually the number of universities or training institutions reporting curricula upgrades or adoption of tools/methods (like pro-WEAI or risk-based approaches to food safety), in their academic, certificate, or other short- or long-term training programs.
- For Element #6, we could track annually the number of countries who have developed (or are developing) evidence generation and use cycles or systems by collaborative engagement involving two or more stakeholders and the number of CRPs (or CGIAR Centers) which are reporting enhanced nutrition sensitivity of programs.

CAPDEV BUDGET AND RESOURCE ALLOCATION

Resources required to implement a robust and credible capacity development strategy have been included in the CRP's budget. It is recommended that a credible share of the total CRP budget for capacity development is around 10%, although the amounts may vary in individual flagship budgets. Our estimated budget for capacity development is 10% of the total CRP budget from all funding sources and 10% of the W1/W2 budget for the six-year Phase II period. This allocation will cover the activities described in Table 1 at the end of this Annex.

	PMU	FP1	FP2	FP3	FP4	FP5	Total	% of total
Capacity Development (in US$ millions)	0.6	9.33	13.8	11.88	18.43	8.21	62.26	10.0%

Figure 1. A4NH Phase II Results Framework

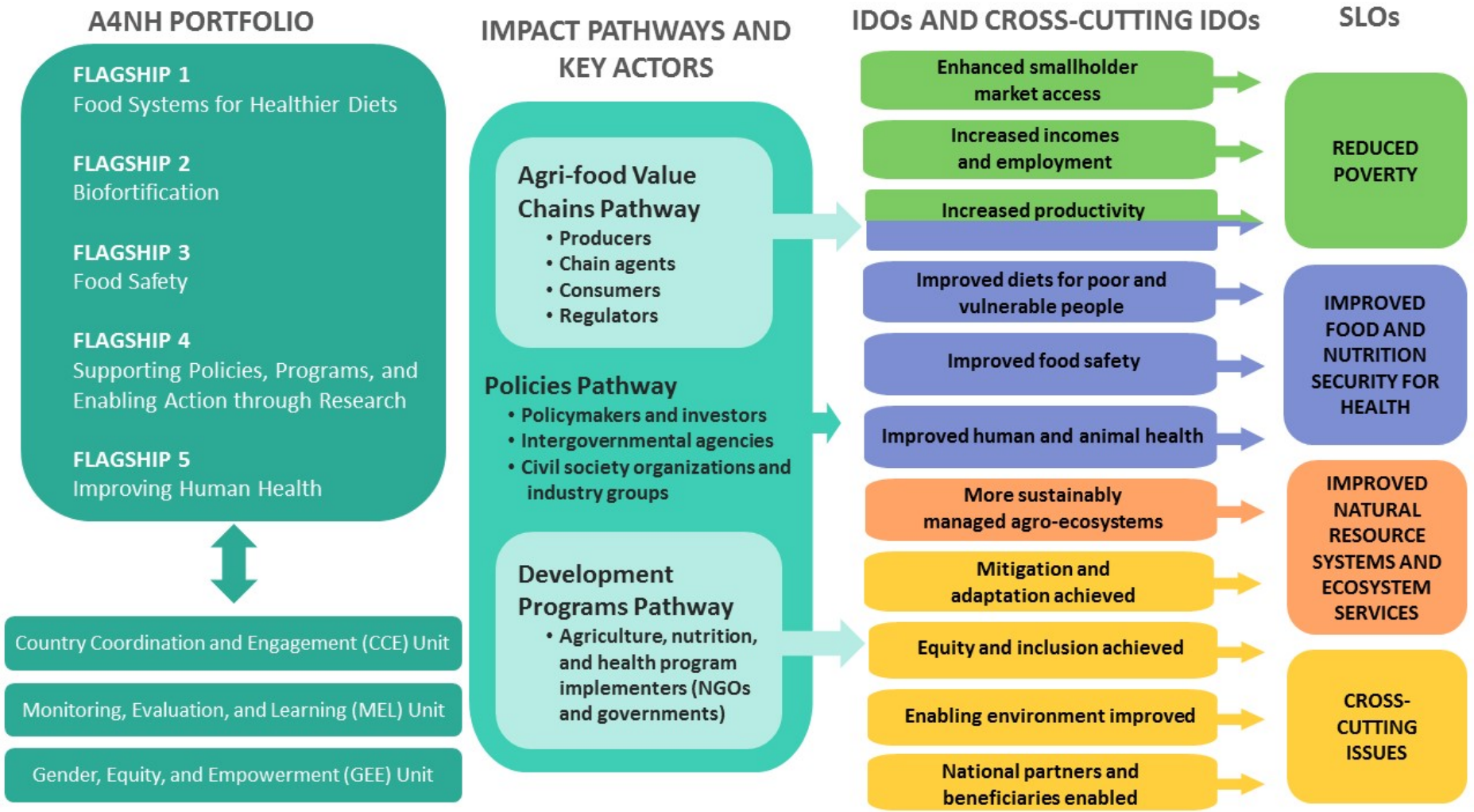

Table 1. Examples of capacity development actions in A4NH linked to the ten elements in the CGIAR Capacity Development Framework

Element 1: Capacity Needs Assessment and Intervention Strategy Design		**Medium intensity**
FP2	• Implement recommendations to strengthen capacity to improve the design of delivery systems that would be effective not just in disseminating seed but in reaching target consumers (male and female), in response to the Strategic Gender Assessment (2015)	
FP2 and FP4	• Conduct evaluations of alternative approaches to building capacity within nutrition-sensitive programs, looking at both effectiveness and cost effectiveness, and synthesize results	
FP3	• Adapt and validate the training and certification approach, an approach to food safety in informal value chains that focuses on training and certifying informal traders in better hygiene practices	
FP4	• Provide more focused response to countries and networking between countries on essential capacities that will allow key nutrition champions to participate more actively in strategy design • Build on the capacity assessments undertaken in selected African countries under the CAADP/ReSAKKS program	
GEE Unit	• Plan activities based on assessment of needs and capacities in gender researchers across CGIAR	
Element 2: Design and Delivery of Innovative Learning Materials and Approaches		**High intensity**
All FPs	• Establish working groups (on topics TBC) on metrics and methods through the ANH Academy	
FP1	• Develop and/or adapt learning materials developed under flagship training programs to improve capacity of partners in the analysis of diet change data and in the use of nutrition-sensitive agriculture and healthy diet tools	
FP2	• Develop and/or adapt tools for country planning and implementation of breeding and delivery of biofortified varieties	
FP3	• Upgrade university curricula for risk-based approaches to food safety • Develop capacity for outreach and communication as well as develop innovative capacity-building packages with key partners including ANH Academy, CTA, PACA, and public services and NGOs	
FP4	• Co-develop, with knowledge brokers, evidence synthesis, knowledge translation and knowledge mobilization outputs to create and moderate dialogue between researchers and policy and program actors and decisionmakers • Design and implement short-courses in a variety of locations for policymakers and practitioners, to introduce new ways of thinking about undernutrition and what to do about it in particular country contexts • Develop curricula and training materials based on project-level Women's Empowerment in Agriculture (pro-WEAI) and related concepts and tools, working with AWARD, BRAC University and GREAT (a new BMGF, Cornell, Makerere grant on gender and ag in capacity development) (with GEE unit);	
FP5	• Upgrade university curricula for risk-based approaches for multi-disciplinary methods, tools, and approaches for agriculture and health issues	
Element 3: Develop CRPs and Centers' Partnering Capacities		**Medium Intensity**
All FPs	• Identify and build the capacity of partners at the national, regional, and global levels to increase the effectiveness of research and development partnerships	
Element 4: Develop Future Research Leaders		**Medium Intensity**
All FPs	• Develop research leaders with good disciplinary skills in nutrition, public health, agriculture, veterinary science and socio-economics who are strong in their own disciplines and able to work well in a multi-disciplinary, multi-sectoral approach. One example is the BecA-ILRI Hub, a shared agricultural research and biosciences platform that increases access to affordable, world-class research facilities and provides capacity building in research for African scientists. • Support future multi-disciplinary research leaders, in partnerships with regional academic institutes and programs, and form a community of practice across this broad research area through the ANH Academy (all) • Collaborate with existing initiatives, including but not limited to, those led by: the African Nutrition Leadership Program, Afrique One, AgroEcoHealth Platform for the West and Central African Region, EVIDENT, Federation of African Nutrition Societies, One Health/Ecohealth Research Centres, Public Health Foundation of India, SACIDS, sandwich research or PhD programs through North-West University (South Africa) and Wageningen UR, and many others, for building research leaders, who are interested in health-sensitive and nutrition-sensitive agriculture research.	

Element 5: Gender Sensitive Approaches		Medium Intensity
GEE Unit with input from all FPs	• Expand gender and nutrition CoP led by the GEE unit to help evaluation and gender staff in other CRPs apply state-of-the-art methods and tools • Project partners trained in WEAI methods and tools through formal and informal means (led by GEE unit) • Reflection/learning events to refine pro-WEAI implementation and share findings (led by GEE unit)	
Element 6: Institutional Strengthening		**High Intensity**
FP1	• Develop individual and institutional food system champions by building the capacity of partners in the analysis of diet change data, the use of nutrition-sensitive agriculture and healthy diet tools, plus the design and appraisal capacities amongst public and private agents to design, implement and assess innovations and interventions approaches	
FP3	• Extend initial efforts with the EAC on evidence for aflatoxin risk and control options through the AU-PACA networks • Provide support to national and regional food safety policy and advocacy forums in key countries and built on current initiatives such as support to the national food safety policy task force in Vietnam and the regional work on informal dairy markets in East Africa.	
FP4	• Convene annual global and regional events to look at both innovation and on development outcome demands between agriculture research and nutrition and health policy and advocacy communities with EU-UNICEF, SUN Civil Society and other networks • Build on past work undertaken by the EVIDENT team on nutrition-relevant capacity in Africa, to develop, test, and document approaches for strengthening capacity and leadership of key actors and organizations in target countries.	
FP5	• Link past investments in agriculture-health networks (like from Wellcome Trust in Africa - SACIDS and Afrique One) with coordinated research in the AgroEcoHealth Platform for the West and Central African region and the LCIRAH One Health program (RVC and LSHTM) to share expertise and models for institutional strengthening among medical and veterinary partners, in particular	
Element 7: Monitoring and Evaluation of Capacity Development		**Medium Intensity**
All FPs	• Monitor A4NH and flagship-level contributions to capacity in a variety of ways as part of the program's M&E and report on achievement of milestones through case studies that describe capacity levels in target audiences in the beginning of the Phase II and changes in capacity and institutional strengthening in selected countries. • Link A4NH M&E to existing systems that monitor capacity development at the Center level (IFPRI Capacity Strengthening program) and country levels (IFPRI Country Strategy Support Programs).	
Element 8: Organizational Development		**Low Intensity**
FP2 and FP3	• Collaborate with NARS in select countries to change knowledge, attitudes and practices as they relate to mainstreaming biofortification (FP2) and managing food safety risks (FP3)	
FP4	• Strengthen national level nutrition taskforces and committees to better integrate nutrition in the national agricultural investment plans in selected countries (e.g., through CAADP)	
Element 9: Research on Capacity Development		**Low Intensity**
FP4	• Learn from current capacity building approaches (in EVIDENT and ANLP, for example) and apply to approaches in this flagship and across CGIAR	
Element 10 Capacity to Innovate		**Low Intensity**
FP1 and FP4	• Explore innovative opportunities, in country contexts, to strengthen nutrition policy processes as part of food systems (FP1) and nutrition-sensitive agriculture (FP4)	

3.3 Gender Annex

Introduction

The objective of this annex is to summarize gender-related research and activities in Phase I carried out by the CGIAR Research Program (CRP) on Agriculture for Nutrition and Health (A4NH), and to describe how it has informed priority-setting in Phase II. This section discusses the role of A4NH's cross-cutting Gender, Equity and Empowerment (GEE) unit, along with a plan on how gender research will be operationalized in Phase II at both the CRP- and the flagship-levels. Additional details on flagship-specific gender research questions, capacity development activities, and monitoring of gender in A4NH research projects can be found in CRP Section 1.4. A detailed Gender Strategy for A4NH is also available.

In Phase I, the GEE unit, based in the A4NH Program Management Unit (PMU), was referred to as the Strategic Gender Unit. The name change reflects a recommendation of the A4NH External Evaluation to pay more attention to equity issues and to highlight A4NH's increased focus on empowerment issues. See Box 1 for definitions of the terms 'gender,' 'equity,' and 'empowerment.'

Box 1: Definitions of gender, equity and empowerment

Gender	Social category usually associated with being a man or a woman. It encompasses economic, social, political, and cultural attributes and opportunities as well as roles and responsibilities
Equity	Based on the idea of moral equality i.e. the principle that people should be treated as equals and that despite many differences, all people share a common humanity or human dignity. The three principles of equity are: equal life chances, equal concern for people's needs and meritocracy
Empowerment	Expansion of people's ability to make strategic life choices, particularly in contexts where this ability had been denied to them

Source: Gender (Rubin, Manfre, and Barrett 2009), Equity (Jones 2009), Empowerment (Kabeer 2001)

CRP-level research priorities

As a research program that focuses on nutrition and health, women have always been at the forefront of A4NH research because inadequate nutrition affects not only women's own health, but also the health of their children. Children of nutrition-deficient women are more likely to experience poor physical and cognitive development and a higher risk of morbidity and mortality throughout their lives (Black et al. 2008; Victora et al. 2008). For biological and social reasons (e.g. lack of education, poverty, disempowerment) women are more likely to suffer from nutritional deficiencies than men. At the start of the CRP, most flagship programs (FPs) in A4NH—especially those focused on nutrition—targeted women and collected sex-disaggregated data. However, as Phase I research progressed, A4NH researchers became increasingly aware that gender matters not just for women's own nutritional status, but also for the pathways linking agriculture to nutrition and health (Box 2) (Kadiyala et al. 2014; Hawkes and Ruel 2006; Herforth and Harris 2014). Thus, gender issues had to be fully incorporated into their research plans. To assist flagship teams in identifying key gender questions and evidence gaps, and in some cases re-orient their research priorities, the GEE unit provided technical assistance to research teams, organized gender workshops, and conducted its own research on strategic gender issues.

In Phase I, A4NH's PMU conducted a detailed inventory of gender research being done in A4NH projects to document the types of gender research questions being asked, and to identify gaps. The inventory highlighted key constraints researchers faced integrating gender into their projects. This was used by the GEE unit to design appropriate capacity building activities, outreach, and technical assistance for A4NH

researchers. The inventory also led to the redesign of A4NH's monitoring system to enable the PMU to track gender integration within projects and their deliverables—a practice that will continue in Phase II. The information generated by the gender monitoring system will be used by flagships and the GEE unit to revise and update research priorities as needed.

Although consensus on the pathways exists, as a guiding framework for research and practice on leveraging agriculture for nutrition and health, a number of systematic reviews have pointed to the lack of documentation on the effects of these pathways in practice (Hawkes, Turner, and Waage 2012; Herforth, Jones, and Pinstrup-Andersen 2012; Masset et al. 2012; Ruel and Alderman 2013). The pathways can thus be grouped into three strands of research: (1) impact of **gender-based differences** on nutrition- and health-related outcome, (2) improving nutrition through **women's empowerment;** and (3) avoiding **unintended consequences** to women's well-being and empowerment.

A4NH has addressed these research themes in Phase I and will continue to investigate and refine them in Phase II, using diagnostic gender analysis, gender impact studies, and explicit gender-based targeting. The research themes translate into specific research priorities for each flagship, as outlined in CRP Section 1.4. The A4NH Gender Strategy contains the background research on these priorities.

Box 1: Pathways from agriculture to nutrition and health

1. **Agriculture as a source of food:** Farmers produce for own consumption.
2. **Agriculture as a source of income for food and non-food expenditures**: As a major source of rural income, agriculture influences diets and other nutrition- and health-relevant expenditures.
3. **Agricultural policy and food prices:** Agricultural conditions can change the relative prices and affordability of specific foods and foods in general.
4. **Women's roles in agriculture and intrahousehold decision making** and resource allocation may be influenced by agricultural activities and gendered control of assets, which in turn influences intrahousehold allocations of food, health, and care.
5. **Maternal employment in agriculture and child care and feeding**: A mother's ability to care for her child may be influenced by her engagement in agriculture.
6. **Women in agriculture and maternal nutrition and health status**: Maternal health and nutritional status may be compromised by the often arduous and hazardous conditions of agricultural labor, which may in turn influence child nutrition outcomes.

Source: Kadiyala et al., 2014

Flagship-level research priorities

The Value Chains for Nutrition flagship from Phase I (which has now been incorporated in **FP1: Food Systems for Healthier Diets**) started off integrating gender into their research by recognizing women as a target group for nutritious products, by collecting sex-disaggregated data, and by studying value chains of products that are of nutritional value. However, no significant gender research questions were being addressed. In Phase I, a framework for studying nutritious value chains was developed (Gelli et al. 2015), recognizing gender as an important variable of analysis. This framework will be used in Phase II to design value chain interventions for achieving improved nutrition and to help explain how gender interacts with different points of the food chain, including in food choices. The GEE unit supported this flagship in Phase I by targeting capacity building activities such as Gender-Nutrition methods workshops to researchers from CGIAR Centers working on nutritious value chains (e.g. ICRAF (fruits), ICRISAT (pulses), and WorldFish (fish-based complementary foods)). GEE also gave small grants and technical assistance to help new research studies to incorporate gender into their design.

In Phase II, FP1: Food Systems for Healthier Diets will support other CRPs through a learning platform (or Community of Practice) to ensure that food system research and food chain assessments examining impacts on diet-related indicators incorporate sex-disaggregated data and gender in their analysis. In this flagship, a detailed review of food systems in target countries will be undertaken, where gender relationships will be viewed as crucial to understanding how food systems work, along with implications of agriculture and food policies on different gender groups. An Associate Research Fellow hired as part of the CGIAR Gender Post-doctoral Fellowship will help integrate gender and nutrition into agro-food value chains research.

The HarvestPlus program under **FP2: Biofortification** undertook an ex-ante analysis in its initial phase (pre-dating the start of A4NH) (Lividini and Fiedler 2015; Birol et al. 2014), which incorporated sex-disaggregation, setting the overall priorities for the HarvestPlus program. At that stage, the focus of HarvestPlus was on technical feasibility and not much weight was given to gender concerns apart from recognizing women as a key group in consumer acceptance studies. As it shifted towards delivery of biofortified crops, the flagship commissioned gender experts to carry out a strategic gender assessment (SGA) of the HarvestPlus program. The findings of the SGA suggested opportunities to improve the integration of gender considerations in hypothesis development, data collection, and analysis. These are being continuously implemented and gender-responsive programming will continue into Phase II. This includes re-analyzing previously collected data through a gender lens, and recognizing intra-household dynamics and gender issues by including the Women's Empowerment in Agriculture Index (WEAI) in assessment studies on the adoption of biofortified crops. The HarvestPlus Monitoring, Learning and Assessment (MLA) team has started collecting sex-disaggregated data with the intention of closely tracking gender issues and identifying gender-related concerns to improve program design and delivery methods. A gender consultant was hired in Phase I and there are plans for hiring a gender coordinator in Phase II in order to improve gender integration in the program.

Technical assistance was also provided to projects within **FP3: Food Safety** which resulted in a paper on gender and food safety (Grace et al. 2015) and the construction of the Women's Empowerment in Livestock Index (WELI) as part of a project in Tanzania. There is now a greater understanding of men's and women's differential exposure to agriculture-related risks and health outcomes and these findings have been used to formulate research questions for Phase II (see CRP Section 1.4). In Phase II, there will be greater integration of gender issues in aflatoxin research, recognition of the importance of involving women to achieve food safety impacts and of supporting them to engage in emerging formal markets, and the development of tools and metrics on assessing food safety which will consider gender-based barriers to adoption of technologies that reduce foodborne disease risks.

In Phase I, **FP4: Supporting Policies, Programs, and Enabling Action through Research (SPEAR)** has made considerable progress in mainstreaming gender, as projects have evolved from merely targeting women, to incorporating gender issues in evaluation design and analysis, and conducting research on approaches to empower women. Projects within this flagship have generated datasets, online tools, and journal publications with a significant gender focus, which have been disseminated to stakeholders through workshops and learning sessions. In Phase II, this knowledge will be used to explore a variety of new platforms to empower women in agriculture and new approaches to sensitize men about gender roles and women's equity while acknowledging the diversity and complexity of social and gender relations embedded within current agri-nutrition conceptual frameworks. For example, joint research on women's empowerment and nutrition with the CRP on Policies, Institutions, and Markets (PIM) (Sraboni et al. 2014; van den Bold, Quisumbing, and Gillespie 2013) has informed the development of a pilot

study being implemented by the Ministry of Agriculture in Bangladesh in which different modalities for nutrition and gender-sensitive agriculture will be evaluated.

The different roles men and women play in agricultural systems indicate their differential exposure to agriculture-associated health risks (Grace et al. 2015; Wang et al. 2006). This area still remains under-researched within A4NH, and one of the knowledge gaps we aim to fill in Phase II is the interaction of gender with agriculture and health linkages. GEE began paying closer attention to these linkages in Phase I. A seminar was held on the influence of health on gender dynamics in rural livelihoods and blog posts on this topic have been published on the A4NH Gender Nutrition Idea Exchange. The new flagship on **Improving Human Health (FP5)** provides an opportunity to explore questions around gender differentials in exposure to health risks, gender differences in health benefits from agriculture, how decisionmaking around agricultural intensification can be made gender-inclusive, and how men can be engaged to play a greater role in supporting better health outcomes. This flagship is jointly managed by an external partner, the London School of Hygiene and Tropical Medicine (LSHTM), and A4NH hopes to draw upon their extensive research expertise on gender issues in public health.

Strategic cross-cutting gender research

In addition to gender research within the five flagships, in Phase I, GEE conducted its own research on strategic issues and developed tools and methods which are being utilized by A4NH research projects and have helped flagships develop research. Four priority themes (see CRP Section 3.4) have been identified which fill important knowledge gaps (both globally and within flagships) on gender, nutrition, health, and agriculture. A summary of background research on themes can be found in the A4NH Gender Strategy.

A4NH will continue to invest in research that builds evidence on key conceptual and methodological questions, and develop and validate indicators, tools, and metrics that can be used to measure impact along the pathways. A significant stream of strategic gender and nutrition research in A4NH will be conducted in 2015-2020 as part of the second phase of the Gender, Agriculture, and Assets Project (GAAP2), which will adapt and validate a project-level Women's Empowerment in Agriculture Index (pro-WEAI) that agricultural development projects can use to diagnose key areas of women's (and men's) disempowerment, design appropriate strategies to address deficiencies, and monitor project outcomes related to women's empowerment. GAAP2 research will generate the first systematic body of evidence on how different types of agriculture projects can improve gender equity and improve nutrition and health outcomes, to be utilized in future A4NH research projects and to inform new A4NH research priorities.

Operationalization of gender in A4NH

Objectives and outcomes of gender research

A4NH research will contribute to the cross-cutting issue on Gender and Youth, and in particular, to the sub-IDOs (Intermediate Development Outcomes) on *gender-equitable control of productive assets and resources*, and *improved capacity of women and young people to participate in decisionmaking*. Table 1 presents some proposed outcomes of the gender research undertaken by A4NH and how these will be verified and tracked as research progresses. The A4NH gender theory of change (CRP Section 1.4) outlines how we expect gender research to be taken up by flagships, other CRPs, and research users outside CGIAR.

Table 1: Selected proposed milestones of gender research

Flagship	Research Milestones	Means of verification
FP1: Food Systems for Healthier Diets	• At least four gender-sensitive interventions to improve diets in key countries identified, designed, and implemented with key partners, including value chain actors	Program monitoring and reporting; annual reports from partners
FP2: Biofortification	• Lessons learned about factors (e.g., gender, equity) facilitating and hindering adoption and consumption developed and widely disseminated for use in decisionmaking by partner and implementing organizations	Publications (include gender and equity analysis); Head of Impact
	• Efficacy of multiple biofortified crops in culturally accepted combinations for women of child bearing age and for children 6-24 months of age, and results are incorporated into decisionmaking tools	Head of Nutrition; Publications (include gender analysis)
FP3: Food Safety	• Traders and policy/regulators in at least two types of value chains (dairy, fish, vegetables) in target countries are aware of gender-sensitive guidelines based on evidence from A4NH Phase I and II	Monitoring reports; publications which include a section on gender
	• At least 100 public sector agencies and agri-businesses adopt gender-sensitive aflatoxin mitigation technologies (Aflasafe, post-harvest practices and aflatoxin testing) for reducing aflatoxin in crop value chains	Partner reporting; tracking (including gender indicators) of implementation of regulations and policy
FP4: Supporting Policies, Programs and Enabling Action through Research (SPEAR)	• Regional and international organizations incorporate new knowledge/approaches on climate change and gender relations in their discourse, attitudes, behaviours, practices related to cross-sectoral nutrition-sensitive agriculture	Annual reporting (which include gender) from partners; citations in official policy statements and documents
	• Program implementers (governments, INGOs, NGOs, UN institutions) have increased understanding of (gendered) impact of nutrition-sensitive agriculture programs and improved capacity to use evidence, tools and methods in program design resulting in 16.8 million women and children in target countries benefitting from improved nutrition-sensitive programs being implemented by partner organizations and governments	Tracking of program implementing partners through targeted interviews and reviews of documents on nutrition-sensitive agriculture programming, investments and best practices in 2018, 2021 and 2024
FP5: Improving Human Health	• 50 researchers representing natural and social scientists from health and agriculture participate in theme-based symposia to identify and develop research areas, recognizing gender and equity issues	Event reports; gender sessions in symposia
Cross-cutting: Gender, equity & empowerment	• A4NH flagships and other CRPs use A4NH tools and approaches to measure gender, assets and empowerment	Monitoring database; GAAP2 annual monitoring and final evaluation; web searches on "pro-WEAI" to identify other users
	• Institutions incorporate pro-WEAI tools and approaches into their academic and certificate programs for development professionals	

Source: A4NH Phase II proposal, Performance Indicator Matrix Table D

Budget

Although A4NH has made good progress on gender research in Phase I, as noted by the external evaluation, more human and financial resources will need to be invested in implementing the gender strategy for Phase II. The proposed annual base budget is about $367,000 of Window 1/Window 2 (W1/W2) funds and more than $8 million in total from bilateral funds, to support cross-cutting work on gender[2], in addition to dedicated funds allocated for gender research for each flagship. About 25% of the base W1/W2 budget ($560,000 in total) will co-finance strategic gender and nutrition research as part of GAAP2 in 2015-2020. The remaining 75% of this base W1/W2 budget ($273,000 annually) will be used to support coordination and capacity building work, including a core gender team[3] and for funding workshops and other outreach activities. An expanded team will be formed, subject to additional funds from an uplift budget. See Table 2 for team composition for the two different budget scenarios.

With an expanded mandate, the GEE unit intends to add expertise on equity and empowerment, to ensure adequate attention is given to equity issues. Other major expenditure areas subject to the uplift budget include workshops, outreach and other capacity-building activities, and small grants to A4NH-mapped research projects. In the research flagships, gender funds may be used to hire gender experts, add gendered research components to existing studies, and establish strategic partnerships to complement CRP-level efforts. Table 3 shows the estimated distribution of funds from the base budget allocated for gender across the flagships and CRP-level cross-cutting programs for Phase II.

Table 2: GEE Gender Team composition under different budget scenarios (FTE = Full time equivalent)

Position	**Core gender team (base budget)**	**Expanded gender team (uplift budget)**
Gender research coordinator	33% FTE	67% FTE
IFPRI-based Senior Research Assistants/Research Analysts	20% FTE	200% FTE
Region-based Research Assistants	-	150% FTE
Gender postdoctoral fellow	50% FTE	-
Senior gender advisor	8% FTE	25% FTE
Senior equity consultant	$20,000 annually	$50,000 annually

Table 3: Distribution of proposed Phase II gender budget by flagship

Flagships	**Budget (in US$ millions)**
FP1: Food Systems for Healthier Diets	4.7
FP2: Biofortification	4.6
FP3: Food Safety	0.8
FP4: SPEAR	43.5
FP5: Improving Human Health	2.7
Cross-cutting: Gender, Equity and Empowerment	10.9
Total budget for gender *% of total A4NH Phase II base budget*	**67.2** *11%*

[2] This includes $5 million for GAAP2 plus additional funds that the A4NH PMU plans to raise in Phase II

[3] Detailed descriptions of these positions can be found in the A4NH Gender Strategy

3.4 Youth Strategy

Introduction

The recognition and integration of youth issues in agriculture, nutrition, and health is an under-explored topic, providing an opportunity for the CGIAR Research Program (CRP) on Agriculture for Nutrition and Health (A4NH) to better understand this relationship and to contribute evidence on this theme. A4NH can learn from and build on its experiences with gender targeting and integrating gender issues into agriculture and nutrition, in order to make A4NH research teams more cognizant of incorporating youth issues into their research design and analysis. A4NH will contribute to the Gender and Youth cross-cutting Intermediate Development Outcome (IDO) on *equity and inclusion achieved*' specifically the sub-IDO on *improved capacity of women and young people to participate in decision-making*.

Rationale

Demographic transitions in developing countries have raised concerns about the burgeoning youth population (aged 15 – 24)[4]. This brings challenges for young people, especially with respect to unemployment, underemployment, and poverty (International Fund for Agricultural Development 2014) and in rural areas. The agricultural sector is seen as an important avenue for addressing these challenges.

Sumberg et al. 2012 use the phrase 'opportunity space' to describe the options available to a young person, which they may exploit to create an independent life. Within agri-food systems, young people can take up a range of roles (e.g. as producers, employees, and consumers). Changes in agri-food systems and agrarian relations impact this opportunity space and influence the ability of youth to take advantage, thus affecting their capacity and willingness to engage with agriculture as a source of livelihood. Youth is a time period of transition from childhood into adulthood, and is crucial window for interventions focusing on changing knowledge, attitudes, and practices about dietary choices, food safety, and agricultural production, since young people are forming opinions and building their ability to make independent decisions. Adolescent nutrition, specifically for girls, is important with respect to the life cycle approach to nutrition because it has implications for maternal nutrition.

Age is also an important factor in intra-household decisionmaking, as young people, especially young wives or daughters-in-law, may not be empowered to make decisions on factors such as food, healthcare, and childcare, which affect nutritional and health outcome. Integrated programs in agriculture and nutrition are increasingly taking this into consideration while designing programs.

How does the youth strategy contribute to A4NHs overall objectives?

Indicators and targets

The A4NH Results Framework, which describes the development outcomes to which A4NH contributes, includes nutrition and health outcomes (second System Level Outcome or SLO2). For biological reasons, both sex and age matter for identifying beneficiary populations and defining indicators and targets for these outcomes.

Young women in their adolescent years are an important target group of A4NH due to their roles in reproduction and in the 1,000 day window of opportunity (time between a child's conception and second birthday). Recent research has highlighted adolescence as a key window to reach girls and invest in their health and nutrition, including education on infant and young child feeding practices (IYCF)

[4] A4NH is using the United Nations' definition of youth

(Hackett et al. 2015). Moreover, adolescent girls are a nutritionally vulnerable group, as they are more susceptible to micronutrient deficiencies, such as anemia (Black et al. 2013). Pregnancies during adolescence have a high risk of complications in mothers and children, along with poorer birth outcomes. This is especially concerning in developing countries where adolescent pregnancies are three times as common as in high-income countries (Black et al. 2013).

Overnutrition, a growing concern in developing countries and an increasing priority in A4NH, affects men, women, and children of all ages. However, more research is needed to define target groups, and age is likely to be an important factor. Similarly, age will also be an important factor in defining health indicators and identifying target populations at risk for specific diseases.

Impact pathways

Youth, like gender, is a relevant consideration along the three A4NH impact pathways, which include:

1. Supporting value chain actors to enhance and protect the nutritional content of nutritious foods along the value chain, while mitigating key food safety risks (**agri-food value chains pathway**);
2. Supporting development implementers to increase the effectiveness of their programming that brings together agriculture, nutrition, and health (**development programs pathway**); and
3. Supporting governments and donors to improve the enabling environment and create better informed, targeted, and implemented policies (**policies pathway**).

There is a growing body of evidence which states that stage-of-life and position in the household and community (both of which are related, but are socially, rather than biologically determined) influence decisionmaking about adoption of specific technologies or livelihood strategies (farm or non-farm) and also in decisions about food purchase, preparation, and consumption (Duflo and Udry 2004; Doss 2011; Sraboni et al. 2014). Marketers have long known this and have targeted their products and services to specific demographic categories. Agricultural research aiming to **improve value chain and food system performance** will need to do the same thing. Since A4NH is particularly focused on demand, rather than supply of food, it is crucial to understand how age-related factors shape consumer food choices and how interventions can influence outcomes. In the **development programs pathways**, A4NH research outputs support implementers of integrated agriculture-nutrition programs to be more cost-effective in reaching their objectives. These programs increasingly focus on gender issues in household decisionmaking about food, care, and health (Olney et al. 2015). A recent innovation is to focus not just on mothers, but also to consider how other households and even community members (husbands, mothers-in-law, elders) influence these decisions and to engage with all of them to change behavior and empower younger women to make more informed choices. Research also looks at how adolescent boys can be engaged, along with adolescent girls, to address issues, such as early marriage and childbearing (Ricardo and Verani 2010). In the **policies pathway,** youth can feature as a group with distinct concerns that should be highlighted in the development of agriculture, health, and other cross-sectoral policies.

Youth issues in A4NH: entry-points to be explored in Phase II

Recognizing youth as a social category

The starting point of integrating youth issues into research on ANH is to recognize youth as a group that needs to be studied. Several A4NH research projects already collect data disaggregated by age and sex. A first step would be to use existing data to look for systematic differences between youth and other groups, in terms of research questions or project outcomes. Since youth is socially defined, it will be important to include qualitative work, and to understand how age-related norms influence behavior and outcomes. Research projects that are yet to start may be asked to think about whether and how youth issues are relevant to their objectives and how they could incorporate them, even in exploratory ways,

into their data collection and analysis. As youth is not a socially homogenous group (Anyidoho et al. 2012), our youth strategy intersects with our gender strategy, taking into consideration gender and other forms of inequity (such as class or ethnicity), all of which affect the 'opportunity space'.

For example, in Flagship Program (FP) 3: Food Safety, ongoing research on informal markets in Africa will recognize youth as a group that is more likely to find employment in informal markets where food safety concerns are higher. Evaluations done in FP4: SPEAR on integrated agriculture and nutrition programs will expand their focus from children beyond 1,000 days to adolescent girls, and will measure impacts over longer time horizons to capture intergenerational effects.

Defining health-related outcomes, indicators, and targets
An important area of work in Phase II will be refining targets for health-related IDOs, and age is likely to be an important factor in terms of indicators and targets. This research will be done under Flagship 5: Improving Human Health, which will engage with the wider CGIAR community to support the development of these indicators.

Raise the profile: current research on age-sensitive approaches
Young people tend to be more receptive to change than older generations (The United Nations Population Fund 2008). One argument for prioritizing research on youth and agriculture discussed in the CGIAR Workshop on youth in agriculture was: "Research can propose age-sensitive methodologies for awareness raising, capacity building and decisionmaking processes, which is crucial for a socially inclusive and sustainable adoption of new technologies and access to markets." Research on this aspect of youth can contribute to the sub-IDO of 'improved capacity of women and young people to participate in decisionmaking.'

There are several areas within current A4NH research that already use an age-sensitive approach. For example, the flagship on integrated programs and policies in Phase I uses innovative ways of behavior change communication to raise awareness on nutrition issues in young girls. HarvestPlus recognizes the appeal of local musicians to young people in their multimedia campaign to promote biofortified products under the current flagship on biofortification.

In Phase II, our goal is to make age-sensitive methodologies more explicit and informative, linking to well-defined research questions. HarvestPlus, under their research on delivery science, will focus on youth involvement in adoption of biofortified crops as one of the key areas where evidence is needed to facilitate and improve delivery. FP4: SPEAR will further explore the use of agriculture platforms, such as homegrown school feeding programs, to reach adolescent girls. Research under FP1: Food Systems for Healthier Diets on the impact of transforming food systems on diets can gain additional insights by applying an age-sensitive lens and recognizing youth as consumers. Demographic changes can be viewed as one force contributing to the evolving nature of food systems, as tastes and preferences of younger people may differ from older generations. Youth can also be viewed as a catalyst for bringing about positive changes in food systems, to make them more responsive to nutrition and health concerns.

Operationalizing youth in research
The previous section outlines some preliminary ways of incorporating youth issues into A4NH research. A first step in exploring these entry-points is to identify a well-defined methodological framework for incorporating youth into agriculture-nutrition-health linkages. A4NH will draw on existing literature on this topic, in consultation with the CRP on Policies, Institutions, and Markets (PIM) and with others who have done extensive research on youth issues, in order to formulate a coherent framework for research,

identify important evidence gaps, and develop potential research questions. Based on these priorities, A4NH will seek appropriate partnerships to raise funds and conduct more in-depth youth-specific research to fill these evidence gaps.

A4NH views youth as a potential source of inequity, which falls under the mandate of the Gender, Equity and Empowerment unit (GEE). Thus, the A4NH PMU will be responsible for coordinating and implementing the youth strategy across the CRP. To provide additional expertise on broader equity issues, including youth issues, a Senior Gender and Equity Advisor will be recruited as part of the expanded gender team proposed in the Gender Strategy (Annex 3.3). An analysis of youth issues will be included in a review of social equity in A4NH, recommended by the external evaluation, and planned for early 2017 (refer to Annex 3.5).

Links with other CRPs

Studies on young people's perspective on farming as a means of employment show that youth have a negative attitude towards farming, which raises concerns about the exit of young people from farming (Leavy and Hossain 2014; Sumberg et al. 2015). CRPs, such as PIM and WHEAT, focus their youth strategies on promoting opportunities for rural young people, understanding the impacts of the youth employment challenge and engaging youth with farming and agri-food system development. A4NH will add to the work being done by these CRPs by focusing on how agricultural employment for youth can be made nutrition-sensitive, how to ensure that it is not detrimental to health, how transforming food systems can be made youth-inclusive, and ensuring agricultural interventions targeted towards youth recognize their unique health and nutritional needs.

3.5 Results-Based Management

A4NH APPROACH TO RESULTS-BASED MANAGEMENT (RBM) AND MONITORING, EVALUATION, LEARNING, AND IMPACT ASSESSMENT (MELIA) STRATEGY FOR PHASE II[5]

I. A4NH Results-Based Management (RBM) Framework

A. Purpose

Annex 3.5 provides the conceptual underpinnings and operational approaches that guide how decisions will be made within the program based on a clear intent to achieve specific results, including how the program will learn and adapt to retain its relevance and focus. Annex 3.5 also explains the role of monitoring, evaluation, and impact assessment within a results-based management (RBM) system, providing an evidence base to inform decisions.

B. A4NH results framework and nested approach to impact pathways and theories of change

The current A4NH results framework (Figure 1) describes the main components of the program and the main research and development outcomes and impacts to which activities and outputs of our collaborative research program are expected to contribute.

Each of the five A4NH flagship programs (FPs) has its own impact pathway, a sequence of outcomes, which describes how its activities and outputs, together with contributions from cross-cutting units such as Gender, Equity and Empowerment (GEE),[6] are expected to contribute to immediate and intermediate development outcomes. Within each FP, another set of impact pathways are nested, which provide more detail on the causal chain from specific outputs and related activities to outcomes. For these pathways, most of which are at cluster of activity (CoA) level, we also identify and assess the assumptions and risks that underlie anticipated linkages in the sequence of outcomes. Cluster-level theories of change (ToCs) include impact pathways and assumptions, and are based on the current portfolio of projects in the FP, allowing them to be useful tools for real-time management and monitoring.

As an integrating CRP (ICRP), A4NH has a mandate to engage not only in collaborative research, but also to support networking, learning, and bridging activities to support other CRPs in achieving their nutrition and health outcomes. Following the suggestion of the A4NH external evaluation panel, we will develop separate ToCs to plan and monitor progress of A4NH investment in these networking, learning, and bridging activities. These initial ToCs will be further developed as specific activities are identified together with other CRPs during Phase II.

C. Approach to RBM

According to the 2nd Call Full Proposal Guidance, RBM is "the proactive gathering of information on performance and progress towards results, providing managers at different levels with the needed flexibility to be able to use that information to manage towards results, and to reallocate resources (budget, staff) in order to maximize results." Both accountability and adaptive management are central

[5] Annex 3.5 is based on a template recommended by the CGIAR Monitoring, Evaluation, and Learning Community of Practice (MEL CoP). The outline follows the general outline of that document. Italicized text is taken directly from it or from other common sources (e.g., the commitment by ICRPs to develop an integrated online platform for monitoring and evaluation).
[6] The GEE unit contributes both to A4NH core research and to supporting other CRPs. For the former, the contributions are included in the FP impact pathways. For the latter, they are included in a separate ToC, found in the gender strategy.

to RBM. Since RBM is fundamentally about management, it requires a way to link results to real-time decisions that CRP managers make in the implementation of a collaborative, multi-institutional, multi-donor, research-for-development program. Annex 3.5 describes the CRP-level framework and strategy, however it is important to keep in mind that management occurs at multiple levels, including the FP level, which is key. While the principles and processes are the same, the implementation of RBM will differ across FPs depending on the nature and stage of research, and on how research is organized and managed.

In research, the timeframe for management decisions is often very different from the timeframe in which results (outcomes and impacts) can be observed. Nonetheless, the ToCs, as described above, can be useful for RBM in all stages of research. While the actual outcomes and impacts at scale occur after research is complete, it is often possible to track more immediate research outcomes in real-time. In addition, the plausibility of the ToC and the likelihood of longer-term outcomes and impacts can be assessed and revised as research progresses. The A4NH approach to RBM focuses on a combination of documenting evidence of achievements, including outputs and research outcomes—a focus of the monitoring strategy—and on building a convincing case that longer-term development outcomes and impacts are likely to be achieved cost-effectively—a focus of the learning strategy.

To support RBM and to comply with the requirement for "Interoperable Tools to Support RBM Implementation," A4NH is participating in a joint effort with the other ICRPs to develop an online monitoring and evaluation (M&E) tool. A4NH, CCAFS, PIM and WLE have agreed on the fundamental conditions of a single, integrated online platform to be in place from 2017 onwards. The process of designing this platform began in February 2016. The advantages of cross-CRP collaboration on a single platform include reduced transaction and management costs, standardization of nomenclature and frameworks, and, with time, the integration and aggregation of data across the participant CRPs. This is expected to benefit both the CRPs involved, and the CGIAR system as a whole (with and through the System Office), in terms of providing automated data and information on planning through the annual plan of work and budget, reporting, and with time, on progress towards the system level outcomes (SLOs) in the CGIAR Strategy and Results Framework (SRF). The system will be interoperable, enabling data to be accessible and usable by other CRPs and the System Office. The online tool covers the CRP program and project management cycles, including pre-/ and planning, monitoring, reporting, and synthesis. The platform is structured around the ToC at programmatic, cluster and project levels enabling the inclusion and review of key results and assumptions on a periodic basis. It is primarily a program management tool designed to address the requirements from a programmatic (CRP) perspective, as well as contribution to the CGIAR SRF. The platform being developed is based on the existing CCAFS planning and reporting system which is being modified to meet the requirements of each CRP while adhering to common principles.

II. Monitoring, Evaluation, Learning and Impact Assessment (MELIA)

A. Monitoring

The A4NH monitoring plan will consist of a continuous process of data collection and analysis based on the major outputs and outcomes expected each year, and on key assumptions and risks identified in the ToCs. The monitoring plan will be updated annually based on each year's results.

In Phase II, A4NH monitoring will move towards a programmatic approach, which forms the core of the integrated online platform for M&E we are co-developing with the other ICRPs. Given the share of the budget taken by Window 3/bilateral financing, and the associated monitoring and reporting

requirements contained within these separate contracts, the focus of A4NH's monitoring will be more intense for Window 1/Window 2 (W1/W2) financing, and on the contribution of all projects (regardless of funding source) to key outputs and outcomes in the program-level ToCs. This approach avoids duplication as Centers, not CRPs, monitor the achievement of deliverables and outcomes produced by individual W3/bilateral projects. It also enables us to better understand how the W3/bilateral projects contribute to FP- and CRP-level outputs and outcomes. This approach allows A4NH to focus on the programmatic results achieved through coordination across projects, Centers, and partners. We anticipate that, with time, project- and program-level monitoring will be harmonized, as Center researchers become more familiar with RBM processes and are able to develop projects that map directly to A4NH research questions, outputs, and ToCs.

Responsibility for implementing the monitoring plan will be shared between FP leaders, the cross-cutting unit on Monitoring, Evaluation, and Learning (MEL), and other members of the A4NH Program Management Unit (PMU). In most cases, documenting progress on outputs and immediate outcomes is part of A4NH projects and therefore the regular work of FP leaders, researchers, and project teams (including partners). In some cases, however, additional technical or financial resources will be required to adequately document an outcome. These resources will come from the MEL unit.

A set of indicators for intermediate development outcomes (IDOs) to which A4NH will be contributing is included in Other Annexes (Potential Indicators for Key IDOs to which A4NH Contributes). *Indicators at other levels will be developed during the operational phase after proposal submission, working together with other ICRPs and the CGIAR MEL CoP as appropriate.*

B. Evaluation

Following guidance from the CGIAR Independent Evaluation Arrangement (IEA): *A4NH will operationalize a rolling evaluation plan to build credible evaluative evidence to support decisionmaking and lessons for improved and more cost-effective programming. This rolling plan will include CRP Commissioned External Evaluations (CCEEs), impact assessments, and other studies identified by CRP management.*

In Phase I, A4NH conducted FP-level external evaluations on food safety, gender in biofortification,[7] as well as an overall CRP evaluation. Several large bilaterally-funded projects in A4NH also underwent external evaluations commissioned by donors, including HarvestPlus (Abt Associates Inc. 2012), LANSA, and Transform Nutrition.[8] Selection of CCEEs in Phase II will comply with IEA guidance[9] and will focus on areas not covered in Phase I. We will coordinate with other CRPs where possible. Our proposed plan for CCEEs and reviews is presented in Table 1. A4NH management and governance bodies will review this plan annually to ensure it meets its needs for accountability and learning purposes.

C. Impact assessment

Globally, impacts are defined as the positive and negative, primary and secondary long-term effects produced by a development intervention, directly or indirectly, intended or unintended. Within the CGIAR, impacts are described as the consequences of the CRPs on the state of selected development variables concerning the SLOs, which are themselves related to the Sustainable Development Goals.

[7] The Strategic Gender Assessment (2014) is not a public document. It can be obtained upon request from HarvestPlus.
[8] Reports available upon request
[9] The CCEEs will cover at least half of the budgeted activities of a flagship in a cycle in line with the CGIAR IEA's Guidance for CCEEs (January 2015).

There is increasing recognition that interventions that contribute to complex, indirect causal chains, with multiple partnerships, and with data limitations require a broad range of methods to evaluate effectively, especially at the impact level. Therefore, A4NH will adopt a mixed-methods approach to evaluate its performance, including impact evaluations, adoption studies, and ex-ante and ex-post impact assessments, defined as follows.

- ***Impact evaluations*** allow for the rigorous estimation of the impact of an intervention based on CGIAR research on IDO- or even SLO-level outcomes (See "Potential Indicators for Key IDOs to which A4NH Contributes" in Other Annexes). The goal of these studies is to get an accurate and unbiased estimate of the size of the impact on development outcomes; to achieve this, a rigorous and costly methodology (e.g., an experimental or quasi experimental design) is generally required. As a result, the studies are usually done at small scale (hundreds or thousands of participants). These studies are more appropriate for some types of research (e.g., technologies that can be adopted at the individual, household or possibly community level) than others (e.g., policy research). These types of studies are generally conducted as part of the research agenda of a specific FP. Given the cost of the studies, they tend to be funded largely through W3/bilateral grants.

- ***Adoption studies*** focus on uptake of research outputs at scale. They do not generate estimates of impacts on impact indicators; however they are important for documenting uptake and for understanding the factors that facilitate and constrain uptake (such as gender) among particular target groups (including women). In this sense, they are complementary to impact evaluations, and the combination of adoption studies and impact evaluations can make a convincing case for impact at scale. While household surveys are a common approach for tracking uptake of research outputs by ultimate beneficiaries, adoption studies can be done with other types of methods to document use of research outputs by different types of users.

- ***Impact assessments*** estimate the IDO- and SLO-level benefits of use at scale of research outputs. A variety of methods are possible, generally based on secondary data, modeling or on expert opinion.

This section describes the studies that A4NH has planned for Phase II (Table 2). Additional studies may be identified as part of the monitoring plan as well as by the programming needs for prioritization of research and improved performance. The types of indicators that will be assessed, mainly at IDO and SLO level, can be found in "Potential Indicators for Key IDOs to which A4NH Contributes" in Other Annexes.

D. Reporting

The annual CGIAR reporting process will be the key method for A4NH to describe its progress and results achieved as established in the FP ToCs. Reporting of results will be conducted at the output and outcomes levels, and when possible, at the impact level. A review of data collected on indicators, assumptions and risks will serve as guides for reporting on results. As part of this process, A4NH will also document any lessons and changes to the implementation of the program, including to the ToCs and monitoring plan. The integrated online platform is designed to support the reporting process across all partners involved in A4NH. For example, the interoperability features of the platform will reduce some of the reporting burdens cited during Phase I and will make information products produced by A4NH more discoverable in the multiple online repositories hosting A4NH generated information products, a

principle of open access/open data management.[10] By introducing a common system across all ICRPs, the system will be more user-friendly, will reduce transaction costs, and will minimize error and double-counting.

E. Learning

Learning takes place continuously in a research program, so our strategy focuses specifically on learning to support RBM. RBM-focused learning will take place at all levels of the program, however the focus in A4NH will be on FPs, where detailed ToCs can be tested and validated, with results contributing to RBM. In line with RBM principles, A4NH will operationalize a variety of measures to support learning from information collected during M&E and from external evaluations. A4NH will integrate these measures as part of its planning and reporting cycle with clear roles and responsibilities. Some specific measures are described below.

Annually reviewing and revising ToCs based on evidence collected, and to the extent possible, conducting contribution analysis to reflect and strengthen A4NH performance. Analysis of information generated by the integrated online platform is a key source of learning, and will generate lessons about particular outputs and outcomes. These results, together with information from other sources gathered from researcher and partner experience, will be used to regularly assess and update the ToC. Part of this assessment involves whether the pathway itself is appropriately specified. Another part is whether the links in the pathway are likely to hold, something that can be assessed by looking at underlying assumptions and risks. As part of developing A4NH ToCs, an initial assessment of evidence for assumptions and the likelihood of outcomes has already been conducted (Johnson, Atherstone, and Grace 2015; Johnson et al. 2015; Johnson, Guedenet, and Saltzman 2015). The status of evidence will be regularly re-assessed and updated by FP and cluster teams, with support from MEL specialists. Over time, the ToCs of the individual FPs and the overall CRP will become more robust. The ToC papers produced in Phase I reflect one approach to assessing the strength of ToCs. Other approaches are also possible, and FP teams, working together with MEL specialists, will identify an approach, or approaches that work best for their FP, considering what will be most useful for internal FP management and what will be viewed as most credible for external CRP and FP stakeholders.

Annually reflecting on performance and risk information collected throughout the year, adjusting and prioritizing implementation in line with the evidence collected, and implementing and adjusting mitigation measures to properly manage risk. In all FPs, learning will be built into regular, annual planning and reporting. FP work plans will explicitly detail learning objectives for the coming year and reporting will include changes to the FP that were made on the basis of lessons learned from the previous year. How the FP operationalizes learning will vary depending on the stage of research and the nature of each FP. For example, FP2: Biofortification has formal management structures through HarvestPlus that regularly review progress (see FP2 Section for more detail). Starting in 2015, a Monitoring, Learning, and Action (MLA) functional team with an annual budget of $1 million was formed and is specifically charged with supporting learning from the program's delivery at scale in nine target countries. In other FPs, learning is likely to be less formal, though in FPs with a larger number of Centers and external partners, learning events may need to be more deliberately planned than in FPs where there are fewer Centers and where FP and Center management responsibilities are closely aligned.

[10] We will explore harmonizing approaches with Centers to facilitate this. Some Centers are planning to use the same system being developed by ICRPs.

Documenting lessons learned and best practices, including knowledge management and information sharing. In Phase I, we held semi-annual meetings of center focal points (CFP) and planning and management committee (PMC) members. However, the external evaluation revealed dissatisfaction with these events due to the heavy focus on management and administrative issues, leaving limited time for discussion of science. Therefore, in Phase II, we will transfer the CFP management functions to management representatives from the seven A4NH managing partners. Technical focal points and/or A4NH-affiliated researchers from partnering centers and institutes will be invited to attend an annual scientific meeting with specific learning objectives, hosted by A4NH. The CoPs and other learning platforms that A4NH supports through specific FPs and cross-cutting units will contribute to the learning agendas of other CRPs and our own. Ensuring that our investments in CoP activities are aligned with the priorities and learning objectives of other CRPs is a key assumption in the ToC for our integrative work. CoP activities will be co-developed with other CRPs, and their usefulness to and influence on other CRPs will be tracked and assessed. Once FP-level learning plans are developed, a CRP-level plan will also be developed with the goal of facilitating cross-FP and CGIAR-system level learning. One way that we will contribute to system-level learning about RBM and MEL is through participation in the CGIAR MEL CoP.

III. Budget Allocation to MELIA

Resources required to implement a robust and credible MELIA strategy have been included in the CRP's budget (Table 3 - below). This allocation will cover the elements included in the table. For the MEL elements (excluding impact assessment) of the strategy, it is recommended that the budget be between 2 to 5% of the CRP budget. Our estimated MEL budget is 2.1% of the full CRP budget from all funding sources and 9.4% of the W1/2 budget. The MEL share of the full budget is an underestimate since it includes some but not all of the center-level MEL expenditures associated with W3/bilateral funds.

Table 3. Estimated annual budget for MELIA, in thousand USD

Element	Total Budget Amount	In MEL or Management Budget	In Flagship Budget
Development and implementation of a stronger integrated online platform for M&E			
· System maintenance	25	25	0
· RBM and learning in clusters, flagships, and overall CRP	200	0	200
Management of data collection measures in various geographies to implement the monitoring plan effectively	1200	200	1000
Annual conduct of CCEE(s), which is estimated [at up to] USD 300,000 of consulting fees per evaluation	100	100	0
MEL specialists to provide expertise to CRP and project leads, build capacity across the lead centers and partners, and coordinate the implementation of the MEL modules	350	350	0
Impact assessment	4800		4800
Total (should be 2-5% of total)	6675	675	6000
MELIA as share of total CRP budget (91 million)	**7.4%**		
MEL as share of total CRP Budget (91 million)	**2.1%**		
MEL as a share of CRP W1/2 budget (20 million)	**9.4%**		

Figure 1. A4NH Phase II Results Framework

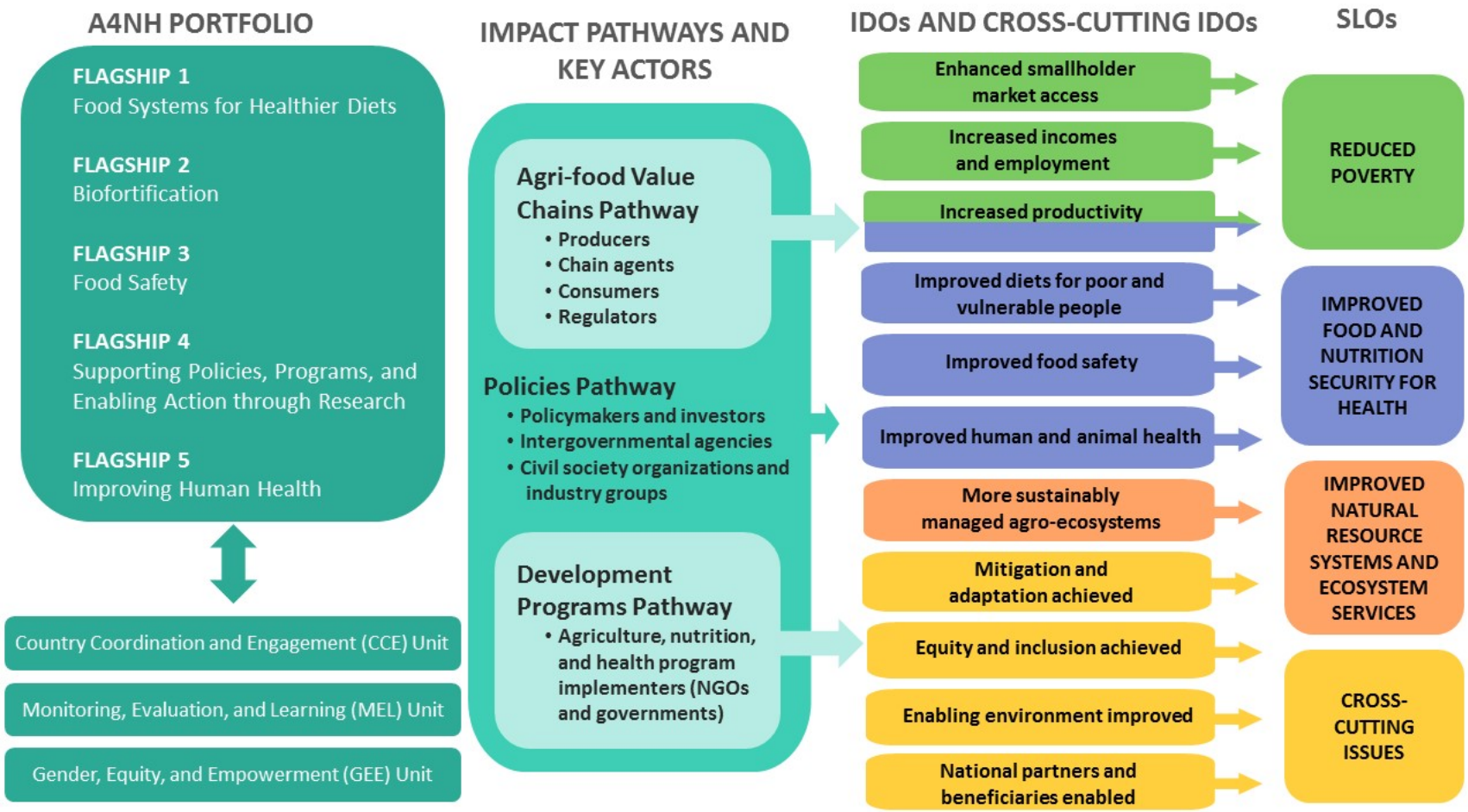

Table 1. Tentative plan for A4NH external evaluations and reviews in Phase II

Review or Evaluation	Dates	Evaluation Focus	Geographic Focus (tbc)	Budget (USD)	Participating Centers/CRPs
Review	Early 2017	Cross-cutting: Social equity across the portfolio	N/A	30K	All partner centers/CRPs
CCEE/Impact Assessment	2017/2018	CoA1 in FP4: Supporting Policies, Programs and Enabling Action through Research (SPEAR) - Integrated Programs to Improve Nutrition	Bangladesh, India, *Burkina Faso, Zambia*	100K	CIP, IFPRI Joint with IFPRI impact assessment
Rapid Assessment	2018	Integrative work of I-CRPs - Integrating tools and mechanisms[11]	Global	10K	Joint with all I-CRPs All A4NH managing partners
CCEE	Late 2018	CoA1 in FP2: Biofortification - Progress on mainstreaming of nutrition in CGIAR breeding	Africa/S Asia	60K	Crop centers in HarvestPlus; Crop AFS-CRPs
CCEE	2019	CoA2 and CoA3 in FP4: SPEAR - Policy and enabling environment	FP target countries in S Asia and Africa	75K	IFPRI and IDS plus other partner centers; CCAFS; PIM
CCEE	2019	Cross-cutting – A4NH management and governance	N/A	25K	Lead center and managing centers
CCEE	2021	FP1: Food Systems for Healthy Diets	Nigeria, Ethiopia, Bangladesh Vietnam	75K	Bioversity, CIAT, IFPRI, Wageningen UR
CCEE	2021	FP4: Improving Human Health	TBD	25K	IFPRI, ILRI, IMWI
CCEE/possible Impact Evaluation?	2022	FP3: Food Safety – possible focus on outcomes and impacts of aflatoxin work	TBD	60K	ILRI, IFPRI, IITA Joint with IITA impact assessment
CCEE	2022	FP2: Biofortification - Learning from delivery, (if not covered as part of a donor evaluation)	9 target counties	TBD	AFS-CRPs and partners
CCEE	2022	Integrative work of I-CRPs: Integrating tools and mechanisms	Global	40K	Joint with all I-CRPs

[11] Progress on open data and on linking data across sectors could be a topic for this evaluation and/or in FP1: Food Systems for Healthier Diets.

Table 2. Proposed plan for A4NH impact studies, by flagship program, in Phase II

Flagship Program (FP)	Impact Evaluations	Adoption Studies	Impact Assessments
FP1: Food Systems		Uptake of data and methods by: policymakers, other food system stakeholders, other CRPs	
FP2: Biofortification[12]	Iron beans in Guatemala; zinc wheat in Pakistan; multi-crop (iron beans and OSP); others to follow towards the end of Phase II	Iron beans in Rwanda, iron pearl millet in India; vitamin A cassava in Nigeria; mainstreaming nutrition in breeding and of biofortification in policy	Ex ante ongoing (e.g., Birol et al. 2014; Lividini and Fiedler 2015), updating past work with new information and assessing the cost-effectiveness of food basket approaches
FP3: Food Safety	Funding being sought for rigorous evaluations of food safety outputs, such as aflasafe™ and training & certification (T&C)		Funding being sought for an ex post Impact of T&C in Kenya
FP4: SPEAR	Agriculture, Nutrition, and Gender Linkages (ANGeL) project in Bangladesh, measures impact, including on women's empowerment	Uptake and use of evidence, methods and tools, new knowledge and skills by program implementers, policymakers and other key stakeholders	Possible assessment of IFPRI's "Diet quality, agriculture and health program" (GRP24), precursor to CoA1: Integrated Programs to Improve Nutrition in FP4
FP5: Improving Human Health		Influence on research programs and on governments	

[12] FP2: Biofortification uses slightly different terminology: effectiveness, impact assessment, cost-effectiveness/cost-benefit analysis)

3.6 Linkages with other CRPs and Site Integration

In Phase II, Agriculture for Nutrition and Health (A4NH), one of the four Integrating CRPs (ICRPs), will work in a complementary, joint relationship with the other ICRPs and with the eight major Agri-food System CRPs (AFS-CRPs) to contribute to the CGIAR system-level outcomes (SLOs) and the Sustainable Development Goals (SDGs). While A4NH has its own set of research questions, impact pathways, and outcome targets against which we must report progress, in most cases we will plan and implement research in close collaboration with other CRPs.

As an ICRP, A4NH will, in addition to its mandate for joint research, have coordination and support functions for CGIAR related to context setting, synthesis, engagement in specific policy processes (convening), and supporting networking and mutual learning through communities of practice (CoP) and other learning platforms. The first half of this annex describes the assumptions that drive our integrating role, followed by a summary of the areas of collaboration between A4NH and other CRPs where there is joint planning, investment, and reporting. The last part describes A4NH's planned involvement in CGIAR Site Integration.

ASSUMPTIONS ON THE INTEGRATING ROLE OF A4NH

Our focus on the drivers of food demand and on diets complements CGIAR strengths on supply and on individual commodities. A4NH will integrate individual value chains into multi-chain food system approaches, and will assess outcomes in relation to changes in the quality of diets. We will look at gender-sensitive approaches and options that can both improve individual and multiple food chains with research on food safety, biofortification, and multi-chain food system innovations that can be aligned with value chain research in the AFS-CRPs. We hope to align with and build on value chain research in other CRPs (largely the AFS-CRPs but also with the ICRP on Policies, Institutions and Markets (PIM) who leads methodological work on value chains in CGIAR) and in A4NH FP1: Food Systems for Healthier Diets, FP2: Biofortification and FP3: Food Safety. We will also work closely with the ICRP on Climate Change, Agriculture and Food Security (CCAFS) to ensure that we consider synergies and tradeoffs between impacts of food system innovations on diets and equity with other outcomes such as economic performance and sustainability.

Our research activities can foster willingness and capacity to work across sectors. A4NH provides evidence for global and national policy processes for enabling agriculture to help achieve better nutrition and health outcomes. Clearly, specific research elements on diet quality and consumption data and knowledge and evidence linking agriculture, nutrition and health will be important. However, there is an important role for A4NH in bringing broader and more systematic cross-sectoral research processes to the new CGIAR portfolio. The HarvestPlus program, which leads FP2: Biofortification, is an excellent example of how CGIAR strengths (plant breeding and germplasm delivery) can be combined with public health (nutritional efficacy trials) and economics (cost-effectiveness studies) to provide implementation and impact evidence for development investments, and supportive policies and regulations at scale. In Phase II, we will develop and promote theories of change (ToCs) and contribution analysis for policy enabling including cross-sectoral (agriculture, nutrition, health and economic and social development) policy, policy process research including stories of change, and monitoring, evaluation and learning associated with enabling environments. There is strong interest from other CRPs in engaging with A4NH in more systematic approaches to integrating agriculture and nutrition and health policy. FP4: Supporting Policies, Programs and Enabling Action through Research (SPEAR) will respond to this

demand by hosting annual learning events, for example, that strengthen linkages within CGIAR and build bridges to key nutrition and public health communities in countries where we work. In addition, FP5: Improving Human Health, will support a cross-sectoral learning platform for bridging activities and networking between agricultural and public health researcher communities, led by the London School of Hygiene and Tropical Medicine (LSHTM).

Driven by these assumptions, we envisage three types of strategic links within the new CGIAR portfolio.

1. **Joint research,** or closely aligned research, between A4NH and other CRPs will help each CRP and CGIAR as a whole achieve its ambitious SLOs and make a worthwhile contribution to the SDGs. Joint research is characterized by joint planning, investment, and reporting.
2. **Networking and mutual learning,** through **learning platforms** and **CoPs,** to catalyze learning on commonly required research approaches, methods, tools and their application so that nutrition, health, gender and equity issues can be integrated effectively into agricultural research across CGIAR.
3. **As a bridge,** between global, regional, and national nutrition and health communities and CGIAR. In particular, A4NH can convene and represent CRPs in national, regional, and global nutrition and health policy processes, adding value to A4NH's own work and the collective work of CGIAR.

Our approach to collaboration with other CRPs in Phase II will build on lessons learned from past experiences and anticipate new needs in the future. Some significant examples of past partnerships with other CRPs that will evolve in Phase II include:

Mainstreaming of biofortification. The HarvestPlus Challenge Program (2003-2011) and its continuation as an A4NH flagship program (FP), FP2: Biofortification (2012- present), has managed agreements across Centers (and subsequently also CRPs) on priorities and led a focused research agenda that integrates crop breeding for micronutrients as well as economic impact assessments and nutritional efficacy research. This research provided convincing evidence to investors of the plausibility of the hypothesized ToCs for biofortification and the potential for scaling-out delivery to prevent micronutrient deficiencies cost-effectively to 100 million people in high-burden target countries by 2022. In 2014, the CGIAR Centers agreed to mainstream biofortification in their cross-Center/CRP breeding efforts. Mainstreaming needs to be accelerated to include high levels of micronutrients in the varietal development and delivery programs for all food crops. From A4NH, FP2 will support mainstreaming through new joint research and networking, supporting cross-crop methods for cost-effective selection of high micronutrient varieties. It will also continue to strengthen the partnership it has built between the agriculture and nutrition communities to implement and enable delivery of biofortified varieties to achieve food security, higher incomes and micronutrient sufficiency at scale.

Integrating food safety research into CGIAR value chains. In Phase I, researchers in different Centers working on food safety, across perishable and staple foods, came together to conduct coordinated research. Coordinating food safety research within A4NH has brought together a critical mass of key research disciplines such as agronomy, plant pathology, epidemiology, risk assessment, and economics so they can be integrated into CGIAR value chain research that assures safer and fairer (more equitable) food supply for consumers. Key technologies, such as aflasafe™ for aflatoxin control, and food safety

management approaches, such as training and certification of market agents, have been successfully pilot tested. An external evaluation of A4NH food safety research in 2015 provided recommendations

for how this research could be strengthened for impacts at scale, including generating more rigorous evidence of impact and developing a more explicit scaling ToC. Coordination across A4NH, and with AFS-CRPs, like DCL, Fish, Livestock, and Maize will continue from Phase I and we will seek greater engagement with, WLE on wastewater use for vegetable value chains. Following a recommendation from our CRP external evaluation, we will be more explicit about tracking influence on other CRPs through this coordination work.

Improving agriculture and nutrition and gender methods in CGIAR research. The Gender and Nutrition CoP developed into a successful mechanism to engage gender researchers and monitoring and evaluation (M&E) specialists in all CRPs with nutrition outcomes during Phase I. The A4NH Gender Strategy initially envisioned significant joint research with other FPs and CRPs, however it quickly became apparent that there was interest among the CRPs working on gender and nutrition for knowledge on specific topics about which the CRPs themselves had little capacity or methodological expertise, for example women's time use or household decisionmaking. Thus, A4NH invested resources in conducting or commissioning gender research on key cross-cutting topics. The implication for Phase II is that CoPs need to include both capacity building and scope for strategic research in support of key issues prioritized by the community. As was the case with coordination on aflatoxin research, in Phase II we will be more explicit in monitoring our investments in the Gender-Nutrition CoP, guided by a ToC.

In Phase II, A4NH will make some important changes in its own structure to fulfill our integrating role, which has implications for our partnership strategy, inside and outside CGIAR. One major change will be the shift from focusing on *value chains for nutrition* to *food systems for healthier diets* and partnering outside the CGIAR with Wageningen University and Research Centre (Wageningen UR) to lead the new FP. The second change will be greater emphasis on supporting countries with research on integrated agriculture and nutrition programs, and policies. The third major change will be greater emphasis on the positive and negative effects of agriculture on human health issues with a consortium of public health research institutes. Fourth is that A4NH will commit to host an annual event with nutrition and health groups for CGIAR researchers in order for the agricultural research community to hear what research results and outcomes are needed by the nutrition and health communities and for agricultural researchers to share the opportunities they are pursuing to improve nutrition and health through agriculture. Finally the 3C cluster of SPEAR focuses on capacity and leadership, collaboration and convening to position research outputs for uptake and use for policy impact. More details on these new activities are described below.

1. **Food Systems for Healthier Diets**. Given the increasing emphasis on nutrition and health outcomes through agriculture in the CGIAR portfolio, a critical integrating role is to understand the quality of diets consumed and how food supply can improve diet quality. Such a strategy cuts across the challenges of micronutrient deficiency, nutritional insufficiency and overnutrition. It also nicely integrates research on value chains in the AFS-CRPs in a food systems context and provides opportunities for joint research with the other I-CRPs on food system transformation within national economic transformation and tradeoffs between healthy and sustainable diets. A4NH builds on its initial research (frameworks and actions for improving nutrition in value chains) to develop a new research area in food systems under the leadership of Wageningen UR, which has integrative

   capacity in food systems and considerable experience in partnerships with private and public food system actors.

2. **Supporting national and global efforts to achieve health and nutrition goals through agriculture**. Country ownership and leadership is critical to improve nutrition and health outcomes and many countries, within the Scaling Up Nutrition (SUN) Movement, are planning and implementing coordination platforms across sectors and development stakeholders. Through both FP1: Food Systems and particularly FP4: SPEAR, we will put more emphasis on supporting national stakeholders to plan, implement, monitor, and evaluate. This builds on faster than expected progress in supporting country enabling of nutrition in Phase I and there is a large demand for both research and capacity development in this area. Research from phase 1 determined the importance of an enabling environment to translating momentum on nutrition action into impact and both the Global Nutrition Reports (2014 and 2015) highlighted this as a critical factor holding up progress on scaling up nutrition at country level despite increased political will. A4NH researchers have considerable credibility and convening power through their on-going evidence contributions as well as central role in global processes such as SUN and the Global Nutrition Report and will bring this experience to the wider CGIAR system

3. **Partnerships with public health**. In the new Strategy and Results Framework (SRF), there is much greater emphasis on agriculture's influence on human health, both positive and negative. To do this effectively, A4NH has established a new FP, FP5: Improving Human Health, planned and implemented as a partnership between agriculture and public health research, co-led by ILRI and LSHTM. Within FP5, LSHTM will convene a cross-sectoral learning platform between agricultural and public health researcher communities. Through theme-based symposia involving natural and social scientists from both sectors, FP5 will identify and develop joint research areas, such as the health benefits and risks of agricultural intensification, control of infectious diseases shared by animals and people – both emerging and neglected, and new challenges such as antimicrobial resistance.

Based on these experiences and the realignment of the CRP portfolio in Phase II, we are proposing some very specific, strategic links with both AFS-CRPs and ICRPs, as described in **Template 1**. In each case, we are proposing the nature of the linkage and what is needed from A4NH and our partner CRPs and what resources will be required. Some of the linkages will need to be formal and well-resourced. Others will be more informal, though in all cases they will need clear ToCs to support planning and monitoring. We describe the proposed activities with other CRPs in **Template 2a**.

CGIAR Site Integration

CGIAR Site Integration intends to improve the alignment of research, the coordination of delivery, and improve country-level collaborations. Improving partnerships with country-level stakeholders is also a central objective of the second phase of A4NH. A4NH has identified five focus countries for Phase II, four of the highest priority countries for CGIAR Site Integration (**Bangladesh**, **Ethiopia**, **Nigeria**, and **Vietnam**) plus **India**.

The five focus countries build on strong foundations of A4NH work from Phase I. In Bangladesh, IFPRI, CIAT, CIP and WorldFish researchers involved in A4NH actively engaged government in agriculture-nutrition-gender policy and planning. There are joint projects, such as the Agriculture, Nutrition, and

Gender Linkages (ANGeL) project implemented by government and CGIAR researchers. In India, the Partnerships and Opportunities to Strengthen and Harmonize Actions for Nutrition in India (POSHAN) initiative is intimately aligned with policy and actions by national and state governments (for example, the Together for Nutrition initiative) with a number of joint projects (for example, WINGS) with national partners. Country coordination is at an intermediate stage in Ethiopia (Together for Nutrition meeting in

June 2015, CGIAR Site Integration National Consultation Workshop in December 2015 and food systems consultation in February 2016) and at an earlier stage in Nigeria and Vietnam.

In the A4NH focus countries, there will be research in multiple FPs with national partners and systematic engagement with national food systems (FP1: Food Systems) and nutrition- and health-sensitive programs, implementation, policy and capacity (FP4: SPEAR). One of the CGIAR managing partners will manage partnerships and Site Integration in each A4NH focus country (IITA in Nigeria, ILRI in Ethiopia, CIAT in Vietnam and IFPRI in Bangladesh and India). CIAT, IITA and ILRI also have CGIAR-level Site Integration responsibilities. Given the strong emphasis on country strategy and planning, we will rely on IFPRI Country Strategy Support Programs (CSSP) and the Regional Strategic Analysis and Knowledge Support System (ReSAKSS) network (for the focus countries in Africa). For example, in both Bangladesh and India, IFPRI has a substantial CSSP that is intimately engaged with policymakers in agriculture, nutrition and health strategy and planning. The IFPRI CSSP teams will also actively support policy engagement and country coordination in other focus countries in which they are present (Nigeria and Ethiopia in collaboration with IITA and ILRI respectively).

In the five countries listed above, there will be an A4NH country coordination team representing multiple FPs that will make up the new Country Coordination and Engagement (CCE) unit in the A4NH Program Management Unit (PMU). Each team will prepare a three-year plan, an annual work plan and budget with deliverables, which will be included as part of the formal agreement with the managing partner leading that team. The country coordination team will coordinate with FP leaders and with the CGIAR Site Integration leader in convening joint research and partnership activities. For example, in Ethiopia, the A4NH country coordination team consists of members from Bioversity, IFPRI, Wageningen UR and ILRI working across A4NH FPs. The team held a meeting with the ILRI site integration leader, the FP development team, and with national and international partners on food systems in Ethiopia. This assured alignment with national priorities (useful for all A4NH FPs), opportunities for strengthening coordination of CGIAR research within food systems (Centers, AFS-CRPs, CCAFS and PIM) and to begin planning joint research and capacity development with national partners. The outcomes of these interactions have been used in the planning process of the IFPRI Compact 2025 roundtable discussion (scheduled for March 2016 in Ethiopia), thus already demonstrating the value of the site integration activities that have taken place.

In other CGIAR Site Integration countries where A4NH is actively engaged, links with CGIAR Site Integration will be managed by FPs and their managing partners. For example in Kenya, most A4NH research is in FP3: Food Safety and FP5: Improving Human Health, which are led or co-led by ILRI; ILRI will be responsible for linking A4NH with Site Integration. These FPs will provide focal persons for working with the Site Integration leader.

For the national consultations held as part of Site Integration, A4NH prepared materials describing our plans for Phase II, generally, and when applicable, country-specific plans. Our plans for the CGIAR Site Integration countries are described in **Template 2b** and will be updated through 2016 and into Phase II.

In CGIAR Site Integration countries in which A4NH does not have active research projects, we will engage countries through multi-country learning networks. Such co-learning countries will be able to engage with A4NH researchers and researchers in other countries to exchange knowledge and information. An existing example, to be continued in Phase II is the multi-country effort on food basket approaches for biofortification led by EMPRABA in eight Central and South American countries. We will explore the options for extending the reach of A4NH research through other networks that A4NH

actively participates in such as the Agriculture, Nutrition and Health (ANH) Academy or through networks of others, both CGIAR and non-CGIAR. In these countries, A4NH will explore how to actively share information and knowledge and link those countries to A4NH research in focus or key countries as appropriate.

While there is much emphasis on CGIAR site integration at country level, A4NH will actively engage with **regional and continental organizations**, which are critical for both support to countries and learning from cross-country comparisons and synthesis. Such an approach is critical in Africa, given the importance of CAADP, coordinated continentally by the AUC and in regions by regional economic communities (RECs). In phase I, we worked through the ReSAKSS network to engage with policy and planning processes in AU (led by IFPRI) and RECs (especially the ReSAKSS hub with ECOWAS coordinated by IITA and the hub with COMESA coordinated by ILRI). ReSAKSS is a trusted partner in policy processes and supporter of continental and regional results frameworks and monitoring and evaluation for CAADP. Through the RECs, ReSAKSS is also actively engaged with country CAADP strategies and implementation plans. In Phase I, we invested in supporting ReSAKSS with nutrition expertise as CAADP embraced nutrition-sensitive agriculture as a high-level goal demanded by Heads of State. We will expand this relationship in phase II and also links with FARA and SROs in Africa within this overall continental coordination. In South Asia, countries are larger and regional organizations less important. We will continue to engage through regional networks such as APAARI and regional bodies such as SARC and ASEAN; but with less emphasis on regional organizations than in Africa.

Likewise, more global coordination around agriculture-nutrition and agriculture-health is important for country processes. Of particular importance is the identified role of nutrition sensitive agriculture as part of recommended SUN interventions. The SPEAR flagship is closely linked to SUN and its leading organizations. In phase I, we also invested in a joint position with IFAD, with a view to strengthening agriculture-nutrition investment for countries. IFAD has placed much greater emphasis on nutrition in its Country Strategies and Grants and Loan portfolios for IFAD10 (2017-19). Through Bioversity and IFPRI, we plan to strengthen joint work with IFAD and with the other Rome-based agencies – FAO and WFP.

Template 1: ***Overview of Inter-CRP Collaboration: What A4NH Provides and Receives***

Explanation: Summary rows (in gray) explain in general how A4NH will engage with the AFS-CRPs and the ICRPs, respectively. This is followed by specific joint research activities with specific CRPs.

	Agriculture for Nutrition and Health (A4NH)					
	FP1. Food Systems	**FP2. Biofortification**	**FP3. Food Safety**	**FP4. SPEAR**	**FP5. Improving Human Health**	**Cross-cutting Units**
AFS-CRPs (Summary)	**Learning platform** and some joint research projects on improving diet quality through multi-chain food systems both globally and in the site integration ++ countries of Bangladesh, Ethiopia, Nigeria and Vietnam. *Receives*: examples of value chain innovations (technological, institutional, policy) *Provides*: data and analysis of diet quality; analysis of food and diet transitions; implication of proposed VC innovations for food systems and diets.	Evidence of effectiveness and uptake at scale of biofortified varieties; mainstream nutrition in future breeding (**joint research, networking and bridging**) *Receives*: Breeding, genetics, varietal development (conventional and GM); delivery networks in target countries. *Provides*: ex-ante and ex-post impact assessments; bioavailability and nutritional efficacy; networks for nutrition and biofortification delivery; policy and regulatory enabling	**Food safety for high priority risks in perishable and staple food chains** - special emphasis in informal food chains for the poor (joint research) *Receives* innovations for production and processing of foods, from specific value chains *Provides:* food safety expertise (epidemiology, economics, risk assessment) and food safety risk mitigation technologies and approaches	**Convening agriculture and nutrition communities**. Events for knowledge exchange and mutual learning (brokering with potential for joint research) *Receives*: agricultural innovations and research results of interest to nutrition *Provides*: Convening with global and national nutrition partners; Methods and tools.	Convening of public health and agricultural research communities (brokering with potential for joint research) *Receives*: agricultural innovations and research results of interest to health community *Provides*: Convening with global and national public health partners	**Gender Equity and Empowerment Community of Practice** on agriculture-nutrition-gender methods, tools and evaluation approaches bringing together gender and evaluation specialists in different CRPs.
DCL Joint research	*Receives*: dryland cereal and pulse value chain actors and innovations including food processing and dryland cereal and	*Receives*: Breeding, genetics, varietal development; delivery and processing networks in target countries.	*Receives* groundnut value chain innovation and development for productivity and processing of foods			

	Agriculture for Nutrition and Health (A4NH)					
	FP1. Food Systems	**FP2. Biofortification**	**FP3. Food Safety**	**FP4. SPEAR**	**FP5. Improving Human Health**	**Cross-cutting Units**
	pulse-related system changes *Provides*: analysis of diet quality and implications for food system transformation *Joint*: engagement in public-private pulse innovation platforms (Global, India, Ethiopia)	*Provides*: ex-ante and ex-post impact assessments; bioavailability and nutritional efficacy; networks for nutrition and biofortification delivery; policy and regulatory enabling new nutrient-dense traits *Joint*: Assessment of dryland cereal and pulse value chains for nutrition and health.	*Provides:* food safety expertise (epidemiology, economics, risk assessment) and food safety risk mitigation technologies and approaches			
Fish **Joint research**	Fish FP Enhancing the impact of fish for nutrition and health of the poor *Receives*: fish value chain actors and innovations including fish processing and fish-based system changes in Bangladesh *Provides*: analysis of diet quality and implications for food system transformation		Potential for food safety inclusion in fish value chains in Bangladesh		TBD – possible role in AMR research	
FTA **Joint research**	*Receives*: knowledge and evidence on Food supply, quality and links to livelihoods in FTA landscapes. Sustainable supply of fruits.				**Joint**: emerging diseases associated with bush meat hunting and supply chains (tbd)	

	Agriculture for Nutrition and Health (A4NH)					
	FP1. Food Systems	**FP2. Biofortification**	**FP3. Food Safety**	**FP4. SPEAR**	**FP5. Improving Human Health**	**Cross-cutting Units**
	Provides: national and sub-national diet quality and food system transformation information to link with livelihoods in FTA sites. links to food system innovation platforms and links to national and food system anchoring and scaling processes					
Livestock Joint research	*Livestock FP Livelihoods and Agri-Food Systems* *Receives*: livestock value chain actors and innovations including food processing and livestock livelihoods in households and systems Convening with livestock sector actors " Global Livestock Alliance" including tradeoffs in animal-source foods between nutrition and sustainability *Provides*: diet quality and food system transformation		*Livestock FP Livelihoods and Agri-Food Systems* *Receives*: Livestock value chain innovations in target regions; integration of food safety teams in value chain planning. *Provides*: Risk management and analysis; evaluation of food safety pilot interventions; development of large-scale food safety interventions linked to value chain interventions. *Joint*: co-development of innovations and shared research outputs.		Livestock FP Animal Health Convening with livestock sector actors " Global Livestock Alliance" including risks of emerging diseases, AMR *Receives* antibiotic use and efficacy in livestock systems. *Provides*: links between antimicrobials in animals and AMR in humans; policy, regulatory and behavior change studies	Development of a livestock module for pro-WEAI

	Agriculture for Nutrition and Health (A4NH)					
	FP1. Food Systems	**FP2. Biofortification**	**FP3. Food Safety**	**FP4. SPEAR**	**FP5. Improving Human Health**	**Cross-cutting Units**
Maize Joint research	*Receives*: Maize value chain actors and innovations including food processing and maize-based system changes *Provides*: analysis of diet quality and implications for food system transformation	*Receives*: Breeding, genetics, varietal development; maize-based delivery and processing networks in target countries. *Provides*: ex-ante and ex-post impact assessments; bioavailability and nutritional efficacy; networks for nutrition and biofortification delivery; policy and regulatory enabling new nutrient-dense traits Cooperation on food basket approaches to biofortification in LAC and Africa	*Receives maize* value chain innovations mainly biocontrol and post-harvest management *Provides:* food safety expertise (epidemiology, economics, risk assessment) and food safety risk mitigation technologies and approaches			
Rice Joint research	*Receives:* Rice value chain actors and innovations and rice-based system changes *Provides*: analysis of diet quality and implications for food system transformation	*FP on New rice varieties* *Receives*: Breeding, genetics, varietal development (conventional and GM); rice delivery networks in target countries. *Provides*: ex-ante and ex-post impact assessments; bioavailability and nutritional efficacy; networks for nutrition			*Receives*: linkages with rice production networks in selected locations and data on agriculture production and practices *Provides*: data on health risks and benefits of people in selected rice irrigation systems and evidence of health status and irrigation practice changes	

	Agriculture for Nutrition and Health (A4NH)					
	FP1. Food Systems	**FP2. Biofortification**	**FP3. Food Safety**	**FP4. SPEAR**	**FP5. Improving Human Health**	**Cross-cutting Units**
		and biofortification delivery; policy and regulatory enabling new nutrient-dense traits and pre-breeding lines for mainstreaming into rice breeding pipelines, cooperation on agronomic biofortification for zinc.				
RTB Joint research	*Receives*: RTB value chain actors and innovations including food processing and RTB-based system changes *Provides*: analysis of diet quality and implications for food system transformation	*Receives*: Breeding, genetics, varietal development; delivery and processing networks in target countries. *Provides*: ex-ante and ex-post impact assessments; bioavailability and nutritional efficacy; networks for nutrition and biofortification delivery; policy and regulatory enabling new nutrient-dense traits *Joint:* Assessment of RTB value chains for nutrition and health.				
Wheat Joint research	*Receives*: Wheat value chain actors and innovations and wheat-based system changes	*Receives*: Breeding, genetics, varietal development; wheat-based delivery and				

	Agriculture for Nutrition and Health (A4NH)					
	FP1. Food Systems	**FP2. Biofortification**	**FP3. Food Safety**	**FP4. SPEAR**	**FP5. Improving Human Health**	**Cross-cutting Units**
	Provides: analysis of diet quality and implications for food system transformation	processing networks in target countries. *Provides*: ex-ante and ex-post impact assessments; bioavailability and nutritional efficacy; networks for nutrition and biofortification delivery; policy and regulatory enabling new nutrient-dense traits; cooperation on agronomic biofortification for zinc				
ICRPs (Summary)	**Joint research on national food systems futures (CCAFS, PIM, WLE)** **Learning platform** on food system futures linked to PIM and CCAFs learning platform on food systems futures, bringing together agriculture, health and climate data, foresight modelling, FNS scenario research and A4NH on food system, nutrition transformations.			**Convening agriculture and nutrition communities**. Events for knowledge exchange and mutual learning (bridging with potential for joint research) *Receives*: agricultural innovations and research results of interest to nutrition *Provides*: Convening with global and national nutrition partners; Methods and tools.	Convening of public health and agricultural research communities (brokering with potential for joint research)	**Gender Equity and Empowerment Community of Practice** on agriculture-nutrition-gender methods, tools and evaluation approaches bringing together gender and evaluation specialists in different CRPs.
CCAFS Joint research	*CCAFS FP Priorities and Policies for CSA* *Receives:* climate information on food systems futures /			*CCAFS FP Priorities and Policies for CSA* *Receives:* Platforms, policy processes and	TBD – joint research arising from Convening of public health and agricultural research communities	

	Agriculture for Nutrition and Health (A4NH)					
	FP1. Food Systems	**FP2. Biofortification**	**FP3. Food Safety**	**FP4. SPEAR**	**FP5. Improving Human Health**	**Cross-cutting Units**
	tradeoffs; scenario analysis and modeling for food systems under climate change *Provides:* Diet quality information linked to and food systems futures / tradeoffs; scenario analysis and modeling of food systems linked to food innovations and scaling up. *Joint* – participation in learning platform of these 2 CCAFS and A4NH FPs			methods and tools to support enabling for CSA. *Receives:* Platforms, policy processes and methods and tools to support enabling for nutrition-sensitive agriculture.		
PIM Joint research	*PIM FP - foresight* *Receives*: foresight models for economic and agri-food systems transformation. FP on Value chains: Tools and methods for VC research applied to food systems TBD on modelling of food loss and waste? *Provides:* Diet quality information linked to and food systems futures / tradeoffs; scenario analysis and modeling of food systems linked to food	Work on mainstreaming biofortification in national policy, with ReSAKSS	*PIM FP on Value Chains* *Receives*: expertise on value chain analysis and assessment *Provides*: expertise on food safety in value chains	*PIM FP on Development Strategy and Governance* *Receives*: methods and tools for policy processes and policy engagement *Provides*: case studies of application of methods and tools for policy processes in ANH. Methods for engaging policy actors such as Stories of Change	TBD – joint research arising from Convening of public health and agricultural research communities. Collation and joint modeling of detailed spatial agriculture and health data. .	*PIM provides support to Gender-Agriculture-Nutrition Community of Practice from its Gender research flagship* Jointly work with IFPRI country strategy support programs (CSSPs) in A4NH and PIM focus countries and ReSAKSS in Africa with AU and RECs on CAADP.

	Agriculture for Nutrition and Health (A4NH)					
	FP1. Food Systems	**FP2. Biofortification**	**FP3. Food Safety**	**FP4. SPEAR**	**FP5. Improving Human Health**	**Cross-cutting Units**
	innovations and scaling up. Methods for multi-chain food systems research			*PIM FP on Social Protection Receives: studies on social protection interventions Receives: evaluation of nutritional outcomes*		
WLE Joint research	*TBD – WLE input into sustainability in food systems research (food systems focus countries in which we are working with CCAFs (Bangladesh, Ethiopia, Nigeria, and Vietnam)* *TBD – interest (through CIAT) through WLE FP Sustaining Rural-Urban Linkages* *Receives:* research in rural-urban linkages for food systems under natural resource constraints *Provides:* food systems diagnostics, foresight, transformation and scaling		*WLE FP Sustaining Rural-Urban Linkages Wastewater re-use and vegetable value chains.* *Receives*: Coordination and information sharing on target sites and on plans for developing large-scale, integrated interventions. *Provides*: Developing and validating innovations with potential to improve food safety in pilot trials and at scale in target value chains and regions. Integrating of food safety teams in value chain planning of other CRPs. Shared research outputs.		TBD – joint research arising from Convening of public health and agricultural research communities (WLE has focal points engaged in this).	
Genebank Platform		A4NH participates indirectly through AFS-CRPs				

	Agriculture for Nutrition and Health (A4NH)					
	FP1. Food Systems	**FP2. Biofortification**	**FP3. Food Safety**	**FP4. SPEAR**	**FP5. Improving Human Health**	**Cross-cutting Units**
Genetic Gains Platform		A4NH participates indirectly through AFS-CRPs				
Big Data platform	*Receives*: TBD *Provides*: primary and secondary data on diet quality and food systems	*Receives*: TBD *Provides*: primary and secondary data on nutritional surveys	*Receives*: TBD *Provides*: TBD	*Receives*: TBD *Provides*: primary and secondary data on nutritional quality and food systems	*Receives*: TBD *Provides*: primary and secondary data on health data and pathogens at detailed spatial scale (linkages with Harvest Choice agricultural data)	*Receives*: TBD *Provides*: primary and secondary data on diet quality and food systems

Template 2a. ***Partnerships with other CRPs (activities, mode, geographies and outcomes sought).***

PARTNERING MODALITY – JOINT RESEARCH					
FP1: Food Systems for Healthier Diets					
Partner CRP	**ACTIVITY [COUNTRIES IN WHICH THIS TAKES PLACE]**	**A4NH ROLE**	**COLLABORATING CRP ROLE**	**COLLABORATION MODE**	**OUTCOMES; ADDED VALUE; TARGET COUNTRIES**
AFS-CRPs: Maize, Rice, and Wheat,	Contribution of staples to food prices and food system innovations Rice – Bangladesh MAIZE - Ethiopia	Diet quality and consumption studies; food systems analysis including options for scaling up and anchoring	Value chain innovations (breeding, marketing, processing) for improved nutrient quality and safety of foods from staple crops	Joint Research Projects linked to food systems learning platform based on joint fundraising (base and/or uplift)	Bangladesh and Ethiopia • Partners and other CRPs incorporate nutrition, health and gender in agri-food value chains and food systems programs • Stakeholders (investors, civil society, policymakers) consider healthier diets in processes related to food systems • Stakeholders (investors, civil society, policymakers) consider healthier diets in processes related to food systems
CCAFS	Development and quantification of food and nutrition security futures Bangladesh, Ethiopia, Nigeria, Vietnam	Diet quality and consumption studies; food systems analysis including options for scaling up and anchoring	Climate change and food system scenarios; estimates of climate impacts for different food systems scenarios	Joint research – foresight on food systems futures Base budget – use of existing models, scenarios and secondary data; uplift – additional primary data collection	Bangladesh, Ethiopia, Nigeria, Vietnam • *See first row for outcomes*
DCL	Pulse Innovation in Food Systems – Ethiopia, India	Diet quality and consumption studies; food systems analysis including options for	Value chain innovations (breeding, marketing, processing) for improved nutrient	Joint Research Projects linked to food systems learning platform in based on joint fundraising base	Ethiopia and India and potentially Nigeria • *See first row for outcomes*

		scaling up and anchoring	quality and safety of foods from staple crops	and/or uplift)Pulse Innovation Partnership with business schools	
Fish	Improving diet quality through greater consumption of fish in Bangladesh	Diet quality and consumption studies; food systems analysis including options for scaling up and anchoring	Fish production and value chains development in Bangladesh	Joint Research Projects linked to food systems learning platform in based on joint fundraising base and/or uplift)	Bangladesh • *See first row for outcomes*
FTA (and ICRAF)	Sustainable food systems; Food innovations for fruits and for more sustainable diets	Diet quality and consumption studies (CoA1); food innovations (CoA2); food systems analysis including options for scaling up and anchoring (CoA3)	FTA 4.3 Healthy diets from diverse FTA landscapes	Joint research Uplift budget (overlap between FTA and 4 food systems focus countries? Analysis of food systems in FTA countries (and more generally)	• *See first row for outcomes*
Livestock	Improving diet quality through greater consumption of livestock in Ethiopia and Vietnam	Diet quality and consumption studies (CoA1); food innovations (CoA2); food systems analysis including options for scaling up and anchoring (CoA3)	Livestock production and value chains development in Ethiopia, Vietnam	Livestock production and value chains development in Ethiopia and Vietnam (through joint fundraising, base and/or uplift)	Ethiopia, Vietnam and possibly Tanzania, Uganda, India with uplift • *See first row for outcomes*
PIM	Development and quantification of food and nutrition security futures Bangladesh, Ethiopia, Nigeria, Vietnam and more global analyses	Diet quality and consumption studies; food systems analysis including options for scaling up and anchoring	Foresight and food systems scenarios; value chain tools and approaches	Joint research – foresight on food systems futures Base budget – use of existing models, scenarios and secondary data; uplift – additional primary data collection	Bangladesh, Ethiopia, Nigeria, Vietnam and more global analyses • *See first row for outcomes*
RTB	Contribution of staples to food prices and food system innovations Bangladesh, Ethiopia, Nigeria, Vietnam	Diet quality and consumption studies; food systems analysis including options for scaling up and anchoring	Value chain innovations (breeding, marketing, processing) for improved nutrient quality and safety of foods from staple crops	Joint Research Projects linked to food systems learning platform in based on joint fundraising base and/or uplift)	Bangladesh, Ethiopia, Nigeria, Vietnam • *See first row for outcomes*

WLE	Development and quantification of food and nutrition security futures Bangladesh, Ethiopia, Nigeria, Vietnam	Diet quality and consumption studies; food systems analysis including options for scaling up and anchoring	Foresight on rural-urban linkages changes and tradeoffs for land and water use for different food at subnational and national levels	Joint research – foresight on food systems futures Base budget – use of existing models, scenarios and secondary data; uplift – additional primary data collection	Bangladesh, Ethiopia, Nigeria, Vietnam • *See first row for outcomes*
FP2: Biofortification					
Partner CRP	**ACTIVITY [COUNTRIES IN WHICH THIS TAKES PLACE]**	**A4NH ROLE**	**COLLABORATING CRP ROLE**	**COLLABORATION MODE**	**OUTCOMES; ADDED VALUE; TARGET COUNTRIES**
AFS-CRPs: 5 crops	Mainstream higher-levels of micronutrients into staple crop breeding; delivery of planting material	CGIAR-level program coordination for biofortification – priority setting, targeting, nutritional efficacy, MEL, regulatory aspects and policy. Co-development of biofortified staple crops and joint research with AFS-CRPs (Wheat, Maize, Rice, DCLAFS, and RTB), at least through 2019.	Co-development of biofortified staple crops and joint research; mainstream nutritious traits into its breeding programs	Joint investment in biofortification In 2015, approximately $16 million was provided through FP2.Biofortification to AFS-CRPs and Centers to supplement their own budgets for mainstreaming. Will continue at approximately $10-12M per annum through 2017-2019 and be reassessed for 2020 onwards.	Reaching 20 million people globally with biofortified varieties Outcome from mainstreaming work: 2.5% annual increase in mainstreaming as a percentage of total CGIAR Center efforts for target crop/agroecology by 2022
DCL	India, Rwanda, DRC, Uganda	As above	Co-development of biofortified pearl millet and beans and joint research; mainstream nutritious traits into its breeding programs	Joint research with a funding contribution from A4NH at least through 2019	Reaching 1 million people in India (high iron Pearl Millet), 1.2 million people in Rwanda, 0.5 million in Uganda, and 0.5 million people in DRC (high iron beans)
MAIZE	Ethiopia, Nigeria, Zambia, DRC	As above	Co-development of biofortified maize and joint research;	Joint research with a funding contribution from	Reaching 0.5 million in Ethiopia, 0.5 million in DRC,

			mainstream nutritious traits into its breeding programs	A4NH at least through 2019	0.6 million in Nigeria and 0.6 million in Zambia
PIM	All	Work with ReSAKSS on policy issues in target countries	Provide policy and political economy analysis	Joint research	
RICE	Bangladesh, India	As above	Co-development of biofortified rice and joint research; mainstream nutritious traits into its breeding programs	Joint research with a funding contribution from A4NH at least through 2019	Reaching 3.4 million people with conventional rice varieties in Bangladesh and 0.3 million in India. IRRI will conduct on much higher levels of iron and zinc rice through genetic medication.
RTB	DRC, Nigeria, Uganda	As above	Co-development of biofortified cassava and joint research on delivery (cassava and OSP); mainstream nutritious traits into its breeding programs	Joint research	Reaching 1.6 million in DRC, 2.2 million in Nigeria and 1.1 million in Uganda
WHEAT	Pakistan, India	As above	Co-development of biofortified wheat and joint research; mainstream nutritious traits into its breeding programs	Joint research with a funding contribution from A4NH at least through 2019	Reaching 1.6million in India, 0.75 million in Pakistan
FP3: Food Safety					
Partner CRP	**ACTIVITY [COUNTRIES IN WHICH THIS TAKES PLACE]**	**A4NH ROLE**	**COLLABORATING CRP ROLE**	**COLLABORATION MODE**	**OUTCOMES; ADDED VALUE; TARGET COUNTRIES**

DCL	Joint research on food safety in value chain work (aflatoxin control)	Provide food safety expertise (epidemiology, risk assessment, microbiology, economics) (CoA3)	Research and coordination of value chain actors and incorporation of food safety into broader value chain development	Joint research and investment: Senegal, Malawi	Senegal, Malawi • Key food safety evidence users (donors, academics, INGOs, national policymakers, civil society, and industry) are aware of and use evidence to in the support, formulation and/or implementation of pro-poor and risk-based food safety approaches • Biocontrol and GAP delivered at scale in key countries along with understanding of their impact and appropriate use
Fish	Research on food safety in fish value chains (Bangladesh)	Provide food safety expertise (epidemiology, risk assessment, microbiology, economics) (CoA2)	Research and coordination of value chain actors and incorporation of food safety into broader value chain development	Joint research and investment: Uplift budget (Bangladesh)	Bangladesh • Key food safety evidence users (donors, academics, INGOs, national policymakers, civil society, and industry) are aware of and use evidence to in the support, formulation and/or implementation of pro-poor and risk-based food safety approaches • Market-based food safety innovations delivered at scale in key countries along with understanding of their

					impact and appropriate use
Livestock	Research on food safety in livestock value chains (Ethiopia, India, Tanzania, Uganda, Vietnam)	Provide food safety expertise (epidemiology, risk assessment, microbiology, economics) (CoA2)	Research and coordination of value chain actors and incorporation of food safety into broader value chain development	Joint research and investment: Base budget (Ethiopia, India, Tanzania, Uganda and Vietnam) Uplift budget (Burkina Faso, Kenya)	(Ethiopia, India, Tanzania, Uganda and Vietnam) Uplift budget (Burkina Faso, Kenya) • Key food safety evidence users (donors, academics, INGOs, national policymakers, civil society, and industry) are aware of and use evidence to in the support, formulation and/or implementation of pro-poor and risk-based food safety approaches • Market-based food safety innovations delivered at scale in key countries along with understanding of their impact and appropriate use
MAIZE	Joint research on food safety in value chain work	Provide food safety expertise (epidemiology, risk assessment, microbiology, economics) (CoA3)	Research and coordination of value chain actors and incorporation of food safety into broader value chain development	Joint research and investment: Base budget: Kenya, Nigeria, Malawi, Uganda, Zambia,	Kenya, Nigeria, Malawi, Uganda, Zambia • Key food safety evidence users (donors, academics, INGOs, national policymakers, civil society, and industry) are aware of and use evidence to in the support, formulation and/or implementation of pro-

					poor and risk-based food safety approaches • Biocontrol and GAP delivered at scale in key countries along with understanding of their impact and appropriate use
PIM	Joint research on food safety in value chain work	Provide food safety expertise (epidemiology, risk assessment, microbiology, economics) (CoA3)	Value chain tools and approaches	Complementary outputs and outcomes. Potential for joint research TBD	• Key food safety evidence users (donors, academics, INGOs, national policymakers, civil society, and industry) are aware of and use evidence to in the support, formulation and/or implementation of pro-poor and risk-based food safety approaches • Biocontrol and GAP delivered at scale in key countries along with understanding of their impact and appropriate use
WLE	Joint research on food safety in value chain work	Provide food safety expertise (epidemiology, risk assessment, microbiology, economics) (CoA2)	Research and coordination of value chain activities for vegetables linked to work on resuse of contaminated water	Joint research and investment: Uplift budget (Uganda, Vietnam and potentially other countries TBD)	Uganda, Vietnam • Key food safety evidence users (donors, academics, INGOs, national policymakers, civil society, and industry) are aware of and use evidence to in the support, formulation and/or

					implementation of pro-poor and risk-based food safety approaches • Market-based food safety innovations delivered at scale in key countries along with understanding of their impact and appropriate use
FP4: SPEAR					
Partner CRP	**ACTIVITY [COUNTRIES IN WHICH THIS TAKES PLACE]**	**A4NH ROLE**	**COLLABORATING CRP ROLE**	**COLLABORATION MODE**	**OUTCOMES; ADDED VALUE; TARGET COUNTRIES**
CCAFS	Policy process research; assessing and documenting processes for enhancing nutrition-relevant policy and investment	National and global policy engagement with ANH community; analysis of cross-sectoral policy processes and enabling; methods such as Stories of Change; national capacity development enabling for ANH	National and global policy engagement with CSA community analysis of cross-sectoral policy processes and enabling; national capacity development enabling for CSA	Joint research – globally (base) and in Ethiopia, India, Bangladesh, …(uplift)	globally (base) and in Ethiopia, India, Bangladesh, …(uplift) • Regional, international and UN agencies and initiatives and investors use evidence, tools and methods to inform decisions and investment strategies to guide and support NSA programming and nutrition-sensitive policies • National policymakers and shapers, and stakeholders from different sectors, civil society and industry use evidence to design effective nutrition-sensitive policies and strategies to enable effective programming.

					• Stakeholders from different sectors, civil society and industry listed in the other four outcomes, including CGIAR and other CRPs, have improved capacity to generate and use evidence to improve NSA programming, nutrition-sensitive policymaking and implementation.
PIM	Policy process research Nutrition outcome from social protection interventions	ANH case studies for policy process research Nutrition evaluation	Policy platforms – ReSAKSS and IFPRI CSSP Policy process research (with DSG – FP2, CoA3 on Policy process and political economy Social protection interventions	Joint research – globally (base) and in Ethiopia, India, Bangladesh,…(uplift)	– globally (base) and in Ethiopia, India, Bangladesh,…(uplift) • Regional, international and UN agencies and initiatives and investors use evidence, tools and methods to inform decisions and investment strategies to guide and support NSA programming and nutrition-sensitive policies • National policymakers and shapers, and stakeholders from different sectors, civil society and industry use evidence to design effective nutrition-sensitive policies and strategies to enable effective programming.

					• Stakeholders from different sectors, civil society and industry listed in the other four outcomes, including CGIAR and other CRPs, have improved capacity to generate and use evidence to improve NSA programming, nutrition-sensitive policymaking and implementation.
FP5: Improving Human Health					
Partner CRP	**ACTIVITY [COUNTRIES IN WHICH THIS TAKES PLACE]**	**A4NH ROLE**	**COLLABORATING CRP ROLE**	**COLLABORATION MODE**	**OUTCOMES; ADDED VALUE; TARGET COUNTRIES**
Livestock	Livestock systems and vector-borne and zoonotic disease emergence and impact Control of zoonoses linked to livestock systems (with Animal Health); Antimicrobial Resistance	Zoonoses disease risk and joint control programs with public health Public health data Antimicrobial resistance in humans linked to use in livestock	Livestock systems modelling Joint diagnostics and vaccine with Animal health Antimicrobial efficacy in animals	Joint research Livestock provides links to platform for responsible livestock and A4NH to public health platforms	*Zoonoses risks globally and Kenya, Vietnam, China* *AMR – China, India, Thailand, Vietnam, Kenya and Tanzania* • Agricultural and public health policymakers and implementers deliver coordinated and effective solutions to cysticercosis and other zoonotic threats • Public and private sector policymakers implement measures to reduce health risks from antimicrobial resistance in hotspot livestock systems

PIM	Joint modelling of agriculture and health outcomes using detailed spatial data	tbd	HarvestChoice provides spatially disaggregated crop and production system data	Uplift	*Emphasis on Africa* • Agricultural research initiatives, including farming communities, measure health risks and benefits
RICE	Health risks and benefits in irrigated rice	Public health	Rice systems	Benin, Côte d'Ivoire Joint research	Benin, Côte d'Ivoire • Agricultural research initiatives, including farming communities, measure health risks and benefits
WLE	Joint agriculture and health research (FP4)	Coordinate and share information between CRPs and public health researchers	???	Joint investment in agriculture and health research; uplift Locations TBD	• Agricultural research initiatives, including farming communities, measure health risks and benefits
PARTNERING MODALITY – NETWORKING AND MUTUAL LEARNING THROUGH LEARNING PLATFORMS AND COMMUNITIES OF PRACTICE, INCLUDING CAPDEV					
FP1: Food Systems for Healthier Diets					
Partner CRP	**ACTIVITY [COUNTRIES IN WHICH THIS TAKES PLACE]**	**A4NH ROLE**	**COLLABORATING CRP ROLE**	**COLLABORATION MODE**	**OUTCOMES; ADDED VALUE; TARGET COUNTRIES**
AFS-CRPs	CoP to support the integration of agriculture, nutrition, and health and the use of methods and metrics in CRP research linked to an average of two projects integrating nutrition and gender into value chain research as part of food systems research, such as diet diversification through nutrient-dense foods (animal source,	A4NH would support meetings on best practices for methods and metrics for diet nutrition, health and gender in food systems research bringing together AFS-CRPs, A4NH and nutrition and health partners; joint research	Participation in the CoP; joint research	Joint investment in food systems research; expecting approx. $3 million per annum from A4NH	• Partners and other CRPs incorporate nutrition, health and gender in agri-food value chains and food systems programs

	legumes, vegetables, fruits, dryland cereals)				
ICRPS	Participation in CoP / learning platforms to support the integration of agriculture, nutrition, and health and the use of methods and metrics in CRP research (FP1) Joint research on synergies and trade offs between health, economic, and sustainability dimensions of food systems (PIM CCAFS and WLE), (FP1)	A4NH would support meetings on best practices for methods and metrics for diet nutrition, health and gender in food systems research bringing together GI-CRPs, A4NH and nutrition and health partners; joint research	Participation in the CoP; joint research	Joint investment in food systems research; expecting approx. $1 million per annum from A4NH	• Partners and other CRPs incorporate nutrition, health and gender in agri-food value chains and food systems programs
FP2: Biofortification					
AFS-CRPs	Mainstreaming nutrition into CGIAR and partner breeding programs	Rapid screening tools for micronutrient levels; investment and enabling for biofortification (e.g., policy Codex)	Breeding platforms	Joint and complementary funding	Global and in support of national breeding platforms in specific countries • Biofortification mainstreamed into CGIAR and NARS breeding efforts
Cross-Cutting – Gender Equity Empowerment Unit					
AFS-CRPs	Sharing tools and approaches for research evaluation of agriculture-nutrition-gender outcomes	Expertise, tools and approaches for evaluation and gender in ANH research Support to AFS-CRP projects seeking to improve nutrition to improve research quality	Contribute experiences and issues in ANH research Provide projects for joint learning	Basic A4NH support to community of practice. AFS-CRPs fund participation of staff. Some joint project funding and potential expansion (uplift)	*Africa and South Asia primarily* • Partners and other CRPs incorporate nutrition, health and gender in agri-food value chains and food systems programs

Cross-Cutting – Monitoring Evaluation and Learning Unit					
ICRPs	Common RBM platform	RBM and MEL experience in A4NH	RBM and MEL experience in other ICRPS	Sharing costs of RBM system operation; Shared participation costs for co-learning	• Faster learning for improved RBM and MEL
PARTNERING MODALITY – BRIDGING					
FP4: SPEAR					
Partner CRP	**ACTIVITY [COUNTRIES IN WHICH THIS TAKES PLACE]**	**A4NH ROLE**	**COLLABORATING CRP ROLE**	**COLLABORATION MODE**	**OUTCOMES; ADDED VALUE; TARGET COUNTRIES**
All CRPs	Convene annual meeting with global, regional and key national actors in nutrition	Ability to convene nutrition community and articulate linkages between agriculture and nutrition.	Contribute experiences and issues in ANH research and potential insights for new research	Basic A4NH support to convening. Other CRPs fund participation of staff. Some joint project that might arise (TBD uplift)	• Stakeholders from different sectors, civil society and industry listed in the other four FP4 outcomes, including CGIAR and other CRPs, have improved capacity to generate and use evidence to improve NSA programming, nutrition-sensitive policymaking and implementation.
FP4: Improving Human Health					
All CRPs	Convene annual meeting with global, regional and key national actors in public health		Contribute experiences and issues in ANH research and potential insights for new research	Basic A4NH support to convening. Other CRPs fund participation of staff. Some joint project that might arise (TBD uplift)	• Agricultural research initiatives, including farming communities, measure health risks and benefits • Agricultural and public health policymakers and implementers deliver coordinated and effective solutions to cysticercosis and other zoonotic threats

					• Public and private sector policymakers implement measures to reduce health risks from antimicrobial resistance in hotspot livestock systems

Template 2b: Plans for site integration in 20 CGIAR ++ and + countries.

Target country (++ and + countries relevant to your CRP)	Define steps taken so far (March 2016) to establish national level engagement with other CRPs towards site integration	Define plan and schedule through which your CRP will provide relevant elements for development of CGIAR site integration in this country
CGIAR Site Integration ++ Countries with A4NH activities in Phase II		
Bangladesh *(A4NH Focus Country)*	CGIAR centers plus AVRDC and IFDC meet with NARS and Ministry officials twice a year. The coordinator rotates annually. Further details are posted at http://gcard3.cgiar.org/national-consultations/bangladesh/. In Phase I, A4NH held 2 meetings with CGIAR Centers and partners on coordination for ANH research. For Phase II, an in-country A4NH Bangladesh team was formed in late 2015. This team was provided with a brief on Phase II plans as well as a document on on-going and planned projects in Bangladesh for Phase II and slides for country consultation meetings.	The IFPRI country office will coordinate A4NH Site Integration in Phase II with support from the A4NH PMU and flagship leaders. IFPRI-Bangladesh coordinates a number of current and planned projects in A4NH and is closely aligned with government policy and planning through its Policy Research and Strategy Support Program for Food Security and Agricultural Development (PRSSP). A document on ongoing and planned research in A4NH for Phase II in Bangladesh was prepared in late 2015 and will be updated at least annually. All flagships except FP5 have or plan to have projects in Bangladesh. FP2 and FP4 have large multi-project portfolios that are already well integrated into government and partner planning. BRAC is a key strategic partner in these. Bangladesh will be one of the 4 focus countries for FP1. We plan to hold a country consultation meeting for planning FP1 in late 2016, similar to the process followed in Ethiopia (see below). As with other A4NH focus countries, we will allocate a small budget for coordination of A4NH activities and engagement with the managing partner in that country – in this case IFPRI.
Ethiopia *(A4NH Focus Country)*	ILRI leads the CGIAR Site integration and held a national consultation in December 2015. Further details are posted at: http://gcard3.cgiar.org/ethiopia/. For Phase II, an in-country A4NH Ethiopia team was formed in late 2015. This team were provided with a brief on Phase II plans as well as a document on ongoing and planned projects in Ethiopia for Phase II and slides for country consultation meetings.	ILRI, one of the A4NH managing partners, will coordinate A4NH site integration in Phase II with support from the A4NH PMU and flagship leaders. ILRI also leads the CGIAR site integration efforts and this will ensure close alignment of A4NH. A document on ongoing and planned research in A4NH for Phase II in Ethiopia was prepared in late 2015 and will be updated at least annually. All flagships except FP5 have and plan projects in Ethiopia in Phase II. Ethiopia will be one of the 4 focus countries for FP1. The Ethiopia A4NH in-country team held a country consultation meeting for planning FP1

		and its activities in Ethiopia in February 2016 (see agenda, participant list, background document and a summary of key issues). In June 2015, researchers in FP4, held a national meeting *Together for Nutrition*, which will guide plans and partnerships for Phase II. As with other A4NH focus countries, we will allocate a small budget for coordination of A4NH activities and engagement with the managing partner in that country – in this case ILRI.
Nicaragua	CIAT convened a national consultation in November 2015. Further details are posted at http://gcard3.cgiar.org/nicaragua/ A4NH was represented by a national partner in the LAC Biofortification network. We shared the A4NH Phase II brief and information on the Biofortification network for the consultation.	CIAT will be the A4NH managing partner ensuring connections with and alignment to the CGIAR site integration plan, which is also leads. EMBRAPA with CIAT support leads the Biofortification country network for LAC and will continue support to Nicaragua through linkages with other countries in the region as well as HarvestPlus resources more broadly.
Nigeria *(A4NH Focus Country)*	IITA leads the CGIAR Site integration and held a national consultation in November 2015. Further details are posted at http://gcard3.cgiar.org/nigeria/ For Phase II, an in-country A4NH Nigeria team was formed in late 2015. This team were provided with a brief on Phase II plans as well as a document on on-going and planned projects in Nigeria for Phase II and slides for country consultation meetings.	IITA, one of the A4NH managing partners, will coordinate A4NH site integration in Phase II with support from the A4NH PMU and flagship leaders. IITA also leads the CGIAR site integration efforts and this will ensure close alignment of A4NH. IFPRI's CSSP in Abuja will ensure that A4NH policy research is appropriately aligned with research in PIM. There will also be connections for national and regional networking with the ReSAKSS-ECOWAS hub. A document on ongoing and planned research in A4NH for Phase II in Nigeria was prepared in late 2015 and will be updated at least annually. FP2 has a large portfolio that is already well integrated into government and partner planning. Nigeria will be one of the 4 focus countries for FP1. We plan to hold a country consultation meeting for planning that flagship in late 2016 or early 2017, similar to the process followed in Ethiopia (see above). As with other A4NH focus countries, we will allocate a small budget for coordination of A4NH activities and engagement with the managing partner in that country – in this case IITA.
Tanzania	IITA leads the CGIAR Site integration and held a national consultation in December 2015. Further details are posted at http://gcard3.cgiar.org/tanzania/	IITA, one of the A4NH managing partners, will coordinate A4NH site integration in Phase II with support from the A4NH PMU and flagship leaders. IITA also leads the CGIAR site integration efforts and this will ensure close alignment of A4NH.

	For Phase II, an in-country A4NH Tanzania team was formed in late 2015. This team were provided with a brief on Phase II plans as well as a document on on-going and planned projects in Tanzania for Phase II and slides for country consultation meetings.	A document on ongoing and planned research in A4NH for Phase II in Tanzania was prepared in late 2015 and will be updated at least annually. FP3 led by ILRI, with aflatoxin research led by IITA, will continue with a number of research projects in Tanzania. FP4 and FP5 will also have continuing and new projects in Phase II.
Viet Nam *(A4NH Focus Country)*	CIAT leads the CGIAR Site integration and held a national consultation in November 2015. Further details are posted at http://gcard3.cgiar.org/vietnam/ For Phase II, an in-country A4NH Viet Nam team was formed in late 2015. This team were provided with a brief on Phase II plans as well as a document on on-going and planned projects in Viet Nam for Phase II and slides for country consultation meetings.	CIAT will coordinate A4NH site integration in Phase II with support from the A4NH PMU and flagshipo leaders. CIAT also leads the CGIAR site integration efforts and this will ensure close alignment of A4NH. A document on ongoing and planned research in A4NH for Phase II in Viet Nam was prepared in late 2015 and will be updated at least annually. FP4 has ongoing and planned projects in Viet Nam. FP3 and FP5 have current and planned projects in Viet Nam that will be coordinated by the ILRI country office. Viet Nam will be one of the 4 focus countries for FP1. We plan to hold a country consultation meeting for planning that flagship in June 2016, similar to the process followed in Ethiopia (see above). As with other A4NH focus countries, we will allocate a small budget for coordination of A4NH activities and engagement with the managing partner in that country – in this case CIAT.
CGIAR Site Integration + Countries with A4NH activities in Phase II		
Burkina Faso	CIFOR leads the CGIAR Site integration. Further details are posted at http://gcard3.cgiar.org/burkina-faso/ The site integration process arose from a collaborative process of a group of Centers working in a common site. A4NH has not been involved in the site integration process.	FP4 has had a large trial with HKI and partners on small-scale / homestead food production and nutrition and health outcomes for mothers and infants. We plan to provide information to the site integration team to see how local partners might contribute to CGIAR site integration in Burkina Faso.
Cameroon	ICRAF leads the CGIAR Site integration and a meeting was recently held. No information yet on the site integration website http://gcard3.cgiar.org/cameroon/	A4NH activities are very limited, working with national partners in FP5 through IITA. IITA will explore potential alignment with the Cameroon site integration team.
DRC	IITA leads the CGIAR Site integration and held a national consultation in February 2016. Further details have been circulated and will be posted at http://gcard3.cgiar.org/drc/ The focal point was provided with a brief on Phase II plans and slides for country consultation meetings.	IITA will manage A4NH site integration activities in DRC. DRC is a target country for FP2 and the HarvestPlus country manager is hosted by IIITA and the A4NH focal point for DRC.

Ghana	IWMI leads the CGIAR Site integration and held a national consultation in February 2016. Further details are posted at http://gcard3.cgiar.org/ghana/ One of the A4NH researchers from IITA will be the focal point with the Ghana site integration team. The focal point was provided with a brief on Phase II plans and slides for country consultation meetings.	IITA will manage the A4NH site integration activities in Ghana as it is the major managing partners involved in research in Ghana through FP5 and FP3. There might be one or two projects in FP1 that IITA is also involved with. Both IITA and IFPRI have country offices in Ghana. The IFPRI CSSP will play an important role in any policy pathway research.
India *(A4NH Focus Country)*	ICRISAT leads the CGIAR Site integration and a one-day meeting will be held in March 2016. Further details of the site integration process are available and updates will be posted at http://gcard3.cgiar.org/india/ A4NH will manage its participation in the site integration process through the IFPRI regional office in New Delhi which hosts a large portfolio of A4NH projects. A brief of Phase II plans has been provided.	India is a focus country for A4NH, and there is a large portfolio of A4NH projects. Both FP4 and FP2 have a large portfolio of research with partners in India. In October 2014, researchers with FP4 held a national meeting *Together for Nutrition*, which will guide plans and partnerships for Phase II. We also plan research in all other flagships in India in Phase II. We will prepare a document on ongoing and planned research in India. As with other A4NH focus countries, we will allocate a small budget for coordination of A4NH activities and engagement with the managing partner in that country – in this case IFPRI.
Kenya	ICRAF leads the CGIAR Site integration and a meeting was recently held. No information yet on the site integration website http://gcard3.cgiar.org/kenya/ ILRI is coordinating A4NH input into the Kenya site integration process. The team were provided with a brief on Phase II plans and we will update the list of ongoing and planned projects.	ILRI will manage the A4NH site integration activities in Kenya as it is the major managing partners involved in research in Kenya through its leadership of FP3 and co-leadership of FP5. A4NH researchers in Kenya are working through the ILRI Kenya manager for site integration.
Malawi	CIP leads the CGIAR Site integration and a two-day meeting was held in February 2016. Further details are posted at: http://gcard3.cgiar.org/malawi/ IFPRI participated in the site integration meeting and will coordinate linkages with the site integration process.	The IFPRI CSSP in Malawi will manage the A4NH site integration activities. There are 2 main sets of A4NH activities planned, one under FP4 and the other under FP3 (aflatoxin control led by IITA, which also have a Malawi Office and contribute to the site integration development).
Mali	ICRISAT leads the CGIAR Site integration and a two-day meeting was held in February 2016. Further details are posted at: http://gcard3.cgiar.org/mali/ A4NH did not participate in the consultation meetings but will link with the site integration team through IITA.	A4NH activities in Mali are relatively limited. IITA leads work in aflatoxin control in FP3 and IFPRI teams from outside Mali work with in-country partners on research in evaluation of ANH interventions. We will provide the IITA Mali focal point with the brief on A4NH in Phase II and descriptions of on-going and planned projects and ask IITA to manage the alignment of A4NH with site integration planning.
Mozambique	CIP leads the CGIAR Site integration and a meeting will be held in late March. Information will be provided	A4NH activities in Mozambique are limited in Phase II. IITA will leads work in aflatoxin control in FP3. We will provide the IITA Mozambique

	at: http://gcard3.cgiar.org/cameroon/. A4NH is not participating in the planned meeting but will provide information through IITA.	focal point with the brief on A4NH in Phase II and descriptions of on-going and planned projects and ask IITA to manage the alignment of A4NH with site integration planning.
Nepal	IWMI and CIMMYT co-lead the site integration and a meeting was held in January 2016. Further details are posted at: http://gcard3.cgiar.org/nepal/. A4NH was not actively involved in the meeting.	A4NH research is limited to one project in FP4. We will provide information and coordinate with the site integration team through the IFPRI focal point for Nepal site integration.
Niger	ICRISAT leads site integration. Further details at http://gcard3.cgiar.org/niger/	A4NH has no planned activities in Niger for Phase II.
Rwanda	Rotating site integration leadership with CIP followed by CIAT. A number of meetings have been held and a national consultation is scheduled for late March. Further details will be posted at: http://gcard3.cgiar.org/rwanda/ CIAT is providing information into the site integration process for A4NH.	CIAT will manage the A4NH site integration activities in Rwanda. There is a very large FP2 program in Rwanda managed by CIAT. Other research in Rwanda is aflatoxin control, led by IITA. A4NH will provide a brief on Phase II plans as well as an updated list of on-going and planned research to CIAT for inclusion in the site integration.
Uganda	Bioversity and CIP co-lead the site integration on a rotational basis. Meetings with staff of Centers with offices in Uganda have been held and a national consultation meeting will be held on March 9. Further details are posted at: http://gcard3.cgiar.org/uganda/ A4NH will provide its brief on plans for Phase II as well as an updated list of projects to the site integration team and to all its managing partners working in Uganda (Bioversity, CIAT, ILRI, IITA and IFPRI (lead Center).	A4NH has a large portfolio of research on-going and planned for Phase II in Uganda. This includes substantial activities in FP2, FP3, and FP4. At the moment we plan that the lead Centers for these FPs (FP2 – IFPRI/CIAT; FP3 – ILRI/IITA and FP4 – IFPRI) will contribute to site integration at flagship level.
Zambia	CIMMYT leads the site integration and a number of meetings including a national consultation in Feb 2016. Further details are posted at: http://gcard3.cgiar.org/zambia/ For Phase II, an in-country A4NH Zambia team was formed in late 2015. This team were provided with a brief on Phase II plans as well as a document on on-going and planned projects in Zambia for Phase II and slides for country consultation meetings.	CIAT / HarvestPlus will coordinate A4NH site integration in Phase II with support from the A4NH PMU and flagship leaders. A document on ongoing and planned research in A4NH for Phase II in Zambia was prepared in late 2015 and will be updated at least annually. FP2 has a large program in Zambia. FP3 has activities both for aflatoxins and food safety in animal source foods. FP5 also have current and planned projects in Zambia.

3.7 Staffing of Management Team and Flagship Projects

A summary of the skills, experience and capacity of each flagship leader and up to 10 senior scientists are organized starting with the A4NH Program Management Unit, followed by each flagship. The flagship leader is listed first, followed in alphabetical order by last name.

Name	Affiliation
Program Management Unit	
John MCDERMOTT	IFPRI-A4NH
Nancy JOHNSON	IFPRI-A4NH
Hazel Jean MALAPIT	IFPRI
Agnes QUISUMBING	IFPRI
Flagship 1: Food Systems for Healthier Diets	
ToR for Flagship Leader	Wageningen University
Christophe BÉNÉ	CIAT
Inge D. BROUWER	Wageningen University
Imke J.M. DE BOER	Wageningen University
Alan DE BRAUW	IFPRI
Guy HENRY	CIAT
Gina KENNEDY	Bioversity
Roseline REMANS	Bioversity /Earth Institute, Columbia University
Ruerd RUBEN	Wageningen University
Martine RUTTEN	Wageningen University
Marrit VAN DEN BERG	Wageningen University
Flagship 2 – Biofortification	
Howarth BOUIS	HarvestPlus-IFPRI
Ekin BIROL	HarvestPlus-IFPRI
Erick BOY-GALLEGO	HarvestPlus-IFPRI
Wolfgang PFEIFFER	HarvestPlus-CIAT
Ina SCHONBERG	HarvestPlus-IFPRI
Thom SPRENGER	HarvestPlus-IFPRI
Parminder VIRK	HarvestPlus-CIAT
Manfred ZELLER	HarvestPlus-IFPRI
Flagship 3 – Food Safety	
Delia GRACE	ILRI
Ranajit BANDYOPADHYAY	IITA
Jagger J W HARVEY	ILRI
Barbara HÄSLER	LCIRAH
Vivian HOFFMANN	IFPRI
Amos Ochieng OMORE	ILRI
Alexander SAAK	IFPRI
Hari Kishan SUDINI	ICRISAT
Fred UNGER	ILRI
Barbara WIELAND	ILRI

Name	Affiliation
Flagship 4 – Supporting Policies, Programs and Enabling Action through Research (SPEAR)	
Stuart GILLESPIE	IFPRI
Namukolo COVIC	IFPRI
James GARRETT	IFPRI
Lawrence HADDAD	IFPRI
Jef LEROY	IFPRI
Nicholas NISBETT	Institute of Development Studies (IDS)
Deanna OLNEY	IFPRI
Marie RUEL	IFPRI
John THOMPSON	Institute of Development Studies (IDS)
Roos VERSTRAETEN	Institute of Tropical Medicine Antwerp
Flagship 5 – Improving Human Health	
Eric FÈVRE	University of Liverpool/ILRI
Bernard BETT	ILRI
Rousseau DJOUAKA	IITA
Delia GRACE	ILRI
Jo LINES	LSHTM
Stephen MSHANA	Catholic University of Health and Allied Sciences
Hung NGUYEN-VIET	ILRI
Timothy ROBINSON	ILRI
Richard STABLER	LSHTM
Philip TOYE	ILRI
Jeff WAAGE	LCIRAH/LSHTM

Program Management Unit

John MCDERMOTT

Current position and affiliation: Director, CRP on Agriculture for Nutrition and Health, IFPRI, USA

Profile: Before joining IFPRI in 2011 to lead A4NH, John was Deputy Director General and Director of Research at ILRI in Nairobi from 2003-2011. John has lived and worked in Africa for 25 years. As a researcher, John's research career has focused on public health, animal health and livestock research in developing countries, primarily Africa. He has led projects on zoonotic and emerging diseases in Asia and Africa. John has a strong background in quantitative methods (modeling, study design, statistics). During his research career, John authored or co-authored 200 peer-reviewed publications, book chapters and conference papers and has advised over 30 post-graduate students, including 20 PhD graduates. He was a visiting Lecturer at the University of Nairobi and a Professor at the University of Guelph. He has also served as an advisor to FAO, WHO, OIE, and other international agencies, and currently serves as a member of the International Union of Food Science and Technology food security committee.

Employment

2011-present	Director, CRP on Agriculture for Nutrition and Health, IFPRI, USA
2003-2011	Deputy Director General – Research, ILRI, Kenya
1997-2003	Epidemiologist, ILRI, Kenya
1999-2009	Professor of Epidemiology, University of Guelph, Canada (Assistant 1990-92; Associate 1992-1997; Full 1997-2009)

Education

1990	PhD, Quantitative Epidemiology - University of Guelph, Canada
1981	Doctor of Veterinary Medicine (DVM) - University of Guelph, Canada

Selected recent peer-reviewed publications

- **McDermott, J**., N. Johnson, S. Kadiyala, G. Kennedy, and A.J. Wyatt, 2015. Agricultural research for nutrition outcomes – rethinking the agenda, *Food Security*, 7:593–607
- Jha, S. K., **McDermott, J.**, Bacon, G., Lannon, C., Joshi, P. K., & Dubé, L. 2014. Convergent innovation for affordable nutrition, health, and health care: the global pulse roadmap. Annals of the New York Academy of Sciences, 1331(1), 142-156.
- **McDermott, J.**, Aït-Aïssa, M., Morel, J., & Rapando, N. 2013. Agriculture and household nutrition security—development practice and research needs. Food Security, 5(5), 667-678.
- **McDermott, J.**, Grace, D., & Zinsstag, J. (2013). Economics of brucellosis impact and control in low-income countries. Revue scientifique et technique (International Office of Epizootics), 32(1), 249-261.
- Jones, B.A., Grace, D., Kock, R., Alonso, S., Rushton, J., Said, M.Y., McKeever, D., Mutua, F., Young, J., **McDermott, J**. and Pfeiffer, D.U., 2013. Zoonosis emergence linked to agricultural intensification and environmental change. Proceedings of the National Academy of Sciences, 110(21), pp.8399-8404.

Other evidence of leadership, large-program management and delivery

Alliance Deputy Executive Chair (DDG group including research and finance) 2009-2010; **Managed grant** to establish the public-private partnership - Global Alliance for Livestock Vaccines and Medicine (GALVmed) and served as a non-executive Director (2006-2010). **Awards**: Peter Ellis Award – International Society for Veterinary Epidemiology and Economics 2015 (for international contributions); Doctor of Laws (*honoris causa*) – University of Guelph 2012.

Role in A4NH: Director

Nancy JOHNSON

Current position and affiliation: Senior Research Fellow, IFPRI, USA

Profile: Nancy is an agricultural economist with 20 years of experience in conducting, managing, and evaluating the impacts of agricultural and natural resource management research. Nancy has expertise with different methods and approaches for assessing outcomes and impacts related to productivity, poverty, nutrition and health, gender and women's empowerment, and sustainability and experience managing external evaluations.

Employment

2013-present	Senior Research Fellow, IFPRI, USA
2010-2013	Adjunct Prof/Lecturer, University of Minnesota, USA
2008-2012	Program Leader, ILRI, Kenya
1999-2007	Scientist and program manager, CIAT, Colombia

Education

1997	PhD, Agricultural and Applied Economics, University of Minnesota, USA
1992	MS, Agricultural and Applied Economics, University of Minnesota, USA

Selected recent peer-reviewed publications

- **Johnson, N.** Kovarik, C. Meinzen-Dick, R. Njuki, J. and Quisumbing, A. 2016. Gender, assets, and agricultural development: Lessons from eight projects. World Development,
- Mayne, J. and **Johnson, N**. 2015. Using Theories of change in the Agriculture for Nutrition and Health CGIAR research program. Evaluation 21(4): 407-428.
- McDermott, J., **Johnson, N**., Kadiyala, S., Kennedy, G., and Wyatt, A.J. 2015. Agricultural research for nutrition outcomes – rethinking the agenda. Food Security 7: 593–607.
- Kristjanson, P., A., Waters-Bayer, A., **Johnson, N**., Tipilda, A., Njuki, J., Baltenweck, I., Grace, D. and MacMillan, S. 2014. Livestock and women's livelihoods. In: Gender in Agriculture: Closing the Knowledge Gap. (Agnes R. Quisumbing, Ruth Meinzen-Dick, Terri L. Raney, André Croppenstedt, Julia A. Behrman, and Amber Peterman, Eds.). Springer.
- Meenakshi, JV, **N Johnson**, V. Manyong, H. De Groote, J. Javelosa, D. Yanggen, F. Naher, C. Gonzalez, J.Garcia and E. Meng, 2010, "How cost-effective is biofortification in combating micronutrient malnutrition? An ex-ante assessment," World Development 38(1): 64-75

Other evidence of leadership, large-program management and delivery

Experience with two system-wide programs (CAPRI, PRGA) and two challenge programs (HarvestPlus and CPWF); **Member of Executive Committee** of CAPRi; **Theme leader** in CPWF.

Role in A4NH: Leader of Monitoring, Evaluation and Learning (MEL) unit, which was part of PMU in Phase I and will be a cross cutting unit in Phase II.

Hazel Jean Lim MALAPIT

Current position and affiliation: Gender Research Coordinator, IFPRI, USA

Profile: Hazel coordinates research, training, and technical assistance on the implementation of the Women's Empowerment in Agriculture Index (WEAI), manages and coordinates the integration of gender into the research of the CRP on Agriculture for Nutrition and Health (A4NH), and conducts research on gender, women's empowerment, agriculture, health and nutrition issues. She has eight peer-reviewed publications.

Employment

2012-present	Gender Research Coordinator, IFPRI, USA
2010-2012	Economist (Extended Term Consultant), PREM Gender and Development, The World Bank, USA.
2009- 2010	Herman Postdoctoral Fellow in Gender and Economics, Department of Economics and Department of Women's Studies, University of Michigan-Ann Arbor, USA.
2004- 2005	Senior Policy Analyst, Action for Economic Reforms, Philippines.
2004	Field Research Collaborator, IFPRI, Bukidnon/Cagayan de Oro, Philippines.

Education

2009	PhD Economics, American University, USA
2001	MA Economics, University of the Philippines, Diliman, Philippines.

Selected recent peer-reviewed publications

- **Malapit, H. J.,** Kadiyala, S., Quisumbing, A. R., Cunningham, K., and Tyagi, P. 2015. "Women's empowerment mitigates the negative effects of low production diversity on maternal and child nutrition in Nepal," Journal of Development Studies, 51(8): 1097-1123.
- **Malapit, H. J**. and Quisumbing, A.R. 2015. "What dimensions of women's empowerment in agriculture matter for nutrition in Ghana?" Food Policy, 52: 54-63.
- Rao, S. and **Malapit, H. J**. 2015. "Gender and access to financial services in the United States." Journal of Family and Economic Issues, 36(4): 606-620.
- Sraboni, E., **Malapit, H. J**., Quisumbing, A. R., and Ahmed, A. 2014. "Women's empowerment in agriculture: What role for food security in Bangladesh?" World Development, 61: 11-52.
- **Malapit, H. J**. 2012. "Are women more likely to be credit constrained? Evidence from low-income urban households in the Philippines," Feminist Economics, 18(3): 81-108.
- **Malapit, H. J**. 2012. "Why do spouses hide income?" Journal of Socio-Economics, 41(5): 584-593.

Other evidence of leadership, large-program management and delivery
Coordinates the research and technical assistance for the WEAI, 2012-present; **Herman Postdoctoral Fellowship** in Gender and Economics, University of Michigan, Ann Arbor, 2009-2010; Poverty and Economic Policy (PEP) Research Grant (Project No: pr-pmma-229), 2004-2005

Role in A4NH: Gender Research Coordinator for A4NH in Phase I and Phase II

Agnes QUISUMBING

Current position and affiliation: Senior Research Fellow, IFPRI, USA

Profile: Agnes is a Senior Research Fellow and Theme leader of the cross-cutting gender research theme at IFPR. An applied microeconomist with experience in intrahousehold and gender analysis, analysis of panel data, impact evaluation of integrated agriculture-nutrition programs, her research areas are in gender and intrahousehold issues, poverty, women's empowerment; and intergenerational transfers. She has 68 peer-reviewed publications.

Employment

1999-present	Senior Research Fellow, IFPRI, USA
1995-1999	Research Fellow, IFPRI, USA
1993-1995	Economist, World Bank, USA
1991-1993	Consultant, World Bank, USA

Education

1985	PhD, Economics, University of the Philippines, Philippines
1982	MA, Economics, University of the Philippines, Philippines

Selected recent peer-reviewed publications

- van den Bold, M., A. Dillon, D. Olney , M. Ouedraogo, A. Pedehombga, **A. Quisumbing**. 2015. Can integrated agriculture-nutrition programs change gender norms on land and asset ownership? Evidence from Burkina Faso, *Journal of Development Studies* 51(9): 1155 – 1174.
- **Quisumbing, A. R.**, D. Rubin, C. Manfre, E. Waithanji, M. van den Bold, D. Olney, N. Johnson, and R. Meinzen-Dick. 2015. Gender, assets, and market-oriented agriculture: learning from high-value crop and livestock projects in Africa and Asia. *Agriculture and Human Values* 32(4): 705-725.
- Malapit, H.M. and **A. R. Quisumbing**. 2015. What dimensions of women's empowerment in agriculture matter for nutrition in Ghana? *Food Policy* 52: 54–63.
- Malapit, H., S. Kadiyala, **A. R. Quisumbing**, K. Cunningham, P. Tyagi. 2015. "Women's empowerment mitigates the negative effects of low production diversity on maternal and child nutrition in Nepal" *Journal of Development Studies* 51 (8): 1097-1123.
- Sraboni E., Malapit, H. J., **Quisumbing, A**., Ahmed, A. 2014. "Women's Empowerment in Agriculture: What Role for Food Security in Bangladesh?" *World Development*, Vol 61: 11-52.
- Hoddinott, J., J. R, Behrman, J. A. Maluccio, P. Melgar, **A. R. Quisumbing**, M. Ramirez-Zea, A. D. Stein, K. M. Yount, and R. Martorell, 2013, Adult consequences of growth failure in early childhood, *American Journal of Clinical Nutrition* 98:1170–8.

Other evidence of leadership, large-program management and delivery

Co-PI, Gender, Agriculture, and Assets Project Phase 1, 2010-2014 ($3 million research program with a portfolio of 8 agricultural development projects in 6 countries); **Co-team leader**, IFPRI Pathways from Poverty Research Program, 2003-2009 ($2 million research program); **Team Leader**, IFPRI Gender and Intrahousehold Research Program, 1995-2003 ($4 million research program in 4 high-concentration countries and 8 supplementary study countries)

Role in A4NH: In Phase I: Senior Gender Advisor, led efforts to write the initial A4NH Gender Strategy; provided strategic guidance and technical input into integrating gender into A4NH research programs. In Phase II: Will continue this role as part of the Gender, Equity, and Empowerment (GEE) unit

Flagship 1: Food Systems for Healthier Diets

Draft Terms of Reference (ToR)
for leader of the A4NH flagship on Food Systems for Healthier Diets

Wageningen University and Research Center (Wageningen UR) as a managing partner in the CRP on Agriculture for Nutrition and Health (A4NH) is recruiting a leader for the flagship program, Food Systems for Healthier Diets. Wageningen UR is the collaboration between Wageningen University and the DLO foundation. Its mission is to explore the potential of nature to improve the quality of life, working everywhere around the world in the domain of healthy food and living environment for governments and the business community. A4NH, led by the International Food Policy Research Institute, provides evidence, practical solutions and support to countries for improving nutrition and health outcomes through agriculture, primarily in Africa and South Asia.

Food Systems for Healthier Diets aims to improve the diets of poor and vulnerable populations through enabling interventions and innovations by private, public and civil society actors in national and subnational food systems. It looks at food system transformation from a diet and nutrition outcome perspective, seeking to identify practical options and policy strategies for increasing healthy and reducing unhealthy diet components. It builds on research on dietary assessment and methods for improving nutrition through value chains and places these in a broader agricultural, environmental, social, economic and political decisionmaking framework. We have a new partnership arrangement to implement this research and link to food system actors through a variety of platforms. In the long term, progress will be evaluated through improvements in diets, particularly for women and vulnerable populations.

Essential Qualifications:

- Acknowledged research leader in food systems and food policy as they influence diet quality
- Experience in international development
- PhD in agricultural economics, economics, or quantitative social science and knowledge of nutrition and health or PhD in public health, epidemiology, nutrition
- 10+ years of post-PhD experience relevant to the job with experience leading and managing diverse, geographically distributed teams
- Demonstrated ability to critically assess own and others' research
- Excellent publication record in peer-review journals

Essential Duties:

- Lead a globally-recognized research program on food systems for healthier diets.
- Lead strategy, planning, management and monitoring and evaluation for the program
- Contribute to the planning and management of A4NH as a member of the management committee. Work in a team of research leaders in A4NH.
- Develop a network of research, development implementer (public, private and civil society) and policy partners for innovative research on food systems and how this research supports development outcomes in focus countries in Africa and Asia.
- Identify and cultivate relationships with key donors and partners and lead development of new proposals and partnerships
- Work closely with donor and senior government stakeholders on programs and projects
- Publish research in peer-review publications and communicate research in various forms
- Communicate research to broader agriculture, nutrition and health communities in various forms
- Develop and oversee implementation of a capacity development strategy, based on the A4NH capacity development strategy that supports the achievement of the flagship objectives related to both development outcomes and adding value to research across the CGIAR and partners.

Christophe BÉNÉ

Current position and affiliation: Senior Policy Expert – Decision and Policy Analysis Program (DAPA) – CIAT, Colombia

Profile: Dr. Béné has 15 years of experience in conducting/directing inter-disciplinary research and advisory/assessment work focusing on poverty alleviation, vulnerability and food security. His relevant expertise includes: vulnerability and resilience analysis; decentralization and governance reforms; policy processes and institutional changes, food and nutritional security with field experience in sub-Sahara Africa, South and Southeast Asia, Caribbean, and Pacific.

Employment

2015-Present	Senior Policy Expert – Decision and Policy Analysis Program (DAPA) – CIAT, Colombia
2010-2015	Senior Research Fellow – Vulnerability and Poverty Reduction team – Institute of Development Studies, University of Sussex, UK
2006-2010	Senior Policy Advisor - Policy, Economics and Social Sciences, WorldFish Center
2003-2006	Portfolio Director Water and Fisheries resources - WorldFish Center, Regional Offices for Africa and West Asia, Egypt
1999-2003	Research Fellow - Centre for the Economics and Management of Aquatic Resources, Department of Economics, University of Portsmouth - UK

Education

1997	PhD, Environment and Life Sciences University of Paris VI, France
1992	MSc in Marine Environmental Sciences - University of Aix-Marseille II – France

Selected recent peer-reviewed publications

- **Béné** C., Headey D., Haddad L. and von Grebmer K. 2016 Is resilience a useful concept in the context of food security and nutrition programmes? *Food Security* 8(1), 123-138
- **Béné** C. Arthur R., Norbury H., et al.. 2016 Contribution of fisheries and aquaculture to food security and poverty reduction: assessing the current evidence. *World Development* 79: 177–196.
- **Béné** C., Barange M., Subasinghe R., Pinstrup-Andersen P., Merino G., Hemre G-I., Williams M. 2015. Feeding 9 billion by 2050 – Putting fish back on the menu. *Food Security* 7(2): 261-274.
- **Béné** C., Cannon, T,. Gupte J., Metha L., and Tanner T. (2014) Exploring the Potential and Limits of the Resilience Agenda in Rapidly Urbanising Contexts, Evidence report No.63, Policy Anticipation, Response and Evaluation, Institute of Development Studies, Brighton, 61 p.
- HLPE (2014) Sustainable fisheries and aquaculture for food security and nutrition. A report by the High Level Panel of Experts on Food Security and Nutrition, commissioned by the Committee on World Food Security, Rome, 119 p.

Other evidence of leadership, large-program management and delivery

Team leader of the ITAD evaluation team commissioned by DFID to assess US$50 million Adaptive Social Protection Program implemented by the World Bank in West Africa (£500,000) (Aug.2015-Dec 2017); **Programme leader** of Adaptive Social Protection in the Context of Agriculture and Food Security project funded by UK DFID (£463,000). (Dec 2010 – Nov. 2012); and **Leader of the team** commissioned by the Word Bank to design the fishery module of the Living Standards Measurement Study-Integrated Surveys on Agriculture in Sub-Sahara Africa, with pilot surveys in Malawi and Uganda (US$100,000).

Role in A4NH: In Phase II, PI for activities in FP1, CoA1, and collaborator for CoA3 activities related to policy and economic analysis; linkages between food system transformations and dietary transitions.

Inge D BROUWER

Current position and affiliation: Associate Professor International Nutrition, Division of Human Nutrition, Wageningen University and Research Centre, The Netherlands

Profile: Dr. Brouwer has thirty years of work experience in the field of international nutrition. Her research interests include food-based approaches, nutrition-sensitive agriculture, nutrition behavior, micronutrients, household food security and nutrition, dietary assessment in international settings (including dietary quality index development and validation), monitoring and evaluation. She coordinates large EU funded programs like INSTAPA, nutrition work packages, and supervises several nutrition related PhD and post-doc projects in Africa and Asia.

Employment

2014 – present	Associate Professor, Division of Human Nutrition, Wageningen UR
2001 – 2014	Assistant Professor, Division of Human Nutrition, Wageningen UR
1999 – 2001	Project Officer Nutrition, UNICEF, Ghana
1995 – 1999	Nutrition Consultant, Wageningen UR, attached to UNICEF, Ghana

Education

1994	PhD, Human Nutrition, Wageningen UR, The Netherlands
1986	MSc, Human Nutrition, Wageningen UR, The Netherlands

Selected recent peer-reviewed publications

- Talsma, E. F., **Brouwer, I. D.**, Verhoef, H., Mbera, G. N., Mwangi, A. M., Demir, A. Y., ... & Melse-Boonstra, A. (2016). Biofortified yellow cassava and vitamin A status of Kenyan children: a randomized controlled trial. The American journal of clinical nutrition, 103(1), 258-267.
- **Brouwer, I.D**. 2014. Agriculture and nutrition: linkages and complementarities. In: Diging deeper: inside Africa's agricultural, food and nutrition dynamics. (Akinyinka Akinyoade, Wijnand Klaver, Sebastiaan Soeters, and Dick Foeken, Eds.). Brill. 2014.
- Cercamondi, C. I., Icard-Vernière, C., Egli, I. M., Vernay, M., Hama, F., **Brouwer, I. D.**, ... & Mouquet-Rivier, C. (2014). A higher proportion of iron-rich leafy vegetables in a typical Burkinabe maize meal does not increase the amount of iron absorbed in young women. The Journal of nutrition, 144(9), 1394-1400.
- Koreissi, Y., Fanou-Fogny, N., Hulshof, P.J.M., **Brouwer, I.D**. 2013. Fonio (*Digitaria exilis)* landraces in Mali: Nutrient and phytate content, genetic diversity and effect of processing. Journal of Food Composition and Analysis 29: 134-143
- Talsma, E.F., Melse-Boonstra, A., Kok, B. de, Mbera, G., Mwangi, A.M., **Brouwer, I.D.** 2013. Biofortified cassava with pro-vitamin A is sensory and culturally acceptable for consumption by primary school children in Kenya. PLoS ONE 8(9)

Other evidence of leadership, large-program management and delivery

Leader of International Nutrition research, Division of Human Nutrition and project leader of nine PhD research projects in the area of agriculture-nutrition; **Overall Coordinator** of large EU funded FP7 project, INSTAPA, focusing on food based approaches to alleviate micronutrient deficiencies in women and children in Africa; **Work package leader** of EU funded projects in Africa (FONIO) and Asia (SMILING).

Role in A4NH: In Phase II: PI for several activities under FP1; co-leader of CoA1; Center Focal Point for diet quality assessment. The majority of time will be related to supervision of nutrition related PhD and post-doc projects in FP1, plus management and coordination functions for FP1.

Imke J.M. DE BOER

Current position and affiliation: Professor of Animal Production Systems, Wageningen University and Research Centre, The Netherlands.

Profile: Imke and her team conduct research directed at providing an integrative analysis to scientifically underpin sustainable innovation in animal production to explore the multi-dimensional, and sometimes conflicting, consequences of innovations (trade-offs and synergies) in livestock systems across the world, with special focus on their impact on the environment, animal welfare and livelihood of people.

Employment

2011-present Full professor, Head of Animal Production Systems, Wageningen UR, The Netherlands
2010-2011 Associate professor at Animal Production Systems, Wageningen UR, The Netherlands
1994-2010 Assistant professor at Animal Production Systems, Wageningen UR, The Netherlands

Education

1994 PhD, Animal breeding and genetics, Wageningen UR, The Netherlands
1989 MSc, Animal Sciences, Wageningen UR (cum laude), The Netherlands

Selected recent peer-reviewed publications

- Van Zanten, H.H.E., P. Bikker, B.G. Meerburg, M. Herrero and **I.J.M. de Boer**. 2015. Opinion paper: The role of livestock production in a sustainable diet: a land-use perspective. Animal
- Van Zanten, H.H.E., H. Mollenhorst, C.W. Klootwijk, C.E. van Middelaar and **I.J.M. de Boer**. 2015. Global food security: land use efficiency of livestock systems. International journal of life cycle assessment
- Van Kernebeek, H.R.J., S.J. Oosting, M.K. van Ittersum and **I.J.M. de Boer**. 2015. Saving land for a growing population: consequences for consumption of crop and livestock products. International Journal of Life Cycle Assessment
- De Vries, M., C.E. van Middelaar and **I.J.M. de Boer**. 2015. Comparing environmental impacts of beef production systems: a review of life cycle assessments. Livestock Science 178: 279-288.
- Herrero, M., S. Wirsenius, B. Henderson, C. Rigolot, P. Thornton, P. Havlik, **I.J.M. de Boer** and P. Gerber. 2015. Livestock and the Environment: what have we learnt in the last decade? Annual Review of Environment and Resources 40: 177-202.

Other evidence of leadership, large-program management and delivery

Member of scientific committee on International Conference on Life Cycle Assessment (since 2008) and **European Scientific advisor** of The Sustainability Consortium (since 2011)

Role in A4NH: PI for activities related to animal source food value chains in FP1.

Alan DE BRAUW

Current position and affiliation: Senior Research Fellow, IFPRI, USA

Profile: Dr. de Brauw is a Senior Research Fellow in the Markets, Trade, and Institutions Division. His research has focused on understanding the evolution of rural labor markets in a developing economy and the effects of migration on source households. He has experience designing, implementing and evaluating impact evaluations of agricultural projects from the perspective of poverty and nutrition outcomes and has conducted randomized and non-randomized evaluations of conditional cash transfer programs and agricultural interventions. He has 33 peer reviewed publications.

Employment

2006-present	Senior Research Fellow, Research Fellow, IFPRI, USA
2010-present	Adjunct Professor, McCourt School of Public Policy, Georgetown University, USA
2002-2007	Assistant Professor of Economics, Williams College, USA

Education

2002	PhD, Agricultural and Resource Economics, University of California, Davis, USA
1994	BA, Physics, Carleton College, USA

Selected recent peer-reviewed publications

- Mu, Ren, and **Alan de Brauw**, 2015, "Unattended but not Undernourished: Left-Behind Children in Rural China," *Journal of Population Economics* 28(3): 631-657.
- Jones, Kelly, and **Alan de Brauw,** 2015, "Using agriculture to improve child health: Results from a randomized controlled trial on Vitamin A intake," *World Development* 74 (October): 15-24.
- **de Brauw, Alan**, Patrick Eozenou, and Mourad Moursi, 2015, "Programme Participation Intensity and Children's Nutritional Status: Evidence from a Randomised Control Trial in Mozambique," *Journal of Development Studies* 50(8): 996-1015.
- **de Brauw, Alan**, and Patrick Eozenou, 2014, "Measuring Risk Attitudes among Mozambican Farmers," *Journal of Development Economics* 111, November: 61-74.
- Hotz, Christine, Cornelia Loechl, Abdelrahman Lubowa, James Tumwine, Grace Ndeezi, Agnes Nandutu Masawi, Rhona Baingana, Alicia Carriquiry, **Alan de Brauw**, J.V. Meenakshi, and Daniel Gilligan "A Large Scale Intervention to Introduce Beta Carotene Rich Orange Sweet Potato Was Effective in Increasing Vitamin A Intakes among Children and Women in Rural Uganda," 2012, *Journal of Nutrition* 142: 1871-1880.
- Hotz, C., Loechl, C., **de Brauw, A.**, Eozenou, P., Gilligan, D., Moursi, M., ... & Meenakshi, J. V. (2012). A large-scale intervention to introduce orange sweet potato in rural Mozambique increases vitamin A intakes among children and women. British Journal of Nutrition, 108(01), 163-176.

Other evidence of leadership, large-program management and delivery

Associate Editor, *American Journal of Agricultural Economics*, 2016-2019; **Co-PI**, USAID, Impact Evaluations on Feed the Future Interventions, 2014-present, US$3 million plus (leading impact evaluations in Mozambique and Bangladesh); **Co-PI**, DFID, South-South Learning: Lessons from Brazil for Africa, 2012-present (US$3 million); conducting impact evaluations in Senegal and Malawi. **Co-PI**, IFAD, *Ex Post* Impact Evaluations, 2014-present (US$500,000).

Role in A4NH: In Phase I: Flagship Leader of Value Chains for Nutrition; In Phase II: PI of value chains analysis; focal point for research in CoA2; collaborator in designing, implementing, and evaluating impact evaluations of agricultural projects from perspective of poverty and nutritional outcomes.

Guy HENRY

Current position and affiliation: Leader, Sustainable Food Systems, CIAT (seconded since 2011), Colombia; Senior Scientist and Bioeconomist, UMR MOISA, CIRAD, France

Profile: Dr. Henry is a multi-language and multi-culture senior agricultural/policy/trade economist with research foci on: healthy and sustainable food systems, (international) value chain competitiveness and actor organization, certification, international trade policy, bioeconomy policy and research agendas. He is an innovative developer, initiator and leader of new research programs, networks and strategies. He is a proven successful formulator, negotiator, general coordinator and manager of large (21 partners, €4 M) bi-regional and global food systems/trade research projects under EC FP6, FP7 and H2010 programs.

Employment

2011-present	Leader, Sustainable Food Systems, CIAT (seconded since 2011), Colombia Senior scientist and Bioeconomist, UMR MOISA, CIRAD, France
2004-2010	Senior scientist CIRAD and Regional EC project coordinator, CIRAD office, Argentina
1998-2004	Senior scientist CIRAD, Regional Expert of French Technical Cooperation, coordinator of Southern Cone research network ProsPER, Brazil
1997-1998	Senior scientist CIRAD, Coordinator of global roots R&D network PROAMYL, France
1988-1996	Associate Senior scientist and Leader of Cassava Economics Program, CIAT, Colombia

Education

1988	PhD, International Agricultural Trade and Policy, Texas A&M University, USA
1983	MS, Agricultural Management & Resources Development, University of Florida, USA

Selected recent peer-reviewed publications

- **Henry, G**., Bene, C. and E. Talsma. 2015. Changing Diets. In: Feeding Tomorrow's Cities. Henk C. van Latesteijn and A. Oostra (eds.). Stichting Metropolitane Landbouw. The Netherlands.
- **Henry, G**., Pahun, J. y E. J. Trigo. La Bioeconomia en América Latina: Oportunidades de desarrollo e implicaciones de política e investigación. FACES, 2014, Año 20, No 42-4, 125-141
- Trigo, E., **Henry, G.,** Sanders, J., Schurr, U., Ingelbrecht, I., Revel, C., Santana, C. and P. Rocha. 2014. Towards Bioeconomy Development in Latin America and Caribbean. In: "Towards a KBBE in Latin America and the Caribbean". *Pontificia Universidad Javeriana*, Bogotá, Colombia
- International Center of Tropical Agriculture – CIAT. 2014. CIAT Strategy 2014-20: Building an Eco-efficient Future. (***Guy Henry,*** *taskforce leader*). CIAT press, Cali, Colombia. 65 p.
- Orden, D., Beghin, J. and **G. Henry**. 2012. Special issue: Non-tariff Measures, Agriculture and Food Trade, and Competitiveness, The World Economy, Volume 35, Issue 8, p. 967-972.

Other evidence of Leadership

Leader of the new CIAT Strategic Initiative Sustainable Food Systems – *FoodLens* (since 2014); **Taskforce leader** for the organization, formulation and publication of *CIAT Strategy 2014-2020*; **Coordinator** of bi-regional LAC-EU science & technology cooperation projects on the Bioeconomy. Co-financing mainly from European Commission programs FP6 and FP7. Research projects include: ABEST3, ABEST2, ALCUE-NET, ALCUE-KBBE, ALCUE-FOOD. Total grants portfolio: 8+ M€; **Coordinator** of food systems research projects at global, regional and national levels. Ex: EC FP7 NTM-IMPACT (2009-12) Assessment of the impacts on non-tariff measures NTM, on the competitiveness of the EU and selected global trade partners. 18 global partners, 3.9 M€ budget.

Role in A4NH: In Phase II, co-leader of CoA3 and researcher in CoA1 of FP1.

Gina KENNEDY

Current position and affiliation: Component Leader, Healthy Diets from Sustainable Food Systems, Bioversity International, Italy

Profile: Dr. Kennedy has twenty five years of work experience in the field of public health and nutrition. Her research interests include measurement of dietary diversity and diet quality and assessment of nutritional problems in developing countries. For the past ten years she has worked on nutrition assessment in developing countries, including assessing the contribution of agricultural biodiversity and food-based approaches on dietary and nutritional improvement.

Employment

2013-present	Component Leader, Healthy Diets from Sustainable Food Systems, Bioversity, Italy
2000-2013[13]	International Nutrition Consultant, FAO, Italy (with travel to LMIC)
1998	Public Health Technical Advisor, GTZ, Republic of Guinea
1994-1996	Clinic Manager, British Aid Management Office (ODA), Tarawa, Republic of Kiribati

Education

2009	PhD, Public Health Nutrition, Wageningen University, Netherlands
1993	MPH, Maternal and Child Health, University of Alabama, Birmingham, USA

Selected recent peer-reviewed publications

- Remans, R., DeClerck, F. A., **Kennedy, G.**, & Fanzo, J. 2015. Expanding the view on the production and dietary diversity link: Scale, function, and change over time. Proceedings of the National Academy of Sciences, 201518531.
- Martin-Prevel Y, Allemand P, Wiesmann D, Arimond M, Ballard T, Deitchler M, Dop MC, **Kennedy G**, Lee WT, Mourisi M. 2015. Moving forward on choosing a standard operational indicator of women's dietary diversity. Rome: FAO.
- McDermott, J., Johnson, N., Kadiyala, S., **Kennedy, G**., and Wyatt, A.J. 2015. Agricultural research for nutrition outcomes – rethinking the agenda. Food Security 7: 593–607.
- Kuchenbecker, J., Jordan, I., Reinbott, A., Herrmann, J., Jeremias, T., **Kennedy, G.**, ... & Krawinkel, M. B. 2015. Exclusive breastfeeding and its effect on growth of Malawian infants: results from a cross-sectional study. Paediatrics and international child health, 35(1), 14-23.
- **Kennedy G**, Razes M, Ballard T and Dop MC. Measurement of dietary diversity for monitoring the impact of food-based approaches. In: Proceedings of the International Scientific Symposium on Combating micronutrient deficiencies: food-based approaches. Thompson B and Amoroso L, editors. Elsevier, 2014.

Other evidence of leadership, large-program management and delivery

Leader, Bioversity Initiative on Healthy Diets from Sustainable Food Systems, a portfolio of nine projects; **Member** of International Women's Dietary Diversity project I (2005-10) and project II (2012-16); **Member** of EAT initiative competence forums on Multifunctional Landscapes and Seascapes and Metrics for Healthy Diets from Sustainable Food Systems.

Role in A4NH: Phase I: Center Focal Point for Bioversity International and member of Program Management Committee; Leader of Cluster on Nutrition Sensitive Landscapes. Phase II: Managing Partner with FP1; PI for activities related to Nutrition Sensitive Landscapes. (75% FTE)

[13] Indicates non-continuous employment

Roseline REMANS

Current position and affiliation: Research scientist in the Healthy Diets from Sustainable Food Systems initiative at Bioversity International, Ethiopia and at the Earth Institute of Columbia University, Ethiopia

Profile: Dr. Remans is a biosystems engineer with a research focus on diversity in food systems, and synergies and tradeoffs between nutrition, environment and agricultural productivity in development processes. She has co-developed innovative methodologies, e.g. nutritional functional diversity, nutritional yield, and integrated monitoring systems for agricultural landscapes, applied multi-sectoral research approaches, and published widely, e.g. in Science, Nature, PNAS, PLoS, and the American Journal of Clinical Nutrition.

Employment

2014-present	Research scientist, Healthy Diets from Sustainable Food Systems, Bioversity, Ethiopia
2014-present	Research scientist, Agriculture and food security center, the Earth Institute at Columbia University, Ethiopia
2011-2013	Associate research scientist, Agriculture and food security center, Earth Institute at Columbia University, USA
2008-2011	Marie Curie FP7 international outgoing Research Fellow, return phase with Leuven Sustainable Earth at K.U.Leuven, Belgium (2010-11) and outgoing phase (2008-10) with The Earth Institute at Columbia University, USA

Education

2007	PhD, Bioscience engineering, Katholieke Universiteit Leuven, Belgium with extensive research stays in Cuba, Mexico and Colombia
2001	MSc and Bachelors, Bioscience engineering, Katholieke Universiteit Leuven, Belgium

Selected recent peer-reviewed publications

- **Remans, R**., DeClerck, F. A., Kennedy, G., & Fanzo, J. (2015). Expanding the view on the production and dietary diversity link: Scale, function, and change over time. *Proceedings of the National Academy of Sciences*, 201518531.
- DeFries R, Fanzo J, **Remans R**, Palm C, Wood S, Anderman TL (2015) Beyond calories: Metrics For Land-Constrained Agriculture. *Science 349: 238-240.*
- Hunter D, Burlingame B, **Remans R** (lead authors) (2015) Biodiversity and nutrition. In *Connecting global priorities: biodiversity and human health: a state of knowledge review. Romanelli, C. et al.* World Health Organization (WHO) and Convention on Biological Diversity (CBD) 2015, 344pp.
- Anderman TL, **Remans R,** Wood S, DeRosa K, DeFries R (2014) Synergies and tradeoffs between cash crop production and food security: a case study in rural Ghana. *Food Security 6: 541-554*
- **Remans R**, Wood S, Saha N, Anderman TL, DeFries R (2014) Measuring nutritional diversity of national food supplies. *Global Food Security 3: 174-182*

Role in A4NH: Phase II: Research co-leader in Ethiopia. Research on metrics and indicators for food systems. (50% FTE)

Ruerd RUBEN

Current position and affiliation: Program manager Global Food and Nutrition Security (LEI Wageningen University and Research Center) and Professor Impact Analysis for Food Security (Wageningen UR), The Netherlands

Profile: Dr. Ruben provides academic leadership in policy research programs on food security, sustainable land use, rural poverty alleviation and agricultural value chains. He has wide experience in interdisciplinary research programs, based on field expertise in 25 countries (in Latin America, sub-Sahara Africa, Southeast Asia) where he was involved in staff training and policy advice. Key expertise areas: land reform, farm household models cooperative development, mixed farming systems, fair ad responsible trade, rural finance and insurance, labour markets and migration, aid architecture and aid effectiveness, value chain simulation.

Employment

2014-present	Research manager LEI Wageningen UR and Professor Wageningen UR
2010-2014	Director, Policy & Operations Evaluation, Netherlands Ministry of Foreign Affairs
2006-2014	Professor Development effectiveness & Director Centre for International Development Issues (CIDIN), Radboud University Nijmegen
1993-2006	Associate professor Development Economics, Wageningen UR
1988-1992	Director, Foundation of Rural Development Studies (CDR), Costa Rica

Education

1997	PhD, Development Economics, Free University Amsterdam, The Netherlands
1980	MSc, Development Economics, Free University – cum laude

Selected recent peer-reviewed publications

- B Rijsbergen, W Elbers, **R Ruben**, SN Njuguna (2016). The Ambivalent Impact of Coffee Certification on Farmers' Welfare: A Matched Panel Approach for Cooperatives in Central Kenya, *World Development* 77, 277-292
- AD Bekele, J Beuving, **R Ruben** (2016). Food choices in Ethiopia: Does nutritional information matter? *International Journal of Consumer Studies*
- E Ramírez, **R Ruben** (2015). Gender Systems and Women's Labor Force Participation in the Salmon Industry in Chiloé, Chile. *World Development* 73, 96-104.
- BM Lenjiso, J Smits, **R Ruben** (2015). Smallholder Milk Market Participation and Intra-household Time Allocation in Ethiopia. European Journal of Development Research. 10.1057/ejdr.2015.54
- Francesconi, G. N., & **Ruben, R.** (2014). FairTrade's theory of change: an evaluation based on the cooperative life cycle framework and mixed methods. Journal of Development Effectiveness, 6(3), 268-283.

Other evidence of leadership, large-program management and delivery

Commissioner and **Supervisor** of impact analysis studies (€750k/year) (2010-2014); **Lead researcher** Fair Trade Impact Studies, East Africa (€250k, funded by Solidaridad) (2011-2014); **Coordinator** research program reproductive health care in Tanzania (Hewlett Foundation) (2007-2012); **Coordinator** NWO-WOTRO research program on Cooperatives and Chains on farmers' (2008-2012); **Program leader**, Participatory Impact assessment (2 PhDs) (2006-2012); **Coordinator** NWO research program Sustainable International Commodity Chains (€600k) (2003-2006)

Role in A4NH: In Phase II: PI for several activities under FP1; Center Focal Point for program management.

Martine RUTTEN

Current position and affiliation: Senior Researcher, International Policy Department, LEI Wageningen UR, The Netherlands

Profile: Dr. Rutten is an economist with strong skills in research, education, policy and practice, with over fifteen years of relevant work experience. As a Senior Researcher at the International Policy Department of LEI Wageningen UR, she specializes in the areas of food losses and waste and the relationships between agriculture, food and nutrition security, diets and health in the context of global trade relations. She has widely published and frequently acts as guest speaker and lecturer in these areas. Martine previously held positions as a health economist (Royal Tropical Institute – KIT), and as a policy advisor on international financial economics and institutions, particularly the World Bank (Ministry of Finance). In her different capacities she worked in various countries and regions in the world, including the UK, Vietnam, Ethiopia (Nile Basin), Bangladesh, Rwanda and Eastern Europe. Her specialty as a quantitative economist predominantly lies in the area of Computable General Equilibrium modelling, most recently using the MAGNET model developed at LEI Wageningen UR.

Employment

2010–present	Senior Researcher, International Policy Department, LEI Wageningen UR
2008 – 2010	Health economist, Development Policy and Practice Department, Royal Tropical Institute (KIT), The Netherlands
2005 – 2008	Policy Advisor, Foreign Financial Relations Department, Ministry of Finance, The Netherlands
1999 – 2000	Researcher, Horticulture Department, LEI Wageningen UR, The Netherlands

Education

2004	PhD Economics (No corrections), University of Nottingham, UK
1999	M.Sc. Economics (Cum Laude), Erasmus University Rotterdam, The Netherlands

Selected recent peer-reviewed publications

- **Rutten, M**. and Kavallari, A. 2016. Reducing Food Losses to Protect Domestic Food Security in the Middle East and North Africa. Forthcoming in African Journal of Agricultural and Resource Economics, 11(2).
- **Rutten, M**., van Dijk, M., van Rooij, W. and Hilderink, H. 2014. Land Use Dynamics, Climate Change and Food Security in Vietnam: a Global-to-Local Modeling Approach. World Development 59: 29-46.
- Powell, J. and **Rutten, M**. 2013. Convergence of European Wheat Yields. Renewable and Sustainable Energy Reviews, 28: 53-70.
- **Rutten, M**. 2013. What Economic Theory Tells Us about the Impacts of Reducing Food Losses and/or Waste: Implications for Research, Policy and Practice. Agriculture & Food Security 2013, 2:13.
- **Rutten, M**., Shutes, L., and Meijerink, G. 2013. Sit Down at the Ballgame: How Trade Barriers Make the World Less Food Secure. Food Policy 38: 1-10.

Role in A4NH: Principal investigator in CoA1 activities related to foresight and scenario analysis

Marrit VAN DEN BERG

Current position and affiliation: Associate professor, Wageningen University, The Netherlands

Profile: Dr. Van Den Berg is a development Economist with a background in tropical agriculture. Her research focuses on rural livelihoods in areas with imperfect markets, food and nutrition security, diversification, gender, microfinance, impact, risk and uses quantitative and mixed methods. She is currently supervising 6 PhD students and has previously supervised 6 graduates.

Employment

2008 - 2015	Assistant professor, Wageningen University, The Netherlands
2002 - 2008	Postdoc researcher, Wageningen University, The Netherlands
2000 - 2002	Researcher, Development Research Institute-Tilburg University, The Netherlands
1996 - 2001	Trainee assistant, Wageningen University, The Netherlands

Education

2001	PhD, Economics, Wageningen University, The Netherlands
1995	MSc, Development Studies, Wageningen University, The Netherlands

Selected recent peer-reviewed publications

- D'Exelle, B. and **Van den Berg, M**. (2014). Aid distribution and Cooperation in Unequal Communities. Review of Income and Wealth 60(1): 114-132.
- Atamanov, A. and **Van den Berg, M**. (2012). Heterogeneous Effects of International Migration and Remittances on Crop Income: Evidence from the Kyrgyz Republic. World Development 40: 620-630 .
- Groenewald, S. and **Van den Berg, M**. (2012). Smallholder livelihoods in the Context of a Changing Maize Market: Livelihood Patterns and Trends in Rural Mexico. Journal of Development Studies 48(3): 429-444.
- Radeny, M., **Van den Berg, M**. and Schipper, R. (2012). Rural Poverty Dynamics in Kenya: Stochastic increases versus structural declines. World Development 40(8): 1577-1593.
- **Van den Berg, M**. (2010). Household Income Strategies and Natural Disasters: Dynamic Livelihoods in Rural Nicaragua. Ecological Economics 69: 592-602.

Other evidence of leadership, large-program management and delivery

Leader of the 3ie funded project "Integrated development programs in Sub Sahara Africa: Does a multi-faceted market-based approach to food crops stimulate food security and agricultural development in the breadbasket of Tanzania" with Sokoine University and LEI (2014-2018, US$449,956); **Coordinator** of the WOTRO funded project "Joint MFS II Evaluations at Country Level. Democratic Republic of the Congo. 2012-2015" with University of Antwerp, Université Catholoque de Bukavu and Université de Graben a Butembo (2012-1015, €860,000).

Role in A4NH: Principal investigator for issues related to the economics of food systems, with specific focus on micro level (household/intra-household) and meso level (local institutions).

Flagship 2: Biofortification

Howarth BOUIS

Current position and affiliation: Program Director, HarvestPlus: CIAT and IFPRI, USA

Profile: As director of HarvestPlus, Dr. Howarth Bouis coordinates an interdisciplinary, global effort to breed and disseminate micronutrient-rich staple food crops to reduce hidden hunger among malnourished populations. Since 1993, he has sought to promote biofortification both within the CGIAR, among national agricultural research centers, and in the international agriculture and nutrition communities.

Employment

1998-2003	Senior Research Fellow, Food Consumption and Nutrition Division (FCND) – IFPRI, USA
1989-1994	Professorial Lecturer, School of Advanced International Studies, The Johns Hopkins University, USA
1984-1998	Research Fellow, FCND – IFPRI, USA
1982-1984	Post-Doctoral Fellow, FCND – IFPRI, USA

Education

1982	PhD, Food Research Institute, Stanford University, USA
1976	MA, Food Research Institute, Stanford University, USA

Selected recent peer-reviewed publications

- Saltzman, A., Birol, E., **Bouis, H. E**., Boy, E. De Moura, F. F., Islam, Y., and Pfeiffer, W.H. 2013. Biofortification: Progress toward a more nourishing future. Global Food Security 2(1): 9-17.
- Zhang, X., W. Pfeiffer, N. Palacios-Rojas, R. Babu, **H. Bouis**, and J. Wang. 2012. Probability of success of breeding strategies for improving pro-vitamin A content in maize. Theoretical and Applied Genetics: International Journal of Plant Breeding Research 125(2): 235-246.
- **Bouis, H.E.,** C. Hotz, B. McClafferty, J.V. Meenakshi, and W.H. Pfeiffer. 2011. Biofortification: A new tool to reduce micronutrient malnutrition. Food and Nutrition Bulletin Vol. 32 (1): S31-S40.
- **Bouis, H.E.,** P. Eozenou, and A. Rahman. 2011. Food prices, household income, and resource allocation: Socioeconomic perspectives on their effects on dietary quality and nutritional status. Food and Nutrition Bulletin, Vol. 32(1): S14-S23.
- **Bouis, H.E.** and R.M. Welch. 2010. Biofortification—A Sustainable Agricultural Strategy for Reducing Micronutrient Malnutrition in the Global South. Crop Science 50: no. 2.

Other evidence of leadership, large program-management and delivery

Dr. Bouis has been **leading the coordination** of interdisciplinary research on biofortification since the CGIAR Micronutrients Project began in 1994. Under Dr. Bouis' **leadership**, biofortification research has grown from a small research project with a budget of $200,000 a year to a prominent flagship program of the CGIAR.

Role in A4NH: Leader of Flagship 2: Biofortification, in Phase I and Phase II. 100% time committed to Biofortification flagship.

Ekin BIROL

Current position and affiliation: Head of Impact Research, HarvestPlus: IFPRI, USA

Profile: Dr. Birol joined HarvestPlus in 2010 after having first joined IFPRI in 2007 as a Research Fellow. From 2004-2007 she was a Postdoctoral Research Fellow at the University of Cambridge where she conducted research on the development and application of economic methods to inform sustainable policies for environmental conservation and natural resources management.

Employment

2007- 2010	Research Fellow, Markets, Trade, and Institutions Division - IFPRI, USA
2004-2007	Postdoctoral Research Fellow, Department of Land Economy - University of Cambridge, UK
2004-2006	Affiliated Lecturer, University of Reading, UK
2004-2005	Consultant, IFPRI, USA

Education

2004	PhD in Economics, Department of Economics, University College London (UCL), UK
2001	MPhil in Economics, Department of Economics, University College London, UK

Selected recent peer-reviewed publications

- Smale, M., M. Moursi and **Birol, E**. Forthcoming. How does hybrid maize use affect diet diversity on family farms? Micro-evidence from Zambia. Food Policy.
- **Birol, E**., Meenakshi, J.V., Oparinde, A., Perez, S., and Tomlins, K. Forthcoming. Developing country consumers' acceptance of biofortified foods: a synthesis. Food Security.
- **Birol, E**., Asare-Marfo, D., Karandikar, B., Roy, D. and Tedla Diressie, M. Forthcoming. A latent class approach to investigating farmer demand for biofortified foods in developing countries. Journal of Agribusiness in Developing and Emerging Economies.
- Oparinde, A., Banerji, A., **Birol, E**. and Ilona, P. Forthcoming. Information and consumer willingness to pay for biofortified yellow cassava: evidence from experimental auctions in Nigeria. Agricultural Economics.
- De Moura, F. F., Palmer, A.C., Finkelstein, J.L., Haas, J.D., Murray-Kolb, L.E., Wenger, M.J., **Birol, E.,** Boy, E. and Peña-Rosas, J.P. 2014. Are biofortified staple food crops improving vitamin A and iron status in women and children? new evidence from efficacy trials. Advances in Nutrition 5: 1–3.

Other evidence of leadership, large program-management and delivery

Dr. Birol is an **Associate Editor** of *Agricultural Economics* and *International Journal of Food and Agricultural Economics.* She is also a **member** of the Chicago Council on Global Affairs Nutrition Task Force and Council on Food, Agricultural and Resource Economics (C-FARE) Blue Ribbon Expert Panels on Development. She **leads a team** of five impact researchers based at IFPRI's HarvestPlus office.

Role in A4NH: Principal investigator for activities related to farmer adoption and consumer acceptance in Phase I; CoA2 activities related to impact assessment and effectiveness studies in Phase II. 100% time committed to Biofortification flagship.

Erick BOY-GALLEGO

Current position and affiliation: Head of Nutrition, HarvestPlus: IFPRI, USA

Profile: Prior to joining HarvestPlus, Dr. Boy worked at the Institute of Nutrition of Central America and Panama where he became regional coordinator for micronutrient nutrition technical cooperation. He has over 15 years of experience with international nutrition, anemia control and prevention, iodine deficiency disorders, micronutrient fortification, coordination of vitamin and mineral deficiency control programs, and nutrition project management.

Employment

2005-2008	Chief Scientific Adviser, Micronutrient Initiative, Canada
2002-2005	Coordinator, Global Programs Unit, Micronutrient Initiative, Canada
1999-2002	Senior Program Specialist, Programs Unit, Micronutrient Initiative, Canada
1989-1990	Medical Officer, Institute of Nutrition of Central America and Panama, Guatemala

Education

2005	PhD in Nutrition, Emphasis in International Nutrition & focus area in Epidemiology, University of California-Davis, USA
1987	MD in General Medicine & Surgery, University of San Carlos, Guatemala

Selected recent peer-reviewed publications

- Petry N, Egli, I., Gahutu, J.B., Tugirimana, P.L., **Boy, E**., and Hurrell, R. 2014. Phytic acid concentration influences iron bioavailability from biofortified beans in Rwandese women with low iron status. Journal of Nutrition 144(11): 1681-7.
- de Moura, F.F., Palmer, A.C., Finkelstein, J.L., Haas, J.D., Murray-Kolb, L.E., Wenger, M.J., Birol, E., **Boy, E**., and Peña-Rosas, J.P. 2014. Are biofortified staple food crops improving vitamin A and iron status in women and children? New evidence from efficacy trials. Advances in Nutrition 5(5): 568-70.
- La Frano, M.R., de Moura, F.F., **Boy, E**., Lönnerdal, B., and Burri, B.J. 2014. Bioavailability of iron, zinc, and provitamin A carotenoids in biofortified staple crops. Nutrition Reviews May 72(5): 289-307.
- de Moura, F.F, **Boy, E**., and Miloff, A. 2013. Retention of provitamin A carotenoids in staple crops targeted for biofortification in Africa: cassava, maize, and sweet potato. Critical Reviews in Food, Science, and Nutrition, http://dx.doi.org/10.1080/10408398.2012.724477.
- Gera, T., Sachdev, H.S., and **Boy, E**. 2012. Effect of iron-fortified foods on hematologic and biological outcomes: systematic review of randomized controlled trials. The American Journal of Clinical Nutrition 96: 309-324.

Other evidence of leadership, large program-management and delivery

Leads a team of five nutrition researchers based at IFPRI's HarvestPlus office, and was **chair** of the IFPRI Institutional Review Board from 2009-2013.

Role in A4NH: Phase I**:** Principal investigator for activities related to nutritional bioavailability and nutritional efficacy; Phase II: CoA2 activities related to nutritional efficacy and effectiveness studies. 100% time committed to Biofortification flagship.

Wolfgang PFEIFFER

Current position and affiliation: Deputy Director of Operations, HarvestPlus: CIAT, Colombia

Profile: Before joining HarvestPlus, Dr. Pfeiffer was Head Plant Breeder for the Intensive Agro-ecosystems Program at the International Maize and Wheat Improvement Center (CIMMYT) in Mexico. He has over 30 years of experience in crop improvement, commercialization and international agriculture. As Deputy Director of Operations at HarvestPlus, he drives the development of micronutrient-dense, high-yielding varieties of key staple foods and the delivery/commercialization of biofortified products. He has principal authorship of more than 70 research publications, and co-authorship of more than 100.

Employment

2005-2011	Plant Breeding Coordinator, HarvestPlus - International Center for Tropical Agriculture (CIAT), Colombia
2004-2005	Program Head/Head Plant Breeder, International Maize and Wheat Improvement Center (CIMMYT), Mexico
1997-2003	Principal Scientist, Durum Wheat Program – International Maize and Wheat Improvement Center (CIMMYT), Mexico
1994-1997	Head, Durum Wheat and Triticale Programs, International Maize and Wheat Improvement Center (CIMMYT), Mexico

Education

1983	PhD in Agricultural Sciences, University of Hohenheim, Germany
1980	MSc in Agricultural Sciences, Emphasis in Plant Production, University Hohenheim, Germany

Selected recent peer-reviewed publications

- Zhang, X., **Pfeiffer, W.,** Palacios-Rojas, N., Babu, R., Bouis, H., and Wang, J. 2012. Probability of success of breeding strategies for improving pro-vitamin A content in maize. Theoretical and Applied Genetics 125(2): 235-246.
- Velu, G., Singh, R.P., Huerta-Espino, J., Peña, R.J., Arun, B., Mahendru-Singh, A., Mujahid, M.Y., Sohu, V.S., Mavi, G.S., Crossa, J., Alvarado, G., Joshi, A.K., and **Pfeiffer, W.H**. 2012. Performance of biofortified spring wheat genotypes in target environments for grain zinc and iron concentrations. Field Crops Research 137: 261-267.
- Bouis, H.E., Hotz, C., McClafferty, B., Meenakshi, J.V., and **Pfeiffer, W.H**. 2011. Biofortification: A new tool to reduce micronutrient malnutrition. Food & Nutrition Bulletin 32(Supplement 1): 31S-40S.
- Cakmak, I., **Pfeiffer, W.H.,** and McClafferty, B. 2010. Biofortification of durum wheat with zinc and iron. Cereal Chemistry 87(1): 10-20.

Other evidence of leadership, large program-management and delivery
Leads HarvestPlus Operations to achieve the technological and commercial project goals.

Role in A4NH: Leader for activities in crop development and delivery in Phase I; leader of CoA1, Crop Development Mainstreaming and Capacity Building, and co-leader of CoA2 operational activities in Phase II. 100% time committed to Biofortification flagship.

Ina SCHONBERG

Current Position and affiliation: Deputy Director of Programs, HarvestPlus: IFPRI, USA

Profile: Ms. Schonberg has 20 years' experience in programming, policy and management for nutrition, food security, and agriculture for development. She has worked for several non-profit and international organizations, providing institutional support to USAID in its management of food-assisted programming, as well as for FHI360 and University Research Co. She also has a background in microfinance with Catholic Relief Services, and worked for several years with Citibank-NY managing relationships with African institutional banking clients.

Employment

2013-2014	Technical Advisor-Coordination, Food and Nutrition Technical Assistance Project – FHI 360, USA
2011-2013	Sr. Food Security & Nutrition Advisor, University Research Co., LLC, USA
2010-2011	Sr. Officer, Livelihoods and Nutrition, Preparedness & Risk Reduction Dept. – International Federation of Red Cross/Red Crescent Societies, Switzerland
2008-2009	Sr. Associate, Partnership Programs – Global Alliance for Improved Nutrition (GAIN), Switzerland

Education

1989	Masters, International Affairs, Economic and Political Development, Columbia University – SIPA, USA
1983	BS, Business Administration – International Management, Boston University, USA

Selected recent peer-reviewed publications

- **Schonberg, I**. 2008. Tackling Childhood Malnutrition in Coastal Bangladesh. eJournal USA: Food Aid Reducing World Hunger. http://iipdigital.usembassy.gov/st/english/publication/2008/06/20080615235215xjyrrep0.5559351.html#axzz3iiGsjpce
- **Schonberg, I. 2007.** Remarks to the USDA Future of Food Aid Panel. http://www.fsa.usda.gov/Internet/FSA_File/ifac_ina_schonberg_070417.pd

Other evidence of leadership, large program-management and delivery

Manages all global program support functions for HarvestPlus, including budgets and contracts, communications, nutrition and impact research, contributing to accomplishments detailed in the HarvestPlus annual report. Previously **coordinated** FANTA's Nutrition and Infectious Disease Cluster (NID) work, supervising 5 direct and 10 indirect staff and **leading HQ donor liaison** related to Cluster work in 13 countries and globally for technical assistance, capacity strengthening, policy/guidance/tool development, and research.

Role in A4NH

Leader for management of nutrition, impact, and policy research in Phase I; co-leader of CoA2, delivery science and lessons learned, in Phase II. 100% time committed to Biofortification flagship.

Thom SPRENGER

Current position and affiliation: Global Manager – Strategic Alliances, HarvestPlus – IFPRI, USA

Profile: Mr. Sprenger has more than 20 years of professional experience, with a strong focus on facilitating, managing and monitoring innovative public private alliances with a concrete development impact. Since 2007, private sector involvement in food and nutrition security has been his focus area. He has experience in many countries in Africa, South America, Asia, the Indian Sub-continent and the Middle-East. He worked and lived for several years in both India and Yemen.

Employment

2010-2014	Director, Institute for Development Strategy, Germany
2011-2013	Strategic Advisor to the Director, BoP Innovation Centre, The Netherlands
2011-Present	Senior Associate, Partnership Resource Centre – Rotterdam School of Management, The Netherlands
2010-2011	Managing Director, Amsterdam Initiative against Malnutrition (AIM) – Global Alliance for Improved Nutrition, Switzerland

Education

1988	MSc, Environmental Management – Public Administration, Wageningen University, The Netherlands

Selected recent peer-reviewed publications

- **Sprenger, T**. 2015. Biofortification – bringing better nutrition to farm families. CTA http://www.cta.int/en/article/2015-04-14/biofortification-n-bringing-better-nutrition-to-farm-families-and-no-they-are-not-gmos.html

OTHER EVIDENCE OF LEADERSHIP, LARGE-PROGRAM MANAGEMENT AND DELIVERY

Mr. Sprenger was the **first managing director** of the Amsterdam Initiative against Malnutrition. He is also a **former special advisor t**o the Netherlands Minister for Development Cooperation, where he designed and implemented a €50 million fund to stimulate involvement of non-traditional partners in reaching Millennium Development Goals.

Role in A4NH: Leader for partnership activities in Phase I; leader of CoA3, Promoting an Enabling Environment, in Phase II. 100% time committed to Biofortification flagship.

Parminder VIRK

Current position and affiliation: Manager, Crop Development, HarvestPlus: CIAT, Colombia

Profile: Dr. Virk has spent most of his career at the International Rice Research Institute (IRRI) as lead rice breeder for productive environments, biofortified rice, and transgenic breeding. He and his team developed 27 rice varieties for major rice-growing countries. Dr. Virk brings to HarvestPlus extensive experience in international collaboration with public and private sectors in germplasm development, distribution/testing, research, training, technical assistance, and consulting and technology transfer.

Employment

2009-2012	Consultant – Molecular Breeding, MAHYCO, India
1999-2012	Lead rice breeder, International Rice Research Institute (IRRI), Philippines

Education

1985	PhD, Plant Breeding, Punjab Agricultural University, India
1980	MSc, Plant Breeding, Punjab Agricultural University, India

Selected recent peer-reviewed publications

- Spindel, J., Begum, H., Akedemir, D., and **Virk, P**. 2015. Genomic selection and association mapping in rice: effect of trait genetic architecture, training population composition, marker number and statistical model on accuracy of rice genomic selection in elite, tropical rice breeding lines. PLOS Genetics 11(6): e1005350.
- Begum, H., Spindel, J., Lalusin, A., Borromeo, T., Gregorio, G., Hernandez, J., **Virk, P**., Collard, B., and McCouch, S., 2015. Genome-wide association mapping for yield and other agronomic traits in an elite breeding population of tropical rice. PLOS One 10(3): e0119873.
- Yuan, W., Peng, S., Cao, C., **Virk, P**., Xing., D., Zhang, Y., Visperas, R., and Laza, R. 2011. Agronomic performance of rice breeding lines selected based on plant traits or grain yield. Field Crops Research 121(1): 168-174.

Other evidence of leadership, large program-management and delivery

Dr. Virk previously **led** biofortified zinc rice research. He was also **Co-PI** for transgenic breeding for the Golden Rice Project ($3.9 million) and Leader of Objective 3 for Cereal System Initiative for South Asia ($5.3 million).

Role in A4NH: Phase I: Principal investigator for Flagship #2, Biofortification, activities related to crop development for rice and wheat; Phase II: CoA1 activities related to crop development in Asia in Phase II. 100% time committed to Biofortification flagship.

Manfred ZELLER

Current position and affiliation: Senior Research Fellow, IFPRI, Uganda

Profile: From 1993-1999, Dr. Zeller led IFPRI's multi-country program on rural finance and food security. His publications focus on rural financial institutions, operational measures of income poverty, adoption of agricultural technology, food policy, and participation of smallholders in food value chains. He conducted or guided empirical research in more than 30 countries in Latin America, Asia and Africa.

Employment

2005-2014	Professor for Rural Development Theory and Policy, Faculty of Agricultural Sciences – University of Hohenheim, Germany
1999-2005	Professor for Socioeconomics of Rural Development, Institute of Rural Development – University of Göttingen, Germany
1993-1999	Research Fellow, Food Consumption and Nutrition Division & Outreach Division – International Food Policy Research Institute (IFPRI), USA
1991-1993	Post-Doctoral Research Fellow, Food Consumption and Nutrition Division, International Food Policy Research Institute (IFPRI), USA

Education

1990	PhD, Agricultural Economics, University of Bonn, Germany
1986	Diploma (equivalent to MSc), Agricultural Economics, University of Bonn, Germany

Selected recent peer-reviewed publications

- Dibba, L., **Zeller, M**., Diagne, A., and Nielsen, T. 2015. How accessibility to seeds affects the potential adoption of an improved rice variety: the case of the new rice for Africa in The Gambia. Quarterly Journal of International Agriculture 54(1): 33-58.
- Beuchelt, TD., and **Zeller, M**. 2011. Profits and poverty: certification's troubled link for Nicaragua's organic and fair trade coffee producers. Ecological Economics 70(7): 1316-1324.
- Nielsen, T., Keil, A., and **Zeller, M**. 2013. Assessing farmers' risk preferences and their determinants in a marginal upland area of Vietnam: a comparison of multiple elicitation techniques. Agricultural Economics 44(3): 255-273.
- Loos, TK., and **Zeller, M**. 2014. Milk sales and dietary diversity among the Maasai. Agricultural Economics 45(S1): 77-90.
- Khor, L.Y., and **M. Zeller**. 2014. Inaccurate fertilizer content and its effect on the estimation of production functions. China Economic Review 30: 123-132.

Other evidence of leadership, large program-management and delivery

Dr. Zeller has published more than fifty peer-reviewed papers in disciplinary and interdisciplinary journals focusing on development, food, agriculture and nutrition. He has worked in policy research, academic training and policy advisory functions with government, universities and non-government institutions in more than 30 countries.

Role in A4NH: Phase I: Principal investigator for Flagship #2, Biofortification, activities related to impact modeling and policy analysis; Phase II: CoA2 activities related to monitoring and cost-effectiveness research. 100% time committed to Biofortification flagship.

Flagship 3: Food Safety

Delia GRACE

Current position and affiliation: Program Manager Food Safety Zoonoses, ILRI, Kenya

Profile: Dr. Grace is a senior epidemiologist with expertise in research at the agriculture and health interface, especially Ecohealth/ One Health, food safety, gender and food, participatory methods, and, epidemiology in developing countries. Since 2012, she has led theme on agriculture associated disease within the CRP on Agriculture for Nutrition and Health and leads a program on food safety and zoonoses at the International Livestock Research Institute. She is the author of one book, numerous chapters, and more than 100 peer-reviewed papers.

Employment

2011-present	Program Leader, ILRI, Kenya
2008-2011	Senior Scientist, ILRI, Kenya
2006-2008	Joint appointed scientist at ILRI and Cornell University, USA
2002-2006	Scientist at Free University Berlin, Germany

Education

2006	PhD, Veterinary Epidemiology, Free University Berlin, Germany
1990	MVB, National University of Ireland, Ireland

Selected recent peer-reviewed publications

- **Grace, D**., 2015, Food safety in low and middle income countries, International Journal of Environmental Research and Public Health, 12(9), 10490–10507
- **Grace, D**., Mahuku, G., Hoffmann, V., Atherstone, C., Upadhyaya, H.D. and Bandyopadhyay, R. 2015. International agricultural research to reduce food risks: case studies on aflatoxins, Food Security, 7(3): 569-582.
- Perry B and **Grace D**. 2015. How growing complexity of consumer choices and drivers of consumption behaviour affect demand for animal source foods, Ecohealth Journal
- Perry BD, **Grace D** and Sones K. 2013. Current drivers and future directions of global livestock disease dynamics. Proceedings of the National Academy of Sciences of the United States of America, 110 (52) 20871-20877
- **Grace D**, Kang'ethe E. and Waltner-Toews, 2012, Participatory and integrative approaches to food safety in developing country cities, Tropical Animal Health and Production, 44: S1-S2.

Other evidence of leadership, large-program management and delivery

Leader of studies on zoonoses, emerging disease, and antimicrobial resistance; **PI or co-PI** on projects with a combined budget of US$19 million in the last 5 years; **Member** (past and present) of several UN, FAO and WHO expert groups.

Role in A4NH: In Phase I: Leader of Agriculture Associated Diseases and cluster on Food Safety and Center Focal Point for ILRI. In Phase II, Leader of FP3 and leader of CoA1 and CoA2; ILRI co-lead for FP5 (pro tem)

Ranajit BANDYOPADHYAY

Current position and affiliation: Senior Plant Pathologist, IITA, Nigeria

Profile: Ranajit Bandyopadhyay has 36 years of plant pathology research and development experience working for CGIAR in Asia, Africa and the Americas. His research on mycotoxins focuses on surveillance, bio-ecology of toxigenic fungi, integrated management of mycotoxins and policy and institutional issues. He has authored nearly 175 publications and serves on Editorial Boards of two journals related to mycotoxins.

Employment

2002-present	Senior Plant Pathologist, IITA, Nigeria
1980-2001	Principal Scientist (Pathology), ICRISAT, India
1998-1999	Visiting Scientist, Texas A&M University, USA
1996-1997	Project Team Leader, Sorghum Medium Rainfall Project (SG2), ICRISAT, India
1991-1992	Frosty Hill Fellow, Cornell University, USA

Education

1980	PhD, Plant pathology, Haryana Agricultural University, Hisar, India
1976	MSc., Plant pathology, G.B. Pant Univ. of Agriculture & Technology, India

Selected recent peer-reviewed publications

- Atehnkeng, J., Donner, M., Ojiambo, P.S., Ikotun,B., Augusto, J., Cotty, P.J., and **Bandyopadhyay, R.** 2016. Environmental distribution and genetic diversity of vegetative compatibility groups determine biocontrol strategies to mitigate aflatoxin contamination of maize by *Aspergillus flavus*. Microbial Biotechnology 9:75-88. DOI: 10.1111/1751-7915.12324
- Watson, S., Diedhiou, P.M., Atehnkeng, J., **Bandyopadhyay, R**., Srey, C., Routledge, M.N, and Gong, Y.Y. 2015. Exposure to aflatoxin from groundnut among adults from Senegal. World Mycotoxin Journal DOI: 10.3920/WMJ2014.1824.
- Atehnkeng, J., Ojiambo, P.S., Cotty, P.J., and **Bandyopadhyay, R**. 2014. Field efficacy of a mixture of atoxigenic *Aspergillus flavus* link: Fr vegetative compatibility groups in preventing aflatoxin contamination in maize (Zea mays L.). Biological Control 72:62-70.
- Ezekiel, C.N., Ogara, I.M., Abia, W.A., Ezekiel, V.C., Atehnkeng, J., Sulyok, M., Turner, P.C., Tayo, G.O., Krska, R., and **Bandyopadhyay, R**. 2014. Mycotoxin exposure in rural residents in northern Nigeria: a pilot study using multi-urinary biomarkers. Environment International 66: 138-145.
- Probst, C., **Bandyopadhyay, R**., and Cotty, P.J. 2014. Diversity of aflatoxin-producing fungi and their impact on food safety in sub-Saharan Africa. International Journal of Food Microbiology 174: 113-122.

Other evidence of leadership, large-program management and delivery

Guides research and development activities related to crop diseases and mycotoxins at IITA and **leads** Africa-wide efforts on development and scaling-up of the aflatoxin biocontrol technology Aflasafe; **Raised funds** –$41.6 million – for 17 bilateral projects on mycotoxins during the last 6 years .**Member** of the Steering Committee and **Chair** of the Technical Sub-Committee of the Partnership for Aflatoxin Control in Africa (PACA).

Role in A4NH: Leader of Cluster of Activities on aflatoxins and principal investigator for activities related to aflatoxin biocontrol (aflasafe)

Jagger J W HARVEY

Current position and affiliation: Senior Scientist, BecA-ILRI Hub, ILRI

Profile: Jagger Harvey is a molecular plant biologist working within the BecA initiative at ILRI. He established a research platform for mycotoxin and nutritional analysis, which has hosted over 100 researchers to date. He leads an Australian Government-funded research for development project focused on reducing aflatoxin in maize in Kenya and Tanzania, through identification and deployment of integrated interventions on farm and with other key actors along the value chain. Additionally, Jagger is involved in a number of projects focused on improvement of other crops, including rice, common bean, cassava and a range of others.

Employment

2009-present	Senior Scientist, ILRI, Kenya
2005-2008	US National Science Foundation Postdoctoral Research Fellow, Professor Sir David Baulcombe laboratory, Cambridge University and The Sainsbury Laboratory, UK

Education

2005	PhD, Genetics, University of California, Davis, USA
1998	BSc, Biology and Natural Sciences & Mathematics, Washington and Lee University, USA

Selected recent peer-reviewed publications

- Yashvir Chauhan, Jeff Tatnell, Stephen Krosch, James Karanja, Benoit Gnonlonfin, Immaculate Wanjuki, James Wainaina and **Jagger Harvey** (2015) An improved simulation model to predict pre-harvest aflatoxin risk in maize. Field Crops Research 178: 91-99.
- Samuel K. Mutiga, Vivian Hoffmann, **Jagger Harvey**, Michael G. Milgroom and Rebecca J. Nelson (2015) Assessment of aflatoxin and fumonisin contamination of maize in western Kenya. Phytopathology 105(9): 1250-1261.
- Benigni A. Temba, Mary T. Fletcher, Glen P. Fox, **Jagger Harvey** and Yasmina Sultanbawa (2015) Inactivation of Aspergillus flavus spores by Curcumin-mediated photosensitization. Food Control 59:708-713.
- Samuel K. Mutiga, Vincent Were, Vivian Hoffmann, **Jagger Harvey**, Michael G. Milgroom and Rebecca J. Nelson (2014) Extent and drivers of mycotoxin contamination: Inferences from a survey of Kenyan maize mills. Phytopathology 104(11): 1221-1231.
- Ojwang D. Otieno, Calvin Onyango, Justus Mungare, Lexa G. Matasyoh, Bramwel W. Wanjala, Mark Wamalwa and **Jagger Harvey** (2014) Genetic diversity of Kenyan native oyster mushroom (Pleurotus). Mycologia 107(1):32-38.

Other evidence of leadership, large-program management and delivery

Leader of number of projects focused on food and nutritional security-related issues. This has included a $4 million flagship project of the BecA-Australia partnership, Capacity and Action for Aflatoxin Reduction in Eastern Africa. Directly engaged in **resource mobilization** efforts totaling over $18 million while with the BecA-ILRI Hub, and has **served on expert groups** at FAO, the AU and elsewhere.

Role in A4NH: In phase I: established and has led the research platform used by a number of ILRI and hosted scientists working on A4NH projects; In phase II: continued operation and research on the BecA-ILRI Hub research platform aligned with A4NH.

Barbara HÄSLER

Current position and affiliation: Lecturer in Agrihealth, Leverhulme Centre for Integrative Research on Agriculture and Health, UK

Profile: Barbara Häsler is a veterinary researcher with expertise in animal health economics and food systems. Her main area of interest is the integration of economic, social and epidemiological aspects in animal disease mitigation to provide practical and feasible tools that support decision-makers in the efficient allocation of resources. She is particularly committed to the development of interdisciplinary frameworks that support appropriate surveillance and intervention programs for the control of foodborne and zoonotic diseases in food systems both in the developed and developing world.

Employment

2012-2014 Post-doctoral Research Fellow, Royal Veterinary College, University of London, UK

2007-2008 Royal Veterinary College, University of London, Research Assistant in Veterinary Public Health

Educational Background

2015 Postgraduate Certificate HE Veterinary Education, Royal Veterinary College, University of London, UK
2011 PhD, Animal Health Economics Royal Veterinary College, University of London, UK
2011 Postgraduate Certificate HE Economics, Birkbeck College London

Selected recent peer-reviewed publications

- *Characterisation of production, marketing and consumption patterns of farmed tilapia in the Nile Delta of Egypt.* Eltholth M, Fornace K, Grace D, Rushton J, **Häsler B** (2015). Food Policy
- *A One Health Framework for the Evaluation of Rabies Control Programmes: A Case Study from Colombo City, Sri Lanka.* **Häsler B**, Hiby E, Gilbert W, Obeyesekere N, Bennani H, Rushton J (2014). PLoS Negl Trop Dis 8(10): e3270
- *Linking agriculture and health in low- and middle-income countries: an interdisciplinary research agenda.* Dangour, AD, Green, R, **Häsler, B**, Rushton, J, Shankar, B, and Waage, J, 2012. Proceedings of the Nutrition Society, Mar 16:1-7.
- *Economic principles for resource allocation decisions at national level to mitigate the effects of disease in farm animal populations.* Howe, KS, **Häsler, B**, Stärk, KD, 2013. Epidemiol. Infect.
- A review of the metrics for One Health benefits. **Häsler B**, Cornelsen L, Bennani H, Rushton J (2014). Rev. sci. tech. Off. int. Epiz. Vol. 33 (2) pp. 453-464.

Other evidence of leadership, large-program management and delivery

Chair of the international "Network for Evaluation of One Health" (NEOH), 2014-2018; **Co-leader** of the international network NEAT "Networking to enhance the use of economics in animal health education, research and policy making in Europe and beyond" (including co-organisation of annual meetings and blog contributions) (2012-2015); WP **leader** of the FP7 funded project "RISKSUR -providing a new generation of methodologies and tools for cost-effective risk-based animal health surveillance systems for the benefit of livestock producers, decision makers and consumers" (2012-2015); **Member** of the Management Committee of the Leverhulme Centre for Integrative Research on Agriculture and Health (LCIRAH)

Role in A4NH: PI of activities in FP3

Vivian HOFFMANN

Current position and affiliation: Research Fellow, IFPRI, USA

Profile: Vivian Hoffmann is an applied micro-economist with 10 years of experience. She leads the theme on food and water safety within the Markets, Trade and Institutions Division of IFPRI, where her work focuses on market-based intervention trials to improve food safety throughout the value chain in sub-Saharan Africa. Hoffmann also leads a cluster-randomized controlled trial assessing the impact of aflatoxin exposure on child growth.

Employment

2013-present Affiliate, Agricultural Technology Adoption Initiative, USA
2009-present Expert, International Initiative for Impact Evaluation, India / UK / USA
2009-present Member, Innovations for Poverty Action Research Network, USA
2008-2014 Assistant Professor, Agricultural and Resource Economics, University of Maryland, USA

Education

2008 PhD, Agricultural Economics, Cornell University,
2001 B.A., Geography, University of British Columbia,

Selected recent peer-reviewed publications

- **Hoffmann, V**., Jones, K., & Leroy, J. 2015. Mitigating aflatoxin exposure to improve child growth in Eastern Kenya: study protocol for a randomized controlled trial. Trials, 16(1), 552.
- Mutiga, S. K., **Hoffmann, V**., Harvey, J., Milgroom, M. G., and Nelson, R. 2015. Assessment of aflatoxin and fumonisin contamination of maize in western Kenya. Phytopathology, 105(9) 1250-1261.
- Unnevehr, L., & **Hoffmann, V**. 2015. Food safety management and regulation: International experiences and lessons for China. Journal of Integrative Agriculture, 14(11), 2218-2230.
- Grace, D., Mahuku, G., **Hoffmann, V**., Atherstone, C., Upadhyaya, H. D., & Bandyopadhyay, R. 2015. International agricultural research to reduce food risks: case studies on aflatoxins. Food Security, 1-14.
- Mutiga, S. K., Were, V., **Hoffmann, V**., Harvey, J., Milgroom, M. G., & Nelson, R. 2014. Extent and drivers of mycotoxin contamination: Inferences from a survey of Kenyan maize mills", Phytopathology.
- **Hoffmann, V**. and K. Gatobu. 2014. "Growing their own: Unobservable quality and the value of self-provisioning" Journal of Development Economics. 106: 167-178.
- **Hoffmann, V**. 2009. "What you don't know can hurt you: micronutrient content and fungal contamination of food in developing countries", Agricultural and Resource Economics Review 38(2): 1-10.

Role in A4NH

Phase I: Center Focal Point for Food Safety, Principal investigator for activities related to aflatoxins, markets and food safety, 100% of time committed to Food Safety Flagship; Phase II: Center Focal Point for Food Safety, Principal investigator for activities related to aflatoxins, markets and food safety, 75% of time committed to Food Safety Flagship

Amos OCHIENG OMORE

Current position and affiliation: Dairy Value Chain Leader, CRP on Livestock and Fish, ILRI-Tanzania

Profile: A veterinary epidemiologist with over 20 years' experience of research for development to improve livestock-dependent livelihoods in sub-Saharan Africa, with a focus on seeking pro-poor solutions to constraints in agricultural systems where dairying is important. He is currently based in Tanzania working on generating technical and institutional options for improving smallholder livestock value chains, besides acting as ILRI Country Representative in the country.

Employment

2005-2013	Scientist and Senior Scientist, ILRI, Kenya,
1997-2004	Research Officer, Kenya Agricultural Research Institute and ILRI-Kenya (joint appointment)
1985-2003	Research Officer, Kenya Agricultural Research Institute, Kenya

Education

1997	PhD, Veterinary Epidemiology and Economics, University of Nairobi, Kenya
1989	MSc. Animal Production, University of Reading, UK

Selected recent peer-reviewed publications

- Gelan, A. and **Omore, A**. 2014, Beyond Tariffs: The Role of Non-Tariff Barriers in Dairy Trade in the East African Community Free Trade Area. Development Policy Review, 32: 523–543.
- Kaitibie, S., **Omore, A**., Rich, K. and Patti Kristjanson. 2010. Kenyan Dairy Policy Change: Influence Pathways and Economic Impacts. World Development Vol. 38, No. 10, pp. 1494–1505.
- Kurwijila, L. R., **Omore, A**., Staal, S., Mdoe, N. S. Y. 2006. Investigation of the Risk of Exposure to Antimicrobial Residues Present in Marketed Milk in Tanzania, Journal of Food Protection, Vol. 69, No. 10, 2006, Pages 2487–2492
- **Omore, A**.; Kurwijila, L.; Grace, D. 2009. Improving livelihoods in East Africa through livestock research and extension: reflections on changes from the 1950s to the early twenty first century. Tropical Animal Health and Production. 41(7): 1051-1059.
- Okoth, E., Gallardo, C., Macharia, J.M., **Omore, A.,** Pelayo, V., Bulimo, D.W., Arias, M., Kitala, P., Baboon, K., Lekolol, I., Mijele, D., Bishop, R.P. 2013. Comparison of African swine fever virus prevalence and risk in two contrasting pig-farming systems in South-west and Central Kenya. Preventive Veterinary Medicine, volume 110, issue 2, 2013, pp. 198 - 205.

Other evidence of leadership, large-program management and delivery

Rationalisation and harmonisation of dairy policies in eastern and central Africa, 2003-09; with ASARECA, USAID. ($372,000); Improvement and diversification of Somali livestock trade and marketing, 2007-07 ($350,000); More milk by and for the poor: adapting dairy market hubs for pro-poor smallholder value chains in Tanzania. 2012-2017; with Sokoine Unersity, Tanzania dairy Board, Faida Market Linkages, Heifer International-Tanzania and Irish Aid ($2.5 million)

Role in A4NH

Principal investigator for activities related to generating technical and institutional options for improving food safety in smallholder dairy value chains and food safety policy influencing for enabling environment for improving the informal sector markets and governance

Alexander E. SAAK

Current position and affiliation: Research Fellow, IFPRI, USA

Profile: Alexander Saak joined IFPRI in 2010 as a Research Fellow with the Market, Trade and Institutions Division and is part of the Food and Water Safety program. His current research on food safety includes analysis of costs and benefits of external certification, organization and contracting in value chains, provision of product information, and management of infectious diseases in agricultural production in developing economies. Alexander participated in designing and conducting surveys of dairy producers and consumers in Central Asia and India, and analysis of aflatoxin and poultry disease control by small-holder farmers in Africa. Alexander also conducted research on agricultural marketing programs, groundwater use in the presence of externalities, and crop insurance.

Employment

2010-present	Research Fellow, Markets, Trade and Institutions Division, IFPRI, USA
2005-2010	Assistant Professor, Department of Agricultural Economics, Kansas State University
2001-2005	Assistant Scientist, Center for Agricultural and Rural Development, Iowa State University, USA
2003	Instructor, Department of Management, Taganrog State University, Russia
1997-2001	Teaching and Research Assistant, Iowa State University, Department of Economics, USA

Education

2001	PhD in Economics, Major professor D. Hennessy, Iowa State University USA
1997	M.S./B.S. in Management, Taganrog State University, Russia

Selected recent peer-reviewed publications

- **Saak, A**. (2015) "Teams with Moral Hazard and Non-Verifiable Quality Assessment." Economics Letters 136: 88-91.
- **Saak, A.E**. and J.M. Peterson. (2012) "Groundwater Pumping by Heterogeneous Users." Hydrogeology Journal 20: 835-849.
- **Saak, A.E**. (2012) "Collective Reputation, Social Norms, and Participation." American Journal of Agricultural Economics 94: 763-785.
- **Saak, A.E**. (2011) "A Model of Labeling with Horizontal Differentiation and Cost Variability." American Journal of Agricultural Economics 93: 1131-1150.
- **Saak, A.E**. and J.M. Peterson. (2007) "Groundwater Use under Incomplete Information." Journal of Environmental Economics and Management 54: 214- 228.

Other evidence of leadership, large-program management and delivery

Associate Editor at American Journal of Agricultural Economics (2014-2017). **Guided modeling and analysis** of survey data for projects on Aflatoxin control in maize and groundnut value chains and on pro-poor HPAI risk reduction in Africa at IFPRI, and contributed to project on reducing adulteration in milk in India.

Role in A4NH

Principal investigator for the "Analysis of Value Chains in Central Asia from Food Safety and Nutrition Perspective" project

Hari Kishan SUDINI

Current position and affiliation: Senior Scientist-Groundnut Pathology, ICRISAT, India

Profile: Hari has 10 years of experience in groundnut aflatoxin research and development. His major focus areas of research are "Aflatoxin diagnostics", "Understanding the link between soil health parameters, *Aspergillus flavus* population dynamics and aflatoxin contamination in groundnut" and "Devising and promoting integrated aflatoxin management strategies at pre- and post-harvest levels". He also conducts capacity building programs for farmers and NARS staff on creating awareness on aflatoxin contamination problem and how to better manage it. He has authored and co-authored over 25 publications.

Employment

2013-present	Senior Scientist-Groundnut Pathology, ICRISAT, India
2009-2013	Scientist-Groundnut Pathology, ICRISAT, India
2006-2009	Graduate Research Assistant, Auburn University, USA
2004-2005	Quality Assurance Executive, Monsanto India Limited, India

Education

2009	PhD in Plant Pathology, Auburn University, USA
2003	MS in Genetics & Plant Breeding, ANGR Agricultural University, India

Selected recent peer-reviewed publications

- Waliyar, F., Vijay Krishna Kumar, K., Diallo, M., Traore, A., Mangala, U.N., Upadhyaya, H.D., and **Sudini, H**. 2016. Resistance to Pre-harvest Aflatoxin Contamination in ICRISAT's Groundnut Mini core Collection. European Journal of Plant Pathology.
- **Sudini, H**., Ranga Rao, G.V., Gowda, C.L.L., Chandrika, R., Margam, V., Rathore, A., and Murdock, L.L. 2015. Purdue Improved Crop Storage (PICS) bags for safe storage of groundnuts. Journal of Stored Products Research. 64
- **Sudini, H**., Srilakshmi, P., Vijay Krishna Kumar, K., Njoroge, S.M.C., Osiru, M., Anitha, S., and Waliyar, F. 2015. Detection of aflatoxigenic *Aspergillus* strains by cultural and molecular methods: A critical review. African Journal of Microbiology Research. Vol. 9 (8): 484-491. DOI: 10.5897/AJMR2014.7309
- Waliyar, F., Osiru, M., Ntare, B.R., Vijay Krishna Kumar, K., **Sudini, H**., Traore, A., and Diarra, B. 2015. Post-harvest management of aflatoxin contamination in groundnut. World Mycotoxin Journal. Vol. 8 (2): 245-252.
- Waliyar, F., Umeh, V.C., Traore, A., Osiru, M., Ntare, B.R., Diarra, B., Kodio, O., Vijay Krishna Kumar, K., and **Sudini, H**. 2015. Prevalence and distribution of aflatoxin contamination in groundnut (*Arachis hypogaea* L.) in Mali, West
  Africa. Crop Protection. Vol. 70, pp. 1-7.
- Anitha, S., Raghunadharao, D., Waliyar, F., **Sudini, H**., Parveen, M., Ratna Rao, and Lava Kumar, P. 2014. The association between exposure to aflatoxin, mutation in TP53, infection with hepatitis B virus, and occurrence of liver disease in a selected population in Hyderabad, India. Mutation Research/Genetic Toxicology and Environmental Mutagenesis. 766, pp. 23-28.

Other evidence of leadership, large-program management and delivery: Mentoring graduate students (2 MS and 1 PhD completed; 2 MS and 3 PhD on-roll); **Instrumental in setting up** of CAAS-ICRISAT Joint Lab for Groundnut Aflatoxin Management

Role in A4NH: Principal Investigator for activities related to pre- and post-harvest management of aflatoxin contamination and studies on the relationships of soil health parameters and occurrence of aflatoxin contamination in India during Phase I. Phase II time commitment: 60% FTE

Fred UNGER

Current position and affiliation: Senior scientist, ILRI SouthEast Asia, Vietnam

Profile: Dr. Unger is a veterinary epidemiologist with over two decades of work experience on the control of emerging infectious diseases including zoonoses (e.g. HPAI, cysticercoses and brucellosis), food safety and public health targeting low income/middle countries of South East Asia and West/East Africa but also Germany. More recent work in South East Asia includes epidemiological surveys, risk assessments along pig value chains and capacity building on OneHealth/EcoHealth.

Employment

2014-present	Consultant for CIRAD, food safety expert to support the Long term case study on parasitic food borne diseases in Laos, Laos
2006	Outbreak investigations (FLI): To support veterinary authorities of Germany in the control of HPAI, Classical Swine Fever (CSF) and Blue Tongue (BT)
2005-2007	Senior scientist, Control of animal diseases in Germany and new member states, Federal Institute of Animal Health (FLI), Germany
2000-2005	Senior scientist, control of Zoonoses and Foodborne Disease in Guinea, Guinea Bissau, Senegal and The Gambia; International Trypanotolerance Centre (ITC), Banjul, The Gambia.

Education

2000	PhD, Epidemiology, Freie Universität Berlin, Germany
1989	Veterinary degree, Humboldt Universität, Berlin, Germany

Selected recent peer-reviewed publications

- Widyastuti, M.D.W., Bardosh, K.L., Sunandar, Basri, C., Basuno, E., Jatikusumah, A., Arief, R.A., Putra, A.A.G., Rukmantara, A., Estoepangestie, A.T.S., Willyanto, I., Natakesuma, I.K.G., Sumantra, I.P., Grace, D., **Unger, F**. and Gilbert. J. 2015. On dogs, people, and a rabies epidemic: results from a sociocultural study in Bali, Indonesia. *Infectious Diseases of Poverty* 4: 30.
- Bett, B., McLaws, M., Jost, C., Schoonman, L., **Unger, F**., Poole, J., ... & Dunkle, S. E. (2015). The effectiveness of preventative mass vaccination regimes against the incidence of highly pathogenic avian influenza on Java Island, Indonesia. *Transboundary and emerging diseases*, *62*(2), 163-173.
- Chotinun S, Rojanasthien S, **Unger F**, Suwan M, Tadee P and Patchanee P. 2014. An integrative approach to enhancing small-scale poultry slaughterhouses by addressing regulations and food safety in northern -Thailand. Infectious Diseases of Poverty 2014, 3:46.
- Lapar, M.L., Nuryartono, N., Toan, N.N., Rafani, I., Bett, B., McLaws, M., **Unger, F**., Schoonman, L., Jost, C. and Mariner, J. 2012. Are smallholders willing to pay for animal disease control? Empirical evidence from a study of mass vaccination for avian influenza in Indonesia. Asian Journal of Agriculture and Development 9(3): 74.
- Grace, D., Gilbert, J., Lapar, M.L., **Unger, F**., Fèvre, S., Hung Nguyen-Viet and Schelling, E. 2011. Zoonotic emerging infectious disease in selected countries in Southeast Asia: Insights from ecohealth. EcoHealth 8(1): 55-62.

Other evidence of leadership, large-program management and delivery

Project coordinator (regional and national) and **PI** for animal health and food safety related projects, ILRI, FLI, ITC; **Head** of food safety and public health unit, ITC

Role in A4NH: In Phase I: PI and project coordinator for bilateral funded projects; support of animal health assessments and One Health/EcoHealth. In Phase II: Support to FP3.

Barbara WIELAND

Current position and affiliation: Team Leader Herd Health, ILRI, Ethiopia

Profile: Broad experience in veterinary epidemiology research and in teaching at undergraduate and postgraduate level. Has worked on a variety of infectious diseases in different settings in Europe, African and Asia: African swine fever, Campylobacter, Brucellosis, Foot-and-Mouth disease, avian influenza, post-weaning multi-systemic wasting syndrome in pigs, porcine respiratory and reproductive syndrome, and other pig production diseases, and contagious pleuropneumonia in cattle. Other research interests include motivation of farmers to control disease in their herds, improve productivity in herds, and application of risk assessment and disease modelling techniques to identify the best possible control options for farmers and to inform policy.

Employment

2015-present	Team Leader Herd Health, ILRI, Ethiopia
2012-2014	Programme Manager Animal Health, Swiss Agency for Development and Cooperation (SDC), Mongolia
2007-2012	Lecturer in Veterinary Epidemiology, Royal Veterinary College, UK
2006- 2007	Post-Doc in Molecular Epidemiology, Royal Veterinary College, UK
2001-2005	Swiss Federal Veterinary Office, Monitoring Department, Switzerland

Education

2016	MSc in Managing Rural Development, School of Oriental and African Studies, UK
2005	PhD in Veterinary Epidemiology, Vetsuisse Faculty, Swiss Federal Veterinary Office, Switzerland

Selected recent peer-reviewed publications

- Von Dobschuetz, S., DE Nardi M., Harris K.A., Munoz O., Breed, A.C, **Wieland, B.,** Dauphin, G., Lubroth, J. and Stärk. K.D. the FLURISK Consortium. (2015) Influenza surveillance in animals: what is our capacity to detect emerging influenza viruses with zoonotic potential? Epidemiology and Infection
- Vergne ,T., Guinat, C., Petkova, P., Gogin, A., Kolbasov, D., Blome, S., Molia, S., Pinto Ferreira , J., **Wieland B**., Nathues, H. and Pfeiffer D.U. (2014) Attitudes and beliefs of pig farmers and wild boar hunters towards reporting of African swine fever in Bulgaria, Germany and the western part of the Russian Federation. Transboundary and Emerging Disease
- Alarcon, P., Dewberry, C. and **Wieland B**. (2013) Pig farmers' perceptions, attitudes, influences and management of information in the decision-making process for disease control. Preventive Veterinary Medicine
- Onono, J., **Wieland, B.** and Rushton, J. (2013). Constraints to cattle production in a semi-arid pastoral system in Kenya. Tropical Animal Health and Production, Aug;45(6):1415-22
- Sabina B., Barbara W., Katharina DC Stärk, Gertraud R. (2010) Risk attribution of *Campylobacter* infection by age group using exposure modelling. Epidemiology and Infection, Jul 2, page 1-14

Other evidence of leadership, large-program management and delivery

Leader of the pig epidemiology research group at the Royal Veterinary College; **Manager** of the animal health programme for SDC in Mongolia; **Leader** Herd Health team of the Animal Science for Productivity Program in ILRI

Role in A4NH

Center Focal Point for Ethiopia, Principal investigator for activities related to animal welfare and delivery of animal health services by optimizing linkages with the health sector

Flagship 4: Supporting Policies, Programs and Enabling Action through Research (SPEAR)

Stuart GILLESPIE

Current Position and Affiliation: Senior Research Fellow, IFPRI, UK

Profile: Stuart Gillespie has over 31 years of experience in nutrition and development. His work has addressed policy and practice for tackling malnutrition including the intersection of agriculture, nutrition and health, the double burden of malnutrition and the development of a network on HIV and nutrition security in Africa. Prior to joining IFPRI in 1999, he worked with several international agencies on nutrition policy analysis and program support. He has over 130 publications.

Employment

1999-present	Senior Research Fellow, Poverty, Health and Nutrition Division, IFPRI, USA (8/99-7/05), Switzerland (8/05-7/12), UK (8/12 – present)
1996-1999	Independent Consultant. Projects: 1999 - UNICEF New York/World Bank joint evaluation study of progress in nutrition policy and programming; 1998/99 - Asian Development Bank (ADB): Preparation of synthesis of findings from the multi-country nutrition investment exercise for publication ahead of 1999 donor roundtable; 1998 - UNICEF New York: Preparation of nutrition learning package for field staff
1994-1996	Senior Programme Officer (Nutrition), UNICEF India,
1989-1994	Programme Officer, UN Standing Committee on Nutrition, Switzerland

Education

1988	PhD in Human Nutrition, London School of Hygiene and Tropical Medicine, UK
1983	MSc in Human Nutrition, London School of Hygiene and Tropical Medicine, UK

Selected Recent Peer-Reviewed Publications

- **Gillespie, S,** Menon, P., Kennedy, A (2015) Scaling up impact on nutrition: what will it take? Advances in Nutrition, vol. 6: 440-451, July 2015, doi: 10.3945/an.115.008276,
- **Gillespie, S**, van den Bold, M., Hodge, J. and Herforth, A (2015) Leveraging agriculture for nutrition in South Asia and East Africa. Food Security
- **Gillespie, S**. (2014). Nutrition policy and practice: Unpacking the politics. In 2013 Global food policy report. Eds. Marble, Andrew and Fritschel, Heidi. Ch 7 Pp. 75-86. Washington, D.C.: (IFPRI)
- **Gillespie, S.,** Haddad, L., Mannar, V., Menon, P., and Nisbett, N., 2013. The politics of reducing malnutrition: Building commitment and accelerating progress. The Lancet 382(9891): 552-569.
- **Gillespie, S.** and Margetts, B. 2013. Strengthening capacities for enhancing the nutrition sensitivity of agricultural policy and practice. SCN News 40, 55-60.
- **Gillespie, S**. and Kadiyala, S. (2012) Exploring the Agriculture-Nutrition Disconnect in India. In: Fan, S. and Pandya-Lorch, R (eds) Reshaping Agriculture for Nutrition and Health, Ch 20, IFPRI, Washington, D.C.

Other Evidence of Leadership, large-program management and delivery

CEO of the Transform Nutrition Research Consortium; **Research Director** of the Leveraging Agriculture for Nutrition in South Asia (LANSA) consortium; **Creator** and **Director** of Regional Network on AIDS, Livelihoods and Food Security (RENEWAL), the Agriculture and Health Research Platform (AHRP) of the CGIAR, the TANDI project and Stories of Change in Nutrition project.

Role in A4NH: In Phase I: Leader of Cluster on Enabling Environment within flagship on Integrated Programs and Policies. In Phase II: Leader of FP4: SPEAR, PI for several activities under that flagship, co-leader of CoA2 (SCORE), and PI for activities related to Stories of Change.

Namukolo COVIC

Current position and affiliation: Research Coordinator, IFPRI, Ethiopia

Profile: Namukolo Covic combines academic training in both agriculture and nutrition. Before joining IFPRI she was a Senior Lecturer at North-West University (South Africa). She has been a key member of the African Nutrition Leadership Programme (ANLP) since 2008 involved in providing nutrition leadership capacity development training to participants from across the African continent. She has also led nutrition capacity strengthening activities in Zambia and Rwanda. She has been extensively involved with the mainstreaming of nutrition into CAADP and has been instrumental in bringing about the incorporation of nutrition into the CAADP Results Framework.

Employment

2015-present	Research Coordinator in the Poverty, Health and Nutrition Division, IFPRI, USA
2007-2015	Director, Senior Lecturer, Nutrition, Potchefstroom Campus of the North-West University (NWU), South AFrica

Education

2008	PhD, Human Nutrition, North-West University, South Africa
1988	MSc, Nutrition, University of Saskatchewan, Canada

Selected recent peer-reviewed publications

- Claasen, N., **Covic, N. M.,** Idsardi, E. F., Sandham, L. A., Gildenhuys, A. & Lemke Stephanie (2015) Applying a Transdisciplinary Mixed Methods Research Design to Explore Sustainable Diets in Rural South Africa, International Journal of Qualitative Methodology, 14 (2): 69-91.
- Dube, W. G., Makoni, T., Nyadzayo, T .K. & **Covic, N. M.** (2014) A strategy for scaling-up Vitamin A supplementation for young children in a remote rural setting in Zimbabwe. South African journal of child health 05/2014; 8(2):64-67
- Menon, **Covic, N.M.,** Harrigan, P.B., Horton, S.E., Kazi, N.M., Lamstein, S., Neufeld, L.P., Oakley, E. & Pelletier, D. (2014) Strengthening implementation and utilization of nutrition interventions through research: a framework and research agenda. Accepted for publication in the Annals of the New York Academy of Sciences, 1332:39-59.
- Taljaard C., **Covic, N. M.,** Van Graan, A., S Kruger, H. S. & C Jerling, J. C. (2013) Studies of South African primary school aged children since 2005 suggest lower anaemia prevalence in some regions. South African Journal of Clinical Nutrition 26 (4): 168-175
- Taljaard C., **Covic, N.,** Van Graan, A., Kruger, H., Smuts, C., Baumgartner, J., Kvalsvig, J., Wright, H., Van Stuijvenberg, M & Jerling, J. (2013) Effects of a multi-micronutrient-fortified beverage, with and without sugar, on growth and cognition in South African schoolchildren: a randomised, double-blind, controlled intervention. British Journal of Nutrition, 110: 2271-2284

Other Evidence of Leadership, large-program management and delivery
Led the Food and Nutrition Security Research Programme at North-West University, South Africa within the Centre of Excellence for Nutrition

Role in A4NH: In Phase II: Co-Leader of CoA3 (3C) in FP4, and PI for activities related to strengthening capacity.

JAMES GARRETT

Current position and affiliation: Senior Research Fellow, IFPRI / Lead Technical Specialist, IFAD, Partnership Coordinator, A4NH-IFAD Partnership, Italy

Profile: James Garrett has over 24 years of program and policy experience in agriculture, food and nutrition in Africa, Asia and Latin America. Using quantitative and qualitative methods, including house-hold surveys and case studies, he has led research programs on food and nutrition policy processes and on policy and programming for urban food and nutrition security. He has investigated and produced guidance on how to promote organizational change, how to work multisectorally, and how to evaluate and enhance the impact of research on policy. As part of staff exchanges and partnerships with IFPRI, he has served as global technical adviser for nutrition at the World Bank and IFAD. He has lived and worked in Latin America and Africa, where he managed a country program office in Mozambique.

Employment

2013-present	Senior Research Fellow, IFPRI, Italy
2011-2012	Special Adviser for Nutrition, FAO, Office of the Deputy Director-General (Knowledge), Italy
1994-2011	Senior Research Fellow, IFPRI, USA
1991-1992	Fulbright-Hays Doctoral Fellow, Institute of Socio-Economic Research, Catholic University of Bolivia (IISEC), Bolivia
1985-1987	Public Sector Adviser and Lecturer, Instituto Superior de Agricultura, Center for the Administration of Rural Development (CADER), Dominican Republic

Education

1995	PhD in Agricultural Economics, Cornell University, USA
1985	MPP, Harvard University, Kennedy School of Government, USA

Selected recent peer-reviewed publications

- Cohen, M. J. and **J. L. Garrett**. 2016. Food price volatility and urban food security in *The Routledge handbook of urbanization and global environmental change*. London: Routledge.
- FAO [T. Raney, A. Croppenstedt, B. Carisma, S. Lowder, **J. Garrett** et al.]. 2013. The State of Food and Agriculture 2013. Food systems for better nutrition. Rome: FAO.
- **Garrett, J.** (Special Issue Guest Editor). 2013. SCN News. Changing Food Systems for Better Nutrition. Volume 40.
- **Garrett, J.** and M. Natalicchio, eds. 2011. Working Multisectorally in Nutrition: Principles, Practices and Case Studies. Washington, DC: International Food Policy Research Institute.

Other evidence of leadership, large-program management and delivery:
Led development of nutrition strategies and action plans for FAO and IFAD; **Lead** Technical Specialist for nutrition-agriculture at IFAD, which will have an estimated $1-billion portfolio of nutrition-sensitive projects in 2016-2018 (Mainstreaming nutrition-sensitive agriculture at IFAD. Action Plan 2016-2018 and Strategy and vision for FAO's work in nutrition; as researcher at IFPRI-Washington, raised over $800,000 in project funding and managed total funding of over $1 million.

Role in A4NH
In Phase II: Collaborator/Researcher (Bioversity International) in CoA2: SCORE.

Lawrence HADDAD

Current position and affiliation: Senior Research Fellow, IFPRI, UK

Profile: Lawrence Haddad is an economist with research interests at the intersection of poverty, food insecurity and malnutrition. He is the co-chair of the Global Nutrition Report Independent Expert Group.

Employment

2014-present	Senior Research Fellow, Poverty, Health and Nutrition Division, IFPRI, USA
2004-2014	Director, Institute of Development Studies and Professor of Development Studies.
1994-2004	Director, Food Consumption and Nutrition Division, IFPRI, USA 1990-1994: Research Fellow, same division.
1991-1994	Adjunct Professor, Graduate Program in Rural Households and Development Strategies, School for the Advances International Studies (SAIS), Johns Hopkins University, USA
1990-1994	Research Fellow, Food Consumption and Nutrition Division, IFPRI, USA

Education

1988	PhD in Food Research, Stanford University, USA
1983	MS in Resource Economics (Minor in Nutrition), University of Massachusetts, Department of Agricultural and Resource Economics, USA

Selected recent peer-reviewed publications

- IFPRI. 2015. Global Nutrition Report 2015: Actions and accountability to advance nutrition and sustainable development. Washington, DC
- Smith, L. C., & **Haddad, L**. (2015). Reducing Child Undernutrition: Past Drivers and Priorities for the Post-MDG Era. World Development, 68, 180-204.
- **Haddad, L. J.,** Achadi, E., Ag Bendech, M., Ahuja, A., Bhatia, K., Bhutta, Z., ... & Reddy, K. S. (2014). Global Nutrition Report 2014: Actions and accountability to accelerate the world's progress on nutrition. Intl Food Policy Res Inst.
- te Lintelo, D. J., **Haddad, L.,** Lakshman, R., & Gatellier, K. (2014). 3 The Hunger and Nutrition Commitment Index (HANCI 2013): IDS. Sussex.
- **Haddad, L,** N. Nisbett, I. Barnett, and E. Valli. 2014. Maharashtra's Child Stunting Declines: What is Driving Them? Findings of a Multidisciplinary Analysis. IDS Research Report.
- Gillespie, S.; **Haddad, L.;** Mannar, V.; Menon, P.; and Nisbett, N. 2013. The politics of reducing malnutrition: Building commitment and accelerating progress. The Lancet 382(9891): 552-569.
- **Haddad, L.** 2013. From Nutrition Plus to Nutrition Driven: How to Realise the Elusive Potential of Agriculture for Nutrition? Food and Nutrition Bulletin. Vol 34. (1): 39-44

Other evidence of leadership, large-program management and delivery

Member of the External Advisory Group for Measurement of Food and Nutrition Security Technical Working Group for FAO-WFP-IFAD Food Security Information Network (FSIN); **Chair** of Lead Expert Group, Global Panel on Agriculture and Food Systems for Nutrition, for the Food Systems and Nutrition Report; previously the **UK's representative** to the High Level Panel of Experts to the UN's Committee for World Food Security (2010-date**); Lead Expert** on the UK Government Foresight Report on the Future of Food and Farming (2009-2011); **adviser** on nutrition to DFID, the EC, UNSCN, Irish Aid, World Bank, Children's Investment Fund Foundation and Bill and Melinda Gates Foundation

Role in A4NH: In Phase II: Senior researcher and advisor for FP4.

Jef LEROY

Current position and affiliation: Senior Research Fellow, IFPRI, USA

Profile: Jef Leroy has substantial experience with the design and implementation of comprehensive evaluations of integrated nutrition-sensitive programs that seek to generate evidence on what works to improve nutrition, how it works and at what cost. He has also conducted research on child mortality and the correct measurement of linear growth retardation and catch-up growth in children.

Employment

2014-present	Senior Research Fellow, IFPRI, USA
2009-present	Investigador Invitado en Ciencias Médicas "D", Instituto Nacional de Salud Pública (INSP), Mexico
2009-2013	Research Fellow, IFPRI, USA
2008-present	Visiting Fellow, Division of Nutritional Sciences, Cornell University, USA
2005-2009	Research Associate, Instituto Nacional de Salud Pública (INSP), Mexico

Education

2005	PhD in Nutrition, Cornell University, USA
1998	MS in Agricultural and Applied Biological Engineering (Supra cum Laude), Ghent University, Belgium

Selected recent peer-reviewed publications

- **Leroy JL**, Ruel M, Frongillo EA, Harris J, Ballard TJ. 2015. Measuring the Food Access Dimension of Food Security: A Critical Review and Mapping of Indicators. Food Nutr Bull. 36(2): 167-195.
- **Leroy JL**, Ruel M, Habicht J-P, Frongillo EA. 2015. Using Height-For-Age Difference instead of Height-For-Age Z-Scores for the Meaningful Measurement of Catch-up Growth in Children Less Than 5 years of Age. In: Sahn D, editor. The Fight Against Hunger and Malnutrition - The Role of Food, Agriculture, and Targeted Policies. Oxford University Press.
- **Leroy JL**, Habicht J-P, González de Cossío T, Ruel MT .2014. Maternal education mitigates the negative effects of higher income on the double burden of child stunting and maternal overweight in rural Mexico. Journal of Nutrition.144:765–70.
- **Leroy JL**, Gadsden P, González de Cossío T, Gertler P. 2013. "Cash and in-kind transfers lead to excess weight gain in a population of women with a high prevalence of overweight in rural Mexico". Journal of Nutrition. 143: 378-383.
- **Leroy JL**, M Ruel, E Verhofstadt. 2009. "The Impact of Conditional Cash Transfer Programmes on Nutrition: A review of evidence using a programme theory framework". Journal of Development Effectiveness. 1(2): 103-129.

Other Evidence of Leadership, large-program management and delivery

He currently studies the impact of two large-scale integrated food and nutrition programs in Burundi and Guatemala on maternal and child nutrition and health and is involved in research on the impact of aflatoxin on child linear growth in Kenya and Mexico. He worked on the impact evaluation of Mexico's urban and rural Oportunidades programs on child nutrition and health, and the Programa de Apoyo Alimentario (a cash and in-kind transfer program) on household food consumption and women's weight.

Role in A4NH: In Phase II: Co-Leader of CoA1 (NSAP) in FP4.

Nicholas NISBETT

Current position and affiliation: Research Fellow, Co-Lead Health and Nutrition Cluster, Institute of Development Studies, UK

Profile: Nicholas Nisbett explores the political economy of nutrition policy and programming in South Asia and Sub-Saharan Africa with a focus on issues of leadership capacity; national policy processes and community accountability; as well as leading wider evaluations of nutrition, livelihoods and community accountability interventions. Previously he advised UK government ministers on agricultural trade policy and policy reform, land and marine based natural resource management.

Employment

2011-present	Research Fellow, Institute of Development Studies, University of Sussex, UK
2009-2011	Project Leader, Foresight Project on Global Food and Farming Futures, UK Government Office for Science, UK
2008-2009	Team Leader, Defra, International Trade Policy; Policy Manager, CAP Reform, UK
2008-2011	Visiting Research Fellow, School of Global Studies, University of Sussex, UK
2007-2008	International Trade Policy Advisor, Defra, CAP Reform and EU Strategy, UK

EDUCATION

2005	Diploma in French, The Open University, UK
2004	DPhil Development Studies, University of Sussex, UK

Selected recent peer-reviewed publications

- **Nisbett, N.,** Wach, E., Haddad, L., El-Arifeen, S., 'What drives and constrains effective leadership in tackling child undernutrition? Findings from Bangladesh, Ethiopia, India and Kenya' Food Policy Volume 53, May 2015.
- Haddad, L. **Nisbett, N.,** Barnett, I. (2014) Maharashtra's Extraordinary Stunting Declines: What is Driving Them? Findings of a Multidisciplinary Analysis. Brighton: IDS with UNICEF
- **Nisbett**, N., Gillespie, S., Haddad, L., Harris, J. (2014). Why Worry about the Politics of Child Nutrition? World Development Vol. 64, pp. 420–433, 2014
- Gillespie, S.; Haddad, L.; Mannar, V.; Menon, P.; and **Nisbett, N**. 2013. The politics of reducing malnutrition: Building commitment and accelerating progress. The Lancet 382(9891): 552-569.
- DFID (2012) An update of 'The Neglected Crisis of Undernutrition: Evidence for Action' (Lead editor and lead co-author)
- Government Office of Science (2011) The Future of Food and Farming. Challenges and Choices for Global Sustainability. London: Government Office for Science. (Project leader, co-editor & contributor to final report and set of 13 synthesis reports)
- Godfray, H.C.J., Beddington, J.R., Crute, I.R., Haddad, L., Lawrence, D., Muir, J.F., **Nisbett, N**., Robinson, S., Toulmin, C. and Whiteley, R. (2010) 'The Future of the Global Food System', Philosophical Transactions of the Royal Society B 365.1554:2769-77, London: Royal Society Pub.

Other Evidence of Leadership, large-program management and delivery

Co-leads the Health and Nutrition Cluster at IDS and teaches on development and nutrition; Currently **leads** a research theme within the DFID supported Transform Nutrition Research Programme Consortium; Previously **led** a major international policy research programme: the Foresight Project on Global Food and Farming Futures.

Role in A4NH: In Phase II: Co-Leader of CoA2 (SCORE) in FP4.

Deanna OLNEY

Current position and affiliation: Senior Research Fellow, IFPRI, USA

Profile: Deanna Olney's work is in undertaking comprehensive evaluations to examine what impacts nutrition-sensitive programs from the health and agriculture sectors have on maternal health, nutrition and empowerment outcomes and on child health, nutrition and development outcomes. In addition, these evaluations have examined how these impacts are achieved, how program delivery and utilization can be improved and at what cost these impacts come. Finally, she has an expertise in early child development as her dissertation work examined the predictors of early child development outcomes in Tanzania and how child development in the first few years of life was affected by micronutrient supplements and malaria. She has worked in Guatemala, El Salvador, Cambodia, Burkina Faso, Tanzania and Burundi.

Employment

2009-present	Research Fellow, Poverty, Health and Nutrition Division, IFPRI, USA
2008-2009	Consultant, IFPRI, USA
2006-2008	Research Nutritionist, USDA-ARS-WHNRC, USA
2005-2006	Consultant UNICEF, UK
2003-2005	Collaborating Researcher, Division of Nutritional Sciences, Cornell University, USA

EDUCATION

2006	PhD, Nutritional Biology with a designated emphasis in International Nutrition and minors in Statistics and Epidemiology, University of California-Davis, USA
1999	BA in Political Science with an emphasis in International Relations and minors in Nutrition and Spanish, Cal Poly San Luis Obispo, USA

Selected recent peer-reviewed publications

- Olney DK, Leroy JL, Ruel M. Evaluation of Nutrition Sensitive Interventions. In: Taren D, de Pee S, Bloem MW, editors. Nutr Heal Dev Ctries. Springer; 2015 (under review).
- Olney DK, Pedehombga A, Ruel MT, Dillon A. 2015. A 2-Year Integrated Agriculture and Nutrition and Health Behavior Change Communication Program Targeted to Women in Burkina Faso Reduces Anemia, Wasting, and Diarrhea in Children 3-12.9 Months of Age at Baseline: A Cluster-Randomized Controlled Trial. J Nutr. June 1, 2015 vol. 145 no. 6 1317-1324
- Olney DK, Vicheka S, Kro M, Chakriya C, Kroeun H, Sok Hoing L, Talukder A, Quinn V, Iannotti L, Becker E, Roopnaraine T. 2013. Using program impact pathways to understand and improve the program delivery, utilization and potential for impact of Helen Keller International's Homestead Food Production Program in Cambodia. Food and Nutrition Bulletin. 34(2): 169-184.
- Olney DK, Kariger PK, Stoltzfus RJ Khlafan SS, Ali NS, Tielsch JM, Sazawal S, Black R, Allen LH, Pollitt E. 2013. Developmental effects of micronutrient supplementation and malaria in Zanzibari children. Early Human Development, 89(9): 667-674.
- Olney D.K., Rawat R., Ruel M.T. 2012. Selecting programs and delivery systems for multiple micronutrient interventions. Journal of Nutrition, 142:178S-85S.

Other Evidence of Leadership, large-program management and delivery

At IFPRI, she has **co-led** a number of comprehensive evaluations of nutrition-sensitive programs from the health and agriculture sectors. She is currently **co-leading** an early child development interest group based in the PHN division.

Role in A4NH: In Phase II: Co-Leader of CoA1 (NSAP) in FP4.

Marie RUEL

Current position and affiliation: Division Director, Poverty, Health and Nutrition Division, IFPRI, USA

Profile: Marie has worked for more than 25 years on policies and programs to alleviate poverty, food insecurity and undernutrition in developing countries. She has published extensively in nutrition and epidemiology journals on topics such as maternal and child nutrition, food based and agricultural strategies to improve diet quality and micronutrient nutrition, urban livelihoods, food security and nutrition, and the development and validation of simple indicators to measure child feeding, care giving practices and food security. She is the author or co-author of more than 150 refereed papers, including a 2013 paper in the Lancet summarizing what is known about the links between gender, agriculture and nutrition. Her current research focuses on the evaluation and strengthening of integrated, multisectoral development programs in agriculture, social protection and health, and at building the evidence on their role in reducing maternal and child undernutrition globally.

Employment

2004-present	Director, Poverty, Health, and Nutrition Division, IFPRI, USA
2001-2004	Senior Research Fellow, IFPR, USA
1996-2001	Research Fellow, IFPRI, USA
1993-1996	Director, Health and Nutrition Division, Institute of Nutrition of Central America and Panama/Pan American Health Organization (INCAP/PAHO)
1990-1993	Epidemiologist/nutritionist, INCAP/PAHO

Education

1990	PhD in International Nutrition, Cornell University, USA
1982	MS in Health Sciences, Nutrition, Laval University, Canada

Selected recent peer-reviewed publications

- Ruel MT, Alderman H. 2013. Nutrition-sensitive interventions and programmes: how can they help to accelerate progress in improving maternal and child nutrition? The Lancet 6736(13): 1-16
- Ruel MT, Harris J, Cunningham K. 2013. Diet quality in developing countries. Volume 2. Chapter 18. In: Diet Quality: An Evidence-Based Approach. Preedy, Victor R.; Hunter, Lan-Anh; Patel, Vinood B. (eds.). Springer. New York, Heidelberg, Dordrecht, London, pp 239-261.
- Ruel MT, Deitchler M, Arimond M. 2010. Developing simple measures of women's diet quality in developing countries: overview. Journal of Nutrition 140: 2048S-2050S.
- Ruel MT, Menon P, Habicht JP, Loechl C, Bergeron G, Pelto G, Arimond M, Maluccio J, Michaud L, Hankebo B. 2008. Age-based preventive targeting of food assistance and behaviour change communication for reduction of childhood undernutrition in Haiti: A cluster randomized trial. The Lancet 371: 588–595.
- Ruel MT, Quisumbing A, Hallman K, de la Brière B. 2006. The Guatemala Community Day Care Program: An example of effective urban programming. Research Report 144. IFPRI.

Other Evidence of Leadership, large-program management and delivery

Division Director of IFPRI's Poverty, Health and Nutrition Division, extensive experience managing and supervising research staff working on large multi-year projects. Served on various international expert committees, such as the National Academy of Sciences, the International Zinc in Nutrition Consultative Group, and the Micronutrient Forum.

Role in A4NH: In Phase I: Leader of flagship program on Integrated Programs and Policies. In Phase II: Co-Leader of CoA 1 (NSAP) in FP4.

John THOMPSON

Current position and affiliation: Senior Research Fellow, Institute of Development Studies, UK

Profile: John Thompson is a resource geographer by training, with a 30-year record of academic and policy-relevant research on the social, technological and environmental dynamics of agri-food systems in Sub-Saharan Africa and South and Southeast Asia.

Employment

2006-present	Research Fellow, Institute of Development Studies at the University of Sussex, UK
2004-2006	Director of Research and Development, Just Food, USA
2003-2004	Director, Programmes and Partnerships Development Unit, International Institute for Environment and Development (IIED), UK
1997-2003	Director, Sustainable Agriculture and Rural Livelihoods Programme, IIED, UK
1995-1997	Associate Director, Sustainable Agriculture and Rural Livelihoods Programme, IIED, UK

Education

1997	PhD, Graduate School of Geography, Clark University, USA
1988	M.A., Graduate School of Geography, Clark University, USA

Selected recent peer-reviewed publications

- **Thompson, J**. & E. Loureiro (forthcoming) The Political Economy of Agricultural Extension Reform in Africa. Food Policy.
- **Thompson, J.,** et al. (forthcoming) Seed Sector Development to Support CAADP Implementation within the Framework of the African Seed and Biotechnology Programme. Integrated Seed Sector Development Scoping Paper 4. Centre for Development Innovation: Wageningen.
- Sumberg, J. & **J. Thompson** (2013) Revolution Reconsidered: Evolving Perspectives on Livestock Production and Consumption. STEPS Working Paper 52. Brighton, STEPS Centre.
- Sumberg, J. & **J. Thompson** (eds.) (2012) Contested Agronomy: The Politics of Agricultural Research in a Changing World. Pathways to Sustainability Series. London: Earthscan/Routledge.
- Scoones, I. & **J. Thompson** (eds) (2011) Politics of Seed in Africa's Green Revolution. Special issue on The Politics of Seed in Africa's Green Revolution. IDS Bulletin 42(4).
- Scoones, I. & **J. Thompson** (eds.) (2009) Farmer First Revisited: Innovation in Agricultural Research and Development. London: Practical Action Publications
- **Thompson, J**. & I. Scoones (2009) Addressing the Dynamics of Agri-Food Systems: An Emerging Agenda for Social Science Research. Environmental Science & Policy 12: 386-397

Other Evidence of Leadership, large-program management and delivery

Coordinator of the Future Agricultural Consortium (FAC), a partnership of African and European research institutes working on the political economy of agricultural policy research in Sub-Saharan Africa; **Co-lead** of a multi-country, comparative research project on 'Integrated Seed Sector Development in Africa' (ISSD), with colleagues in 10 African countries and The Netherlands, with support from the Gates Foundation and the Dutch Government (2014-16); **Convenor** of the Food and Agriculture Domain of the ESRC-funded STEPS Centre, a major interdisciplinary global research and engagement hub bringing together development and science and technology studies. **Co-PI** on a new, four-year, NERC-ESRC-DFID funded project on 'Groundwater Futures in Sub-Saharan Africa' (2015-18).

Role in A4NH: In Phase II: Senior researcher and advisor for FP4

Roos VERSTRAETEN

Current position and affiliation: Post-Doctoral Researcher, Institute of Tropical Medicine, Belgium

Profile: Roos Verstraeten's research focuses on the development and evaluation of interventions that contribute to the evidence-base of measures and strategies to prevent obesity in low- and middle-income countries.

Employment

2013-present	Research Associate at the Nutrition and Child Health Unit, the Institute of Tropical Medicine (ITM), Belgium. Programme coordinator for EVIDENT
2012-present	Coordinator for the development of the Global Nutrition Leadership Platform Conference director for the European Nutrition Leadership Platform
2007	Coordinator for the "European Nutrition and Health Report 2009" Belgium/Luxemburg
2007	Junior expert in nutrition for the International Fund for Agricultural Development/Belgian Survival Fund (IFAD/BSF) – Burundi. (January – April)
2006	Junior expert in nutrition for the Institute of Tropical Medicine (ITM) – Vietnam

Education

2014	PhD in Applied Biological Sciences, Ghent University, Belgium
2005	Master in Food Science and Nutrition, Ghent University, Belgium

Selected recent peer-reviewed publications

- Andrade S, Lachat C, Ochoa-Aviles A, **Verstraeten R**, et al. (2014) A school-based intervention improves physical fitness in Ecuadorian adolescents: a cluster-randomized controlled trial. Int J Behav Nutr Phys Act 11:153
- Ochoa-Aviles A, **Verstraeten R**, Lachat C et al. (2014) Dietary intake practices associated with cardiovascular risk in urban and rural Ecuadorian adolescents: a cross-sectional study. BMC Public Health 2014; 14:939.
- **Verstraeten R**, Van Royen K, Ochoa-Aviles A et al.(2014) A Conceptual Framework for Healthy Eating Behavior in Ecuadorian Adolescents: A Qualitative Study. Plos One 2014;9.
- **Verstraeten R**, et al. on behalf of the European Nutrition Leadership Platform (ENLP) Conference group.(2014) Creative thinking as an innovative approach to tackle nutrition in times of economic crises: 'Let's cook something up' (an interactive session at the 20th International Congress of Nutrition). Nutrition Bull.2014; 39:132-137.
- **Verstraeten R**, Roberfroid D, Lachat C et al. (2012) Effectiveness of preventive school-based obesity interventions in low- and middle-income countries: a systematic review. AmJClinNutr2012;96:415-38.
- Lachat C, Nago E, **Verstraeten R**, Roberfroid D, Van CJ, Kolsteren P. (2012) Eating out of home and its association with dietary intake: a systematic review of the evidence. Obes Rev 2012;13:329-46

Other Evidence of Leadership, large-program management and delivery

Coordinator of EVIDENT, an international collaboration to enhance evidence-informed decision-making and policy-driven research in nutrition and health, through which she **collaborates** with the SUN initiative. **Active member** of the European Nutrition Leadership Platform (ENLP). **Project leader** of the global nutrition leadership platform and **leader** of implementation and evaluation of projects and interventions in various low- and middle-income contexts (Ecuador, Vietnam, Burundi).

Role in A4NH: In Phase II: Co-Leader of CoA3 (3C) in FP4 and coordinator for EVIDENT network.

Flagship 5: Improving Human Health

Eric FÈVRE

Current position and affiliation: Professor of Veterinary Infectious Diseases, Institute of Infection and Global Health, University of Liverpool and ILRI, Kenya

Profile: Dr. Fèvre has 18 years of experience working in the field of zoonotic disease epidemiology in sub-Saharan Africa and elsewhere. Employed at the University of Liverpool but based full time at ILRI where he is implementing large donor funded projects on a range of aspects of zoonotic disease epidemiology, surveillance, disease control and prevention. He works closely with other academics, with government partners and other organizations.

Employment:

2013-present	Professor of Veterinary Infectious Diseases, University of Liverpool and ILRI, Kenya
2012-2013	Senior Scientist, University of Edinburgh, UK
2009-2013	Wellcome Trust Research Fellow, University of Edinburgh, UK
2007-2009	DEFRA Veterinary Epidemiology Fellow, Centre for Infectious Diseases, University of Edinburgh, UK

Education:

2003	PhD Epidemiology, University of Edinburgh, UK
1997	MSc in Applied Parasitology and Medical Entomology, Liverpool School of Tropical Medicine, UK

Selected recent peer-reviewed publications

- Obonyo, M.O., Akoko, J.M., Orinde, A.B., Osoro, E., Boru, W.G., Njeru, I., **Fèvre, E.M.** (2016). Suspected rabies in humans and animals, Laikipia County, Kenya [letter]. Emerging Infectious Diseases, 22(3)
- Thomas, L.F., Harrison, L.J.S., Toye, P., de Glanville, W.A., Cook, E.A.J., Wamae, C.N., **Fèvre, E.M.** (2016). Prevalence of Taenia solium cysticercosis in pigs entering the food chain in western Kenya. Tropical Animal Health and Production, 48, pp. 233-238
- Wardrop, N.A., Thomas, L.F., Atkinson, P.M., de Glanville, W.A., Cook, E.A.J., Wamae, C.N., Gabriël, S., Dorny, P., Harrison, L.J.S., **Fèvre, E.M.** (2015). The Influence of socio-economic, behavioural and environmental factors on Taenia spp. transmission in western Kenya: evidence from a cross-sectional survey in humans and pigs. PLoS Neglected Tropical Diseases 9(12): e0004223
- Torgerson, P.R., Devleesschauwer B., Praet, N., Speybroeck, N., Willingham, A.L., Kasuga, F., Rokni, M.B., Zhou, X-N., **Fèvre, E.M.***, et al.* (2015). WHO estimates of the global and regional disease burden of 11 foodborne parasitic diseases, 2010: a data synthesis. PLoS Medicine 12(12): e1001920.
- Deem, S.L., **Fèvre, E.M.,** Kinnaird, M., Springer Browne, A., Muloi, D., Godeke, G-J., Koopmans, M., Reusken, C.B. (2015). Serological evidence of MERS-CoV antibodies in dromedary camels (Camelus dromedarius) in Laikipia, County, Kenya. PLoS ONE, 10(10): e0140125.

Other evidence of leadership, large-program management and delivery:
Leader, Emerging and Zoonotic Diseases theme at Institute of Infection and Global Health, University of Liverpool; **Chair**, World Health Organization Working Group on zoonotic Neglected Tropical Diseases; **Member,** WHO Food Borne Disease Epidemiology Reference Group and Government of Kenya Zoonotic Disease Technical Group; **Leads** research grants worth approx. US$9.5M.

Role in A4NH: In Phase I: PI on projects mapped to A4NH and Theme Lead for Neglected Zoonoses in Agriculture-Associated Diseases; In Phase II: Flagship leader of FP5.

Bernard BETT

Current position and affiliation: Senior Scientist, ILRI, Kenya

Profile: Dr. Bett is a veterinary epidemiologist with expertise on transmission patterns of infectious diseases in multi-host systems. He is leading multidisciplinary research work investigating the impacts of irrigation on the transmission patterns of emerging and endemic zoonotic diseases, including malaria that utilizes an Eco-Health framework. He has published over 20 peer reviewed papers demonstrating the application of qualitative and quantitative techniques such as mathematical and statistical modeling in field-based research studies.

Employment

2014 - Present	Senior Scientist, ILRI, Kenya
2012 - 2014	Scientist, ILRI, Kenya
2009 - 2012	Field Epidemiologist, ILRI, Indonesia
1997- 2007	Research Officer, Kenya Trypanosomiasis Research Institute, Kenya

Education

2008	PhD, Veterinary Epidemiology, University of Nairobi, Kenya
2001	MSc, Veterinary Epidemiology and Economics, University of Nairobi, Kenya

Selected recent peer-reviewed publications

- Ng'ang'a, C.M., Bukachi, S.A., **Bett, B.K**., 2015. Lay perceptions of risk factors for Rift Valley fever in a pastoral community in northeastern Kenya. BMC Public Health 16, 32
- Grant, C., Lo Iacono, Giovanni Dzingirai, V., **Bett, B**., Winnebah, Thomas R. A. Atkinson, P.M., 2016. Moving interdisciplinary science forward: integrating participatory modelling with mathematical modelling of zoonotic disease in Africa. Infect. Dis. Poverty XX, XX.
- Munyua, P.M., Murithi, R.M., Ithondeka, P., Hightower, A., Thumbi, S.M., Anyangu, S.A., Kiplimo, J., **Bett, B**., Vrieling, A., Breiman, R.F., Njenga, M.K., 2016. Predictive Factors and Risk Mapping for Rift Valley Fever Epidemics in Kenya. PLoS One 11, e0144570.
- Nanyingi, M.O., Munyua, P., Kiama, S.G., Muchemi, G.M., Thumbi, S.M., Bitek, A.O., **Bett, B**., Muriithi, R.M., Njenga, M.K., 2015. A systematic review of Rift Valley Fever epidemiology 1931–2014. Infect. Ecol. Epidemiol. 5, 1–12. doi:10.3402/iee.v5.28024
- Sindato, C., Karimuribo, E.D., Pfeiffer, D.U., Mboera, L.E.G., Kivaria, F., Dautu, G., **Bett, B**., Paweska, J.T., 2014. Spatial and temporal pattern of Rift Valley fever outbreaks in Tanzania; 1930 to 2007. PLoS ONE 9(2): e88897
- Gachohi, J. M., **Bett, B**., Njogu, G., Mariner, J. C., Jost, C. C., 2012. The 2006-2007 Rift Valley fever outbreak in Kenya: sources of early warning messages received and response measures implemented by the department of veterinary services. Review of Science and Technology Office of International Epizootics, 31(3).

Other evidence of leadership, large-program management and delivery

Coordinator of the implementation of projects on emerging infectious diseases in Integrated Sciences, ILRI which as contributed to refinement of Kenya's RVF Contingency Plan and generated a risk map that is being used for RVF surveillance.

Role in A4NH: In Phase II, coordinate the implementation of FP5 activities in eastern Africa.

Rousseau DJOUAKA

Current position and affiliation: Senior Scientist and Coordinator, AgroEcoHealth Platform for the West and central African Region, IITA, Benin

Profile: Dr. Djouaka is a senior medical molecular entomologist with expertise on the transmission and the control of tropical diseases: malaria vector control, control of neglected tropical diseases, analysis of molecular basis of insecticide resistance in malaria vectors, management of insecticide resistance in malaria vectors, research at the agriculture and health interface. He has published more than 15 recent articles on insecticide resistance in malaria mosquitoes and agricultural pests and contributed to a book chapter on agriculture and health linkages, and has supervised several MSc and PhD students.

Employment

2013-present	Senior Scientist and Coordinator of the IITA- AgroEcohealth Platform, Benin
2008-2013	Scientist at the IITA- Biological Control Unit, Benin
2002-2008	Research Assistant at Center of Research in Entomology of Cotonou (CREC), Ministry of Health, Benin.

Education

2010	PhD, Malaria Molecular Entomology, University of Ibadan and the Liverpool School of Tropical Medicine, UK
2006	MSc, Cell Biology (Applied to medical entomology), University of Ibadan, Nigeria

Selected recent peer-reviewed publications

- Bennett, K. L., Linton, Y. M., Shija, F., Kaddumukasa, M., **Djouaka, R.,** Misinzo, G ... & Tossou, E. (2015). Molecular Differentiation of the African Yellow Fever Vector Aedes bromeliae (Diptera: Culicidae) from Its Sympatric Non-vector Sister Species, Aedes lilii. PLoS Negl Trop Dis, 9(12), e0004250.
- Tonnang, H. E., Tchouassi, D. P., Juarez, H. S., Igweta, L. K., & **Djouaka, R. F**. (2014). Zoom in at African country level: potential climate induced changes in areas of suitability for survival of malaria vectors. International journal of health geographics, 13(1), 1.
- Riveron, J. M., Yunta, C., Ibrahim, S. S., **Djouaka, R**., Irving, H., Menze, B. D ... & Wondji, C. S. (2014). A single mutation in the GSTe2 gene allows tracking of metabolically based insecticide resistance in a major malaria vector. Genome Biol, 15(2), R27.
- Witzig, C., Wondji, C. S., Strode, C., **Djouaka, R.,** & Ranson, H. (2013). Identifying permethrin resistance loci in malaria vectors by genetic mapping. Parasitology, 140(12), 1468-1477.
- **Djouaka, R**., Irving, H., Tukur, Z., & Wondji, C. S. (2011). Exploring mechanisms of multiple insecticide resistance in a population of the malaria vector Anopheles funestus in Benin. PLos one, 6(11), e27760.
- Wondji, C. S., Dabire, R. K., Tukur, Z., Irving, H., **Djouaka, R.,** & Morgan, J. C. (2011). Identification and distribution of a GABA receptor mutation conferring dieldrin resistance in the malaria vector Anopheles funestus in Africa. Insect biochemistry and molecular biology, 41(7), 484-491.

Other evidence of leadership and management

Manager for projects on tropical diseases (malaria and neglected tropical diseases); **Coordinator** of the AgroEcoHealth Platform, research activities of up to US$1 million in the last 3 years, funded by Wellcome Trust, WHO (WHO-TDR and WHO-NTDs), IDRC, IITA and CGIAR; **Member** of WHO-Consultative Committee on Buruli Ulcer Control; **Member** of African Network on Vector Resistance to Insecticides.

Role in A4NH: In Phase II: Coordinate the implementation of FP5 activities in West and Central Africa

Delia GRACE

Current position and affiliation: Program Leader, Food Safety and Zoonoses, ILRI, Kenya

Profile: Dr. Grace is a senior epidemiologist with expertise in research at the agriculture and health interface, especially Ecohealth/ One Health, food safety, gender and food, participatory methods, and, epidemiology in developing countries. Since 2012, she has led theme on agriculture associated disease within the CRP on Agriculture for Nutrition and Health and leads a program on food safety and zoonoses at the International Livestock Research Institute. She is the author of one book, numerous chapters, and more than 100 peer-reviewed papers.

Employment

2011-present	Program Leader, ILRI, Kenya
2008-2011	Senior Scientist, ILRI, Kenya
2006-2008	Joint appointed scientist at ILRI and Cornell University, USA
2002-2006	Scientist at Free University Berlin, Germany

Education

2006	PhD, Veterinary Epidemiology, Free University Berlin, Germany
1990	MVB, National University of Ireland, Ireland

Selected recent peer-reviewed publications

- Kungu JM, Dione MM, Ejobi F, Harrison LJ, Poole EJ, Pezo D, **Grace D.** 2016, Sero-prevalence of Taenia Solium cysticercosis in rural and urban smallholder pig production settings in Uganda. *Acta Trop*. S0001-706X (16) 30016-X.
- Atherstone, C., Smith, E., Ochungo, P., Roesel, K. and **Grace, D**. 2015. Assessing the potential role of pigs in the epidemiology of Ebola virus in Uganda. *Transboundary and Emerging Diseases*.
- Watts N. **Grace, D.,** et al., 2015, Health and Climate change: policy responses to protect public health, *The Lancet*, S0140-6736 (15) 60854-6
- Nguyen-Viet H, Doria S, Tung DX, Mallee H, Wilcox BA, **Grace D**. 2015 Ecohealth research in Southeast Asia: past, present and the way forward. *Inf. Dis. Poverty*. 4:5.
- **Grace, D.** 2014, The business case for One Health *Onderstepoort J Vet Res*; 81, (2), 6 pages.
- Jones, B., **Grace, D.** et al. 2013. How do agricultural intensification and environmental change affect zoonoses with a wildlife-livestock interface? *Proc Natl Acad Sci* U S A.; 110(21): 8399–8404
- **Grace, D.** 2012, The deadly gifts of livestock, *Ag. Dev.*, 17:14-16

Other evidence of leadership, large-program management and delivery

Leader of studies on zoonoses, emerging disease, and antimicrobial resistance; **PI or co-PI** on projects with a combined budget of US$19 million in the last 5 years; **Member** (past and present) of several UN, FAO and WHO expert groups.

Role in A4NH: In Phase I: Leader of Agriculture Associated Diseases and cluster on Food Safety and Center Focal Point for ILRI. In Phase II, Leader of FP3 and leader of CoA1 and CoA2; ILRI co-lead for FP5 (pro tem)

Jo LINES

Current position and affiliation: Reader in Vector Biology and Malaria Control, London School of Hygiene & Tropical Medicine (LSHTM), UK

Profile: Jo Lines is a public health entomologist, who has worked on the practical problems of mosquito control since 1983. He has made major contributions, over 25 years, to the development, evaluation and large-scale implementation of insecticide-treated mosquito nets. Jo has experience of designing and leading applied research programs involving multidisciplinary teams and international collaboration with researchers and health professionals in malaria-endemic countries. As the coordinator of the Vector Control Unit of the Global Malaria Programme (GMP) in the World Health Organisation (WHO), he led the development of the Global Plan for Insecticide Resistance Management in Malaria Vectors. His current research focuses on the landscape epidemiology of malaria and other vector-borne diseases.

Employment

2011- present	Reader in Vector Biology & Malaria Control, LSHTM, UK.
2008-2011	Coordinator of the Vector Control Unit, GMP, WHO, Geneva.
1983-2008	Research assistant, and later Reader at LSHTM, UK.

Education

2006	PhD, Veterinary Epidemiology, Free University Berlin, Germany
1990	MVB, National University of Ireland, Ireland

Selected recent peer-reviewed publications

- Tusting L, Rek J, Arinaitwe E, Staedke S, Kamya M; Bottomley C; Johnston D, **Lines J**, Dorsey G, Lindsay S (2016) Measuring socioeconomic inequalities in relation to malaria risk in rural Uganda. Am J Trop Med Hyg. 94(3):650-8.
- Kristan M, **Lines J**, Nuwa A, Ntege C, Meek SR, Abeku TA (2016). Exposure to deltamethrin affects development of Plasmodium falciparum inside wild pyrethroid resistant Anopheles gambiae ss mosquitoes in Uganda. Parasites & vectors. Feb 24;9(1):1.
- **Lines J** and Kleinschmidt I (2013) Combining malaria vector control interventions: some trial design issues. Pathogens and Global Health 107(1) 1-3.
- Okell LC, Paintain LS, Webster J, Hanson K, **Lines J** (2012). From intervention to impact: modelling the potential mortality impact achievable by different long-lasting, insecticide-treated net delivery strategies. Malar J. 11:327.
- Ranson, H, N'guessan, R, **Lines, J**, Moiroux, N, Nkuni, Z, Corbel, V (2011) Pyrethroid resistance in African anopheline mosquitoes: what are the implications for malaria control? Trends Parasitol 27(2):91-8.
- Carlson M, Paintain LS, Bruce J, Webster J, **Lines J** (2011). Who attends antenatal care and expanded programme on immunization services in Chad, Mali and Niger? the implications for insecticide-treated net delivery. Malaria journal. 13;10(1):1.

Other evidence of leadership, large-program management and delivery

PI of various research project grants; **Director** of "Malaria Knowledge Programme" at LSHTM from 2000-05 (£7m); **Coordinator** of the Vector Control Unit, Global Malaria Programme, WHO (2009-12)

Role in A4NH In Phase II: Lead on CoA1 and co-convenor of Platform for Public Health and Agriculture Research Collaboration in FP5, to bring together agriculture and health sectors and their development donors to identify and fund intersectoral initiatives.

Stephen MSHANA

Current position and affiliation: Associate Professor, Department of Microbiology, Catholic University of Health and Allied Sciences, Tanzania

Profile: Dr Mshana is a clinical microbiologist who has published extensively on the molecular epidemiology of ESBL producing bacteria in African contexts. He developed a program on anti-microbial resistance (AMR) across animal and human health systems and has coordinated work between local universities, research institutes and government in a one health context. He actively collaborates with leading AMR research groups in Europe and has supervised many postgraduate research projects on AMR and has published 70 articles in peer reviewed journals.

Employment

Associate Professor, Department of Microbiology, Catholic University of Health and Allied Sciences, Tanzania

Education

2011 PhD, Department of Microbiology/Immunology, St. Augustine University of Tanzania

Selected recent peer-reviewed publications

- Seni, J., Falgenhauer, L., Simeo, N., Mirambo, M. M., Imirzalioglu, C., Matee, M ... & **Mshana, S. E.** (2016). Multiple ESBL-producing Escherichia coli sequence types carrying quinolone and aminoglycoside resistance genes circulating in companion and domestic farm animals in Mwanza, Tanzania, harbor commonly occurring plasmids. Frontiers in microbiology, 7.
- Mirambo, M. M., Majigo, M., Aboud, S., Groß, U., & **Mshana, S. E**. (2015). Serological makers of rubella infection in Africa in the pre vaccination era: a systematic review. BMC research notes, 8(1), 716.
- Manyahi, J., Matee, M. I., Majigo, M., Moyo, S., **Mshana, S. E.,** & Lyamuya, E. F. (2014). Predominance of multi-drug resistant bacterial pathogens causing surgical site infections in Muhimbili national hospital, Tanzania. BMC research notes, 7(1), 500.
- Kidenya, B. R., Webster, L. E., Behan, S., Kabangila, R., Peck, R. N., **Mshana, S. E**., ... & Fitzgerald, D. W. (2014). Epidemiology and genetic diversity of multidrug-resistant tuberculosis in East Africa. Tuberculosis, 94(1), 1-7.
- **Mshana, S. E**., Matee, M., & Rweyemamu, M. (2013). Antimicrobial resistance in human and animal pathogens in Zambia, Democratic Republic of Congo, Mozambique and Tanzania: an urgent need of a sustainable surveillance system. Annals of clinical microbiology and antimicrobials, 12(1), 1.

Other evidence of leadership, large-program management and delivery

Member, Tanzanian National AMR task force; **participated** in performing situation analysis on antibiotic use and resistance in Tanzania coordinated by Centre of Disease Dynamics, Economic & Policy (CDDEP); **Active member,** Southern African Centre for Infectious Disease Surveillance (SACIDS)

Role in A4NH:

In Phase II: work with FP5 team on the biology and epidemiology of AMR in livestock and humans, building on his landmark work on this problem in an African context, and will participate in broader AMR planning and research in Africa and Asia, and linking it to studies on antibiotic use and policy.

Hung NGUYEN-VIET

Current position and affiliation: Senior scientist, Country representative for Vietnam, ILRI, Vietnam

Profile: A biologist and environmental scientist by training, Dr. Nguyen is a senior scientist with research focuses on the link between health and agriculture, food safety, infectious and zoonotic diseases using integrative approaches such as One Health and Ecohealth. His research emphasis is on the use of risk assessment for food safety management, water and wastewater reuse in agriculture in Southeast Asia.

Employment

2014-present	Senior Scientist, Country representative for Vietnam, ILRI, Vietnam
2009-2014	Researcher, CENPHER, Hanoi School of Public Health, Vietnam
2007-2014	Postdoc, then project leader, Swiss Tropical and Public health Institute, Switzerland
2004-2005	Lecturer, University of Franche-Comté, France

Education

2005	PhD, Life and Environmental Sciences, with Distinction, University of Franche-Comté, France
2001	MSc, Environment, Health, Society, University of Franche-Comté, France

Selected recent peer-reviewed publications

- **Nguyen-Viet, H.,** Doria, S., Tung, D. X., Mallee, H., Wilcox, B. A., & Grace, D. (2015). Ecohealth research in Southeast Asia: past, present and the way forward. Infectious diseases of poverty, 4(5).
- Lam, S., **Nguyen-Viet, H**., Tuyet-Hanh, T.T., Nguyen-Mai, H., Harper, S. 2015. Evidence for public health risks of wastewater and excreta management practices in Southeast Asia: A scoping review. Int. J. Environ. Res. Public Health. 12(10): 12863–12885.
- **Nguyen-Viet H**, Vi Nguyen, et all. 2015. Institutional research capacity development for integrated approaches in developing countries: an example from Vietnam. In J. Zinsstag, E. Schelling, D. Waltner-Toews, M. Whittaker & M. Tanner (Eds.), One Health: The Theory and Practice of Integrated Health Approaches. CAB International, Wallingford, UK.
- Yapo RI, Kone B, Bonfoh B, Cisse G, Zinsstag J, **Nguyen-Viet H**. 2014. Quantitative microbial risk assessment related to urban wastewater and lagoon water reuse in Abidjan, Cote d'Ivoire. J Water Health. 12:301-309.
- Pham-Duc P, **Nguyen-Viet H**, Hattendorf J, Cam PD, Zurbrugg C, Zinsstag J, Odermatt P. 2014. Diarrhoeal diseases among adult population in an agricultural community Hanam province, Vietnam, with high wastewater and excreta re-use. BMC Public Health. 14:978.
- Nguyen V, **Nguyen-Viet H**, Pham-Duc P, Wiese M. 2014. Scenario planning for community development in Vietnam: a new tool for integrated health approaches? Glob Health Action. 7:24482.

Other evidence of leadership, large-program management and delivery

Country representative for ILRI in Vietnam; **Co-founded** and **led** a research center (CENPHER) at the Hanoi School of Public Health for 6 years; **Leader** of the Ecohealth regional program Field Building Leadership Initiative (2012-2016) and the Swiss NCCR North-South project on Environmental Sanitation and Health in Southeast Asia and West Africa (2009-2013). As **PI or Co-PI**, has mobilized more than $3 million project grants.

Role in A4NH: In Phase I: researcher on activities related to Agriculture Associated Diseases. In Phase II: researcher on activities related to FP3 and FP5, contact point for both flagships in Vietnam

Timothy ROBINSON

Current position and affiliation: Principal Scientist, Livestock Systems and Environment, ILRI, Kenya

Profile: Dr. Robinson has more than 20 years of experience working in the field of spatial analysis in relation to agriculture, food security and poverty alleviation, during which he has worked within the United Nations, the CGIAR system, UK universities and government departments. His research includes the application of spatial analytical techniques to understanding current and future livestock species and production systems distributions – particularly in the context of social, environmental and epidemiological risks and opportunities associated with a changing livestock sector.

Employment:

2013-present	Principal Scientist, Livestock Systems and Environment, ILRI, Kenya
2002-2013	Livestock Information Officer, Livestock Policy Branch, FAO, Italy
1999-2002	Scientist, Targeting and Impact Assessment, ILRI, Kenya
1996-1999	Zoology Research Fellow, Department of Zoology, University of Oxford, UK
1992-1996	Tsetse Ecologist, Natural Resources Institute, Zambia

Education:

1991	PhD in Spatial modelling of ecological processes, University of Reading, UK
1988	MA in Pure and Applied Biology, University of Oxford, UK

Selected recent peer-reviewed publications

- **Robinson, T.P**., Wertheim, H.F.L., Kakkar, M., Kariuki, S., Bu, D. and Price, L.B. (2016) Animal production and antimicrobial resistance in the clinic. *The Lancet* **387,** (10014) e1-e3.
- Shaw, A.P.M., Wint, G.R.W., Cecchi, G., Torr, S.J., Mattioli, R.C. and **Robinson, T.P**. (2015) Mapping the benefit-cost ratios of interventions against bovine trypanosomosis in Eastern Africa. *Preventive Veterinary Medicine* **122,** 406–416.
- Gilbert, M., Conchedda, G., Van Boeckel, T.P., Cinardi, G., Linard, C., Nicolas, G., Thanapongtharm, W., D'Aietti, L., Wint, W., Newman, S. and **Robinson, T.P.** (2015) Income Disparities and the Global Distribution of Intensively Farmed Chicken and Pigs. PLoS ONE **10(7):** e0133381.
- Van Boeckel, T.P. Brower, C., Gilbert, M., Grenfell, B.T., Levin, S.A., **Robinson, T.P**., Teillant, A. and Laxminarayan, R. (2015) Global trends in antimicrobial use in food animals. PNAS **18,** 5649-5654.
- Gilbert, M., Golding, N., Zhou, H., Wint, G.R.W., **Robinson, T.P**., Tatem, A.J., Lai, S., Zhou, S., Jiang, H., Guo, D., Huang, Z., Messina, J.P. Xiao, X., Linard, C., Van Boeckel, T.P., Martin, V., Bhatt, S., Gething, P.W., Farrar, J.J., Hay, S.I. and Yu, H. (2014) Predicting the risk of avian influenza A H7N9 infection in live-poultry markets across Asia. *Nature Communications* **5:4116.**
- **Robinson, T.P.,** Wint, G.R.W., Conchedda, G., Van Boeckel, T.P., Ercoli, V., Palamara, E., Cinardi, G., D'Aietti, L., Hay, S.I and Gilbert, M. (2014) Mapping the global distribution of livestock. *PLoS ONE* **9(5):** e96084.

Other evidence of leadership, large-program management and delivery
ILRI focal point for CRP on HumidTropics; **PI/co-PI** on projects with a combined budget of US$22.8 million

Role in A4NH: In Phase I: Co-PI on projects mapped to A4NH; In Phase II: ILRI representative leading the work on antimicrobial resistance.

Richard STABLER

Current position and affiliation: Senior Lecturer in Molecular Bacteriology, London School of Hygiene and Tropical Medicine (LSHTM), UK

Profile: Dr. Stabler is a world renowned expert in using high throughput methodologies to study bacterial pathogenesis and antimicrobial resistance (AMR) and has been trained in high throughput sequencing technologies. His research focuses on clinically important infections including Staphylococcus aureus and Campylobacter. He has experience analysing global molecular epidemiology datasets of these pathogens and mining for salient information such as antimicrobial resistance genetics and transmission pathways.

Employment

Senior Lecturer in Molecular Bacteriology, LSHTM, UK
Post-doc, Bacterial Microarray Group at St. Georges Hospital
Research Assistant, St Bartholomews Hospital, UK

Education

2002 PhD in Molecular Bacteriology, London School of Hygiene and Tropical Medicine, UK

Selected recent peer-reviewed publications

- Auguet, O. T., Betley, J. R., **Stabler, R. A.,** Patel, A., Ioannou, A., Marbach, H., ... & Desai, N. (2016). Evidence for Community Transmission of Community-Associated but Not Health-Care-Associated Methicillin-Resistant Staphylococcus Aureus Strains Linked to Social and Material Deprivation: Spatial Analysis of Cross-sectional Data. PLoS Med, 13(1), e1001944.
- McCarthy, A. J., Martin, P., Cloup, E., **Stabler, R. A.,** Oswald, E., & Taylor, P. W. (2015). The genotoxin colibactin is a determinant of virulence in Escherichia coli K1 experimental neonatal systemic infection. Infection and immunity, 83(9), 3704-3711.
- Palacios, L., Rosado, H., Micol, V., Rosato, A. E., Bernal, P., Arroyo, R., Grounds, H., Anderson J. C., **Stabler, R.A**. & Taylor, P. W. (2014). Staphylococcal phenotypes induced by naturally occurring and synthetic membrane-interactive polyphenolic β-lactam resistance modifiers. PloS one, 9(4), e93830.
- **Stabler, R. A**., Negus, D., Pain, A., & Taylor, P. W. (2013). Draft genome sequences of Pseudomonas fluorescens BS2 and Pusillimonas noertemannii BS8, soil bacteria that cooperate to degrade the poly-γ-d-glutamic acid anthrax capsule. Genome announcements, 1(1), e00057-12.
- Kudirkienė, E., Cohn, M. T., **Stabler, R. A**., Strong, P. C., Šernienė, L., Wren, B. W ... & Brøndsted, L. (2012). Phenotypic and genotypic characterizations of Campylobacter jejuni isolated from the broiler meat production process. Current microbiology, 65(4), 398-406.

Other evidence of leadership, large-program management and delivery

Leads, European Space Agency project using metagenomics to study effect of space countermeasure suit on skin flora; **Runs** cross-faculty Antimicrobial Resistance Interest Group at LSHTM

Role in A4NH: In Phase II, Coordinate public health input into the AMR component of FP5 (CoA3), including his own expertise in molecular epidemiology, as well as inputs from LSHTM anthropologists working on antibiotic usage, economists working on drug value chains and markets, and policy specialists working on AMR policy.

Philip TOYE

Current position and affiliation: Principal Scientist, ILRI, Kenya

Profile: Dr. Toye is a Principal Scientist in Animal Health at ILRI, with major interests in the improvement of animal health through the development and deployment of vaccines and diagnostic assays. He has worked primarily on East Coast fever, with other activities on *peste des petits ruminants* and porcine cysticercosis, and the commercial development of assays for human genetic disorders.

Employment

2006-present	Principal Scientist, ILRI, Kenya
2000–2006	Manager of Research/Project Manager, AGEN Biomedical Limited, Australia
199 –2000	Managing Director, Africa Biotect Limited, Kenya
1986–1994	Scientist/Post Doctoral Scientist, International Laboratory for Research on Animal Diseases, (ILRAD), Kenya
1984–1986	Postdoctoral Fellow, Harvard Medical School and Harvard School of Public Health (joint appointment), Harvard University, USA

Education

1982	PhD in Molecular Immunoparasitology, University of Adelaide, Australia
1977	Bachelor of Veterinary Science (Hons.), University of Queensland, Australia

Selected recent peer-reviewed publications

- Thomas, L. F., Harrison, L. J. S., **Toye, P**., De Glanville, W. A., Cook, E. A. J., Wamae, C. N., & Fèvre, E. M. (2016). Prevalence of Taenia solium cysticercosis in pigs entering the food chain in western Kenya. Tropical Animal Health and Production, 48(1), 233-238.
- Njiiri, N. E., Collins, N. E., Steyn, H. C., Troskie, M., Vorster, I., Thumbi, S. M., ... & Kiara, H. (2015). The epidemiology of tick-borne haemoparasites as determined by the reverse line blot hybridization assay in an intensively studied cohort of calves in western Kenya. Veterinary parasitology, 210(1), 69-76.
- Woolhouse, M. E., Thumbi, S. M., Jennings, A., Chase-Topping, M., Callaby, R., Kiara, H., ... & Poole, E. J. (2015). Co-infections determine patterns of mortality in a population exposed to parasite infection. Science advances, 1(2), e1400026.
- J. Baron, E. Fishbourne, E. Couacy-Hyman, M. Abubakar, B. A. Jones, L. Frost, R. Herbert, T. R. Chibssa, G. van't Klooster, M. Afzal, C. Ayebazibwe, **P. Toye**, J. Bashiruddin and M. D. Baron. 2014. Development and Testing of a Field Diagnostic Assay for Peste des Petits Ruminants Virus. Transbound. Emerg. Dis. 61:390-396.
- **P. G. Toye**, C.A Batten, H. Kiara, M.R. Henstock, L. Edwards, S. Thumbi, E.J. Poole, I.G. Handel, B.M. de C. Bronsvoort, O. Hanotte, J.A.W. Coetzer, M.E.J. Woolhouse, C.A.L. Oura. 2013. Bluetongue and Epizootic Haemorrhagic Disease virus in local breeds of cattle in Kenya. Res. Vet. Sci. 94:769-773

Other evidence of leadership, large-program management and delivery

Animal Health Flagship leader, CRP on Livestock and Fish until August 2015; Wellcome Trust Programme grant, Infectious Diseases of East African Livestock (1 of 5 PIs) (2006-12); BBSRC - Understanding the basis of strain restricted immunity to Theileria parva (1 of 3 PIs), (2010-2013)

Role in A4NH: In Phase II: PI for activities related to diagnostic assay development for zoonoses.

Jeff WAAGE

Current position and affiliation: Director, London International Development Centre (LIDC), and Chair, Leverhulme Centre for Integrative Research on Agriculture and Health (LCIRAH), UK

Profile: Dr. Waage is a specialist in the development and management of interdisciplinary research for international development. Following a career in tropical pest management, he led CABI Bioscience, building close research collaborations with several CGIAR Centers. He was the founding Director of LIDC in 2007, where he has established inter-institutional, intersectoral and interdisciplinary programs in one health and "agri-health", including LCIRAH, and led research on evaluating the MDGs and SDGs. In LCIRAH, he has helped to build a broad portfolio of agri-health research programs, including the Agriculture, Nutrition and Health Academy, jointly with A4NH.

Employment

2007-present	Director, London International Development Center and Professor, School of Oriental and African Studies, London School of Hygiene and Tropical Medicine, University of London UK
2000-2006	Head of Department of Agriculture, then Head of Environmental Sciences and Director, Centre for Environmental Policy, Imperial College London, UK
1986-2000	Director, International Institute of Biological Control, then CEO CABI Bioscience, UK
1978-1986	Lecturer, Department of Biology, Imperial College London, UK

Education

1977	PhD, Ecology, Imperial College, University of London, UK
1975	AB, Biology, Princeton University, USA

Selected recent peer-reviewed publications

- **Waage, J** et al. (2015) Governing the UN Sustainable Development Goals: interactions, infrastructures, institutions. Lancet Global Health 3(5): e251–e252.
- Hawkes, C., Turner, R., **Waage, J**., Ferguson, E., Johnston, D. and B. Shankar (2013) Agriculture for improved nutrition: the current research landscape. Food and Nutrition Bulletin 34, 369-376
- Dangour, A., Hawkesworth, S., Shankar, B., Watson, L., Srinivasan, C.S., Morgan, E., Haddad, L., **Waage, J**. (2013) 'Can nutrition be promoted through agriculture-led food price policies? A systematic review.' British Medical JournalOpen.
- Wilkinson, K., Grant, W.P., Green, L.E., Hunter, S., Jeger, M., Lowe, P., Medley, G.F., Mills, P., Phillipson, J., Poppy, G.M. and **J. Waage** (2011). Infectious diseases of animals and plants: an interdisciplinary approach. Phil. Trans. R. Soc. B.

Other evidence of leadership, large-program management and delivery

Serves on advisory or management groups including A4NH, IMMANA, LANSA and ATONU; **Established** academic departments of agriculture and unique cross-institutional LIDC between LSHTM, SOAS, the Royal Veterinary College, London School of Pharmacy and the Institute of Education; **Technical Advisory** to Global Panel on Agriculture and Food Systems for Nutrition; **Member** of DFID Research Advisory Group; **Served** on 2008 CGIAR Independent Review and the team that developed its Strategic Research Framework.

Role in A4NH: In Phase I, member of PMC. In Phase II: support collaboration between LCIRAH and A4NH; lead establishment and operation of Platform for Public Health and Agriculture Research Collaboration in FP5, to bring together agriculture and health sectors and their development donors to identify and fund intersectoral initiatives.

3.8 Open Access (OA) and Open Data (OD) Management

I. Planning for and implementing OA/OD in accordance with the CGIAR OADM policy and fair principles, including critical issues and anticipated challenges

In Phase II, Agriculture for Nutrition and Health (A4NH) will continue to work with our Lead Center, the International Food Policy Research Institute's (IFPRI) Knowledge Management (KM) team and our managing partners to comply with the CGIAR Open Access and Data Management (OADM) Policy and its Implementation Guidelines, and ensure discoverability of the A4NH outputs order to enhance their use towards outcomes. Follow these links for more information on IFPRI's Open Access Policy and Open Data Policy.

Currently, all known A4NH publications (books, book chapters, journal articles, research monographs, factsheets, policy notes, technical guides, working papers, conference papers, tools, software, and knowledge products) are catalogued in IFPRI's digital repository (IFPRI e-brary). When possible, an electronic copy of the IFPRI publication is housed in the IFPRI repository and publications from other A4NH partners can be stored in the IFPRI e-brary or linked to a partner repository. Datasets are catalogued in IFPRI's data repository IFPRI Datasets including all the data files, questionnaires and other relevant documents. In addition, a record for each dataset with minimum metadata is created in the IFPRI e-brary pointing to the data files in IFPRI Datasets. The IFPRI KM team will also do this for datasets from other partners on behalf of A4NH. IFPRI's KM team is responsible for quality control/assurance and ensuring the A4NH products are consistently well described, and compliant to CGIAR-Core metadata schema. A4NH works with IFPRI's KM team and researchers to ensure that products from all partners are stored, accessible and consistently described. For example, we follow FAO geopolitical and AGROVOC ontology to describe country names and regions. All of these practices will continue in Phase II.

With some exceptions, research products are shared with Creative Commons, under the Attribution CC BY license. A4NH will encourage researchers to publish in journals with Gold/Hybrid Open access. When this is not possible, the pre-print or post-print manuscript of the article is deposited in the repository to enhance accessibility. A4NH encourages all managing partners to publish data as open access as long as the privacy and confidentiality rights of human subjects is maintained.

The A4NH metadata from IFPRI repositories are harvested by various web portals, outlets and repositories. The LandPortal.net, FAO's AGRIS database, IFPRI.org, CAB Abstracts, Thomson-Reuters Data Citation Index, RePEc, CIARD Ring, and ReSKASS Asia websites harvest content using OAI-PMH or APIs. IFPRI also contributes content to SSRN, the Agriculture, Nutrition and Health group on Mendeley, Google Books and Play, Apple iTunes, and Amazon Kindle. To facilitate discovery through interlinking, A4NH information products are linked to each other on the A4NH web site as much as possible and in other repositories (as "Related Publications," "Related Materials," and "Associated Data").

For information products generated by other A4NH participating Centers, records in the IFPRI repository are usually metadata-only with a link to the original location, and automatically harvested, if possible. In Phase I, automation of the metadata harvesting was a challenge. Centers have different repository infrastructures, so interoperability issues can arise. In these cases, the IFPRI KM team enters metadata manually in IFPRI's repositories. Secondly, harvesting A4NH outputs from Centers other than IFPRI and cataloguing them in the IFPRI repository in a timely manner was a challenge that will be addressed by the managing partners in the A4NH PMC in Phase II. In some cases, the A4NH tag was initially omitted

from the metadata for some publications (owing to lack of information on the A4NH affiliation on the part of the KM Team and sometimes A4NH-affiliated researchers themselves). A list of the most common repositories housing A4NH information products is in Table 1.

II. Technical considerations and operations (e.g. technical infrastructure and interoperability, data quality assurance, training activities)

The IFPRI repository where A4NH publications are stored is a CONTENTdm platform.[14] CONTENTdm uses the Dublin Core (DC) standards[15], and supports the following data exchange protocols: XML, JSON, and OAI-PMH (Open Archives Initiative Protocol for Metadata Harvesting), and has a REST API and RSS feeds. Linked Open Data (LOD) capacity is in the process of being added. Both of the IFPRI repositories where A4NH information products are stored are compliant with CGIAR-Core metadata schema and fully support API, OAI-PMH protocol and interoperability. Standard controlled vocabulary (AGROVOC, CAB Thesaurus, Standard Thesaurus of Economics, and Library of Congress (LOC)), taxonomy and ontology concepts are used, where possible, to synchronize and harmonize distribution across multiple outlets.

In Phase I, exporting data from the IFPRI repository to the CGSpace repository has been hampered by CGSpace's failure to comply with the API standards. As a consequence, only a fraction of the A4NH Phase I information products are currently visible in the CGSpace A4NH collection. We hope that in Phase II this interoperability issue will be resolved at the CGIAR level.

At the CRP level, A4NH wants to address the challenge faced by IFPRI's KM team in harvesting the metadata of information products generated by participating Centers. A4NH, with the other integrating CRPs – Climate Change, Agriculture and Food Security (CCAFS), Policies, Institutions, and Markets (PIM), and Water, Land, and Ecosystems (WLE), is developing an integrated online platform to improve planning, monitoring, and reporting in Phase II in 2016-2017. Researchers will be required to upload outputs – or the links or metadata – to the platform as part of CRP monitoring, which will facilitate the systematic inclusion in the IFPRI Repository of all participating Centers' outputs. We will ensure that the platform is designed in consultation with IFPRI's KM team so that we can overcome this challenge in Phase II and strengthen the repository of A4NH outputs. There will be training, from the A4NH Program Management Unit (PMU), with researchers and perhaps KM teams from our participating Centers, on how to use the integrated online platform and ensure that A4NH generated products are more discoverable through the various online repositories.

Both the IFPRI publication and dataset repositories have automatic file transformation systems in order to ensure long term preservation. Both repositories are Trusted Digital Repositories (TDR). Data file types uploaded in the "IFPRI Datasets" are also converted into text file for long term storage and preservation.

III. Coordination and decisionmaking (e.g. workflows/procedures, capacity, governance)

The coordination and decisionmaking structures described earlier in this Annex will remain the same in Phase II, but the A4NH PMU and IFPRI's KM team will improve efforts to improve procedures for effective discoverability of A4NH information products, particularly those produced by participating Centers. One major improvement will come from the integrated online platform to be implemented jointly with CCAFS, PIM, and WLE in 2016-2017. One solution the A4NH PMU will explore with our

[14] IFPRI Repository: http://ebrary.ifpri.org/cdm

[15] The Dublin Core is an internationally agreed upon basic metadata scheme that defines 15 general descriptive elements, for example, Creator, Title, Date, Subject, Publisher.

participating Centers is incorporating an Information Product workflow in our program planning and reporting cycle, which would mean that it would be clearer to authors from participating Centers how and when to acknowledge A4NH funding support so that publications can be tracked by the KM alert systems and added to the appropriate repositories. A4NH is also keen to work with those at the CGIAR level to address the process automation challenges and ensure that all participating Centers are OADM compliant following CGIAR core metadata schema so that A4NH generated products are equally represented and discoverable in the existing repositories. For all A4NH products, IFPRI's KM team will perform a quality assurance function for the metadata. IFPRI's KM team and A4NH will jointly identify partners and collaborators whose dissemination channels are useful to tap into to disseminate the A4NH outputs.

The PMU will ensure that all A4NH projects are aware of the CGIAR OADM Policy, including (i) approaches for making articles/chapters/books published in closed access journals open, either through payment of OA fees or when not possible, storage of pre-prints or post-prints in institutional repositories, (ii) contact person to share the information about the publications with IFPRI KM and the PMU, (iii) challenges for open access/data, and (iv) adequate budget for OA publishing in commercial publishers, maintaining tools and online portals, etc. IFPRI's and other Centers' KM teams will serve as a resource for researchers to help determine if a publisher complies with CGIAR open access policy, and if not provide alternatives for consideration. Information will be requested about application of OA principles at project level as part of the A4NH annual reporting process.

A4NH will continue to include the OADM Policy as part of its Program Participant Agreement (PPA), (or comparable formal agreement) with the participating Centers in Phase II. We will do more to raise awareness of the OADM Policy among flagship and cluster leaders to allow them to play an active role in ensuring that information products are compliant by sharing links to IFPRI's resources on the subject. A4NH will explore how we can coordinate with the newly created PIM Open Access and Research Publication Support team (OARPS) to support our researchers in meeting open access requirements.

IV. Narrative for required resources (e.g. human and financial)

A4NH has designated 3% of its management budget for open access and data management in Phase II. Additional budget will also come from FPs and Centers as indicated in the budget narratives for each FP. This budget is primarily for facilitating overall quality control and web accessibility of knowledge products and databases across A4NH and for strengthening data collection and quality assurance procedures for open data, making available data products from secondary data analysis and improving knowledge products from flagship research. Part of this budget supports the IFPRI Communications and Knowledge Management Division (CKM), which uses the money for journal subscriptions, statistical/bibliographic databases; annual maintenance fees; and website development related to repositories. The budget also covers the membership fees for Altmetrics; Web of Science/InCites/Journal Citation Reports (JCR); Social Science Research Network (SSRN); OCLC; World Share Management; ORCID (unique researcher IDs); open access fees for articles; institutional memberships; and other expenses like making data visualizations, data web and mobile apps for promoting in support of open access and open data; and professional development/ training to support open access and data management. More systematic efforts to cover OA fees for highly-rated journals will continue. This will include a combination of Center contributions (for example IFPRI covers 50% of OA fees for high-ranked journals) as well as inclusion in grant budgets for research projects. A more detailed budget, including time allocation of staff from other managing partners will be developed by the PMC as part of its detailed work planning for 2017, once the 2017 CGIAR Financing Plan is available.

Table 1. Most common repositories housing information products from A4NH

A4NH Information Products	Repository	URL	Metadata Only
Books, book chapters, journal articles, research monographs, factsheets, policy notes, technical guides, working papers, conference papers, infographics, and other outputs	IFPRI e-brary (includes different collections)	http://ebrary.ifpri.org	
	Bioversity e-brary	http://www.bioversityinternational.org/e-library/	
	HarvestPlus Alliance Publications	http://literature.ciat.cgiar.org/	
	IITA Bibliography	http://biblio.iita.org/	
	CIAT Research Online	https://ciat.cgiar.org/data-information-knowledge/ciat-research-online	
	CGSpace (includes different collections)	https://cgspace.cgiar.org/	
Websites, tools, models	IFPRI e-brary	http://ebrary.ifpri.org	yes
Datasets	IFPRI e-brary	http://ebrary.ifpri.org/cdm/landingpage/collection/p15738coll3	yes
	ILRI Data Resources	http://data.ilri.org/	
Datasets	IFPRI Datasets	https://dataverse.harvard.edu/dataverse/IFPRI	
Images	IFPRI Flickr	https://www.flickr.com/photos/ifpri	
Videos, audio presentations	A4NH Vimeo Channel	https://vimeo.com/a4nh	
Program information and documents, blogposts, presentations, toolkits, guides	A4NH website	http://www.a4nh.cgiar.org/	
Presentations	A4NH SlideShare	http://www.slideshare.net/Ag4HealthNutrition/	
Journal publications, but also books, factsheets, policy notes, reports, and technical guides	Agriculture, Nutrition and Health group in Mendeley	https://www.mendeley.com/groups/844241/agriculture-nutrition-and-health/	

3.9 Intellectual Asset Management (IA Management)

OVERVIEW OF INTELLECTUAL ASSETS MANAGEMENT IN A4NH

The intellectual assets (IA) of research results and products developed under Agriculture for Nutrition and Health (A4NH) are largely international public goods (IPGs). A4NH is committed to disseminating research results and products in order to maximize impacts in a manner that improves nutrition and health and ensuring that IA produce benefit and are accessible to beneficiary countries and poor populations. The management of IA in A4NH is a joint responsibility, The CRP Director and FP leaders will ensure the incorporation of IA management into FP management across institutions, while the Lead Center and all A4NH managing partners[16], which have the human and other resources for IA management – will assume accountability for the appropriate implementation of the CGIAR Principles for the Management of Intellectual Assets and the Implementation Guidelines for the CGIAR Intellectual Asset Principles and this accountability will be documented in Partner Participant and Collaborative Research Agreements This document describes how A4NH will support adherence to the CGIAR principles and guidelines.

The majority of IA A4NH expects to produce are information products, such as publications and datasets. The other types of IA listed in the CGIAR Intellectual Asset Principles (e.g., germplasm, technologies, and varieties), will be generated predominantly by FP2: Biofortification, which is led by HarvestPlus and coordinated by CIAT and IFPRI, and by FP3: Food Safety and FP5: Improving Human Health which is led or co-led by ILRI with technology-generating research carried out in coordination with IITA, LSHTM and other partners. Initially in Phase II, most "technology-related" IA will come from these three flagships; however, we do anticipate that others may arise from research by partner institutions or joint research with private-sector partners in FP1: Food Systems for Healthier Diets, led by Wageningen University and Research Center. Across these FPs, we will draw on the experience of ILRI in the management of IA from technology given its important role as a flagship leader and its experience. For intellectual asset management related to crop development, this will remain the responsibility of the partners in FP2: Biofortification and is currently handled through the contractual arrangements for projects. The A4NH PMC will provide the overall oversight in planning and managing IA in A4NH through considering IA in both CRP and FP ToCs and results frameworks, through its risk management framework and through the responsibilities delegated and monitored for different managing partners. This will require joint efforts of the FP leaders and the senior managers from the managing partners. The PMU will support the PMC through its results-based management system (MARLO), providing monitoring information to the PMC and to managers of IA in A4NH. Some important features of intellectual asset management for these different categories include:

1. ***Information products – publications, databases, models***

This will be coordinated by IFPRI's Knowledge Management Division based on IFPRI's Open Access Policy and Open Data Policy. Currently all A4NH publications and almost all information products are catalogued in IFPRI's digital repository (IFPRI e-brary) or in in IFPRI's data repository IFPRI Datasets. The IFPRI KM team, links up with the teams in the other partners of A4NH. Most materials are stored in partner organization sites but with metadata links to the IFPRI repository (see Annex 3.8 Open Access and Open Data management for further details). With some exceptions, research products are shared

[16] A4NH managing partners are: Bioversity International, CIAT, ILRI, IITA, London School of Hygiene and Tropical Medicine (LSHTM), and Wageningen University and Research Centre (Wageningen UR). The Lead Center is IFPRI.

with Creative Commons, under the Attribution CC BY license and publications should be in journals with Gold/Hybrid Open Access.

2. Biofortified Crop Varieties

Within FP2: Biofortification, the HarvestPlus team coordinates crop varietal development across a number of CGIAR Centers for high-levels of micronutrients. For all the products from this research, there are established clauses with clear requirements in all research contracts (template available on request). The IA are managed by the individual CGIAR breeding Centers, with the collaborator generating the IA required to conform to CGIAR principles and practices – including concerning farmers' rights. These Centers have both in-house capacity and CGIAR networks to support intellectual asset management for crop varieties as well as experience in dissemination pathways with public and private provider of seed and planting material to smallholder farmers.

3. Technologies (technical processes, diagnostics, vaccines)

For other technologies we will follow the ILRI policy and guidelines, in particular the ILRI Intellectual Assets Policy. The main challenges are ensuring the trade-offs between public and private capacities and interests in technology development and dissemination. These include different perspectives on confidentiality obligations (including the need to maintain trade secrets and delay disclosure of information so as to allow time to patent inventions), lack of IA knowledge and policies by national partners, and the need to meet relevant national legal requirements. The program will address these issues through legal instruments, transfer agreements, licenses and capacity development, as appropriate. In any cases in which accessibility is in any way limited, such cases will be documented, justified and reported. This is especially the case where technologies, such as diagnostics or vaccines, require private-sector involvement to take outputs to scale. Across these mean types of IA, there are a variety of dissemination pathways to enhance the availability, accessibility and utility of the products of A4NH research. These include making products available through widely-available open access repositories and knowledge platforms through to engagement with different institutional arrangements such as public-private partnerships for technology research, development and scaling-out.

PLANNING AND TRACKING CONCERNING INTELLECTUAL ASSETS AND THEIR ASSOCIATED RIGHTS

The key issues and challenges relating to IA management within A4NH for Phase II are:

- Monitoring, reporting, documenting and disseminating IA in the project management cycle
- Appropriate legal and ethical procedures for managing confidentiality, intellectual property rights, licensing and other aspects that maximize international public goods and accessibility while ensuring that necessary public and private capabilities are brought together to maximize benefits for the poor
- Improving procedures for effective discoverability and access of A4NH information products and how to acknowledge funding support
- Building capacity to ensure the highest-quality of IA as well as the capacity for A4NH researchers and partners to plan and manage IA as part of their research
- Partnerships for scaling-out and optimizing benefits including public-private partnerships and better communication of products and their relevance

A4NH intends to improve the planning and tracking of IA. A list of the major A4NH IA, management and uptake pathways for greater use and associated activities are included in Table 1 (adapted from the CRP Livestock table given the similarity in the range of IA that the two CRPs have in common and the role of ILRI, a managing partner in A4NH, in the IA management in A4NH).

During Phase I, A4NH asked Center Focal Points to report what measures their Centers took in the prior year to comply with the CGIAR Open Access and Intellectual Asset Policies and Guidelines. One way this will be improved will be through the integrated online platform A4NH, with CCAFS, PIM, and WLE, is developing to improve planning, monitoring, and reporting in Phase II. This is budgeted for under the MEL unit in the PMU. IA, including the outputs and dissemination pathways, could be listed by researchers in the project descriptions that flagship and/or cluster leaders will review in the integrated online platform, consistent with Table 1. Progress will then be monitored annually in the reporting cycle. As we implement in Phase II, projects will be requested to include the cost of making publications and datasets open access in their budgets, so A4NH could have information on the cost of implementing some aspects of intellectual asset principles. In regards to the other dissemination pathways described above, the integrated online platform will enable A4NH to have a more robust monitoring system in Phase II, which will include monitoring and evaluating activities conducted as part of networking and mutual learning. For example, A4NH plans to host several communities of practice around particular themes in order to promote extension of research outputs and products related to agriculture, nutrition, health, and gender. The CoP activities will be co-developed with other CRPs and their usefulness to and influence on other CRPs will be tracked and assessed.

CAPACITY AND DECISIONMAKING RELATING TO INTELLECTUAL ASSETS MANAGEMENT

For the management of IA like information products, the A4NH capacity and decisionmaking is described in Annex 3.8. For other types of IA described in the CGIAR Intellectual Assets Principles, the capacity and decision-making is managed with the help of CRP managing partners and collaborator Centers at the Center level. There will be CRP-level intellectual asset oversight by the PMC and monitoring by the PMU, including describing in the PPA or other contractual arrangement the expectations for partners to follow the CGIAR Principles, monitoring and tracking through the A4NH RBM MEL (MARLO) system and advice to research teams on improving intellectual asset management from available resources. A4NH will work with the IFPRI Intellectual Property Focal Point and IFPRI legal capacity[17] as well the ILRI Legal Officer (Linda Opati) on all matters related to the implementation of the CGIAR Principles (and especially to implement the best practices shared through the CGIAR Legal/IP Network). The current A4NH Director has experience in establishing and serving on the board of a public-private partnership for technology research, development and technology dissemination and in considering intellectual asset management in research planning and management.

A4NH BUDGET FOR INTELLECTUAL ASSETS MANAGEMENT

For IA management, A4NH has designated 0.5% of the total CRP budget from all funding sources for the six-year Phase II period. The budget for A4NH IA management includes:

- A budget to the IFPRI CKM Division for managing open access / open data repositories, cataloguing and other documentation. More detail is described in Annex 3.8.
- Inclusion of intellectual asset monitoring as part of the co-investment with other ICRPs in an online integrated platform for monitoring & evaluation within the Monitoring, Evaluation and Learning (MEL) unit of the A4NH PMU.
- Review by HarvestPlus of intellectual asset management of its contracts.
- Approximately 0.1 FTE for the ILRI legal officer for FP3 and FP5 intellectual asset management

[17] IFPRI relies on the advice of its corporate lawyers, Morgan Lewis & Bockius, on an as needed basis. Morgan Lewis & Bockius have been IFPRI's corporate legal advisor since IFPRI's inception and is a large practice with offices worldwide.

A more detailed budget including time allocation of IA staff from other managing partners will be developed by the PMC as part of its detailed work planning for 2017, once the 2017 CGIAR Financing Plan is available.

Table 1. A4NH intellectual assets and impact pathways

<table>
<tr><th>Intellectual asset</th><th>Uptake and impact pathways</th><th>Activities</th></tr>
<tr><td>Information products (publications, multimedia, reports, manuals, learning materials)

Data, datasets, databases, models

Software and applications

Know-how (protocols, how-to guides, toolkits, learning and training, best practices, Institutional arrangements)</td><td>Open access repositories
Data repositories and databases
Open educational resources
Open licences
Adapted IP rights
Partnerships
Capacity development
Targeted dissemination, translation and adaptation to specific groups (policymakers, farmers)
Science communication
Development communication
Participatory research and innovation platforms
Scaling through partners</td><td>Repositories, standards, taxonomies for sharing and re-use
Use of global open licenses
Agreements with third party publishers
Open access support for authors
IPR management strategies and advice
Legal advice
Communication and engagement: publishing, media outreach, use of social media
Use of ICTs (phones, video, radio)
Workshops, engagement processes, conferences etc.</td></tr>
<tr><td colspan="3">Knowledge and information products – the dissemination to international development partners has been easy and rapid. The challenge is to enhance accessibility to national partners in LMICs. Dissemination plans will link many of the elements above such as capacity development (for example through the A4NH-supported ANH Academy), networks in focus countries, targeted dissemination to key groups, and increasing open access of products.</td></tr>
<tr><td>Germplasm</td><td>Utilization PPPs
Participatory development
IP rights and licenses
International treaties
National laws
Capacity development</td><td>Licenses and agreements to access and give access to germplasm, including SMTA/MTAs;
Legal advice
Databases and data dissemination
Open access repositories
Svalbard storage</td></tr>
<tr><td colspan="3">Germplasm – the key strategies for dissemination of new germplasm, particularly for biofortified varieties, is through partnerships with national and international partners and mainstreaming efforts in the CGIAR to leverage experiences and capacities of CGIAR Centers and CRPs involved in crop breeding and dissemination.</td></tr>
<tr><td>Financial products</td><td>Public–private partnerships
Scaling through partnerships</td><td>Legal advice
Dissemination strategies
Capacity development</td></tr>
</table>

Vaccines and diagnostics	Private sector Public–private partnerships	Legal advice Freedom to operate opinions Dissemination strategies
Products that are mixed public and private goods and usually delivered by the private sector – one key issue is to document and make widely available public good information products linked to the private products (for example models to assess risk for financial products) and to ensure that intermediate products are documented as public goods (for example biological products such as antigens and antibodies) that can be used more widely for both proprietary products and other public good products.		
Community and farmer knowledge	Participatory research Value chain development Livelihood systems development	Ethical standards Farmer rights Use of traditional and community knowledge Prior Informed Consent Legal advice Dissemination strategies Innovation platforms Participatory communication and social learning
Community and farmer knowledge – many issues in common with knowledge products above but also careful consideration of accessibility and acceptability for local communities (such as locally appropriate media and portals and local languages). Also some of the information will be socially and culturally sensitive and so safeguards on ownership and access will be important to negotiate with local communities.		
Genomic tools, pathogen sequences and phenotyping platforms Biological materials, samples, pathogens	Open access publications Open access databases (for example Genbank -part of the International Nucleotide Sequence Database Collaboration) Public access biorepository (ILRI BIobank)	Dissemination strategies
Biological materials – information sharing for sequence data is well established. Information on availability of biological samples can be made more accessible. There will be national sensitivities of sharing some biological samples (for example pathogens) for which approval will be required.		

3.10 Other Annexes

3.10.1 A4NH Accountability Matrix - Caveats to Address in Full Proposals

As set out in Annex 1 to the Final Guidance for the 2nd Call for Full Proposals, the collective portfolio submitted by the Centers/partners in response to this call for full proposals must be accompanied by a summary of how the 23 caveats raised in that annex by the respective stakeholders have been addressed. This annex sets out those caveats, grouped by the body putting forward the topic for added attention in the full proposals

1.1 Caveats expressed by the Joint Consortium Board/Centers/Fund Council Working Group, in its Memorandum to the Fund Council to express support for a 'green light' to move to full proposal development, dated 30 November 2015

Recognizing the advances already made in the re-submitted portfolio in the highly constrained time available, **the full proposals submitted by 31 March 2016 for ISPC review must address to the satisfaction of the ISPC, and contributors, the points set out below, to strengthen further the rationale and coherence of the planned research agenda.** Thereby delivering increased confidence that with funding from 2017 onwards, it has the capacity to deliver on SDGs in general and the Results Framework and CGIAR targets as set out in the SRF:

No	Item to address	Relevant CRP(s)	Summary of how the matters has been adequately addressed (Full Proposal sections are referenced)
1	Greater attention to discerning the role of regionally focused yield-gap closing/ sustainable intensification research in the system, as distinct from and a complement to global public goods research in areas such as crop breeding, livestock health, food policy, and others.	AFS programs; genetic gain platform)	✓ A4NH has a supporting role to AFS-CRPs in this regard, both through biofortification research which is completely aligned with yield-gap closing in target countries in Africa and South Asia and for our collaborations with AFS-CRPs on Food Systems for Healthier Diets and both productivity and intensification strategies for diversifying and improving the quality of diets.
2	More clearly articulating the strength of the arguments for maintaining genebanks and genetic gain as two separate platforms rather than an integrated effort[18]	Genebank; Genetic gain platforms	
3	Crosschecking that consolidation at the cluster of activities or flagship level has not delivered unintended adverse consequences such as removing clarity for key research priorities and/or increasing transaction costs	All	✓ The only change to the pre-proposal was to recombine ANH program and policy research in one FP, as it currently is in A4NH I. These groups are co-led and co-managed and have common partnerships and network so there will be no increase in transaction costs.
4	Providing a clearer understanding of National Partners'	All	✓ Support to country ownership, leadership and capacity for ANH outcomes

[18] There were a number of different views expressed during working group deliberations on this topic. Whilst there was no fundamental opposition to separate platforms, there was a call for making a much stronger case as to why they should be separate.

No	Item to address	Relevant CRP(s)	Summary of how the matters has been adequately addressed (Full Proposal sections are referenced)
	requirements, and how the scientific and financial program elements support them		is a much greater emphasis in phase 2. This builds on systematic efforts to engage national partners in phase 1 through initiatives such as Together for Nutrition, support to the CAADP results framework for nutrition and the Global Nutrition Report. Further details are found in the annexes on Partnership, Capacity Development and Site Integration.
5	Setting out more clearly the interconnection and resources available for the proposed Communities of Practice in gender/youth and capacity development, with particular attention to ensuring engagement of partners in the respective Communities of Practice. Specifically, ensuring that the proposed communities of practice operate in a way that will result in meaningful progress towards sustainable engagement and impact	All	✓ Building on community-of-practice (COP) for gender-nutrition-agriculture in phase 1 through the cross-cutting GEE unit plus additional CoP / learning platforms and convening events in FPs with integrative roles in the CGIAR (FP1: Food Systems, FP4: SPEAR and FP5 Improving Human Health). In each case modest resources have been allocated. As per recommendations of our external evaluation, theories of change will be developed for the CoPs/learning platforms to clarify expected outcomes and facilitate monitoring of progress. ✓ There are significant capacity development initiatives with global and national partners such as the ANH Academy (all FPs) and regional networks for agriculture and health (FP5). Capacity development efforts align with CGIAR CapDev COP (see Annex on Capacity Development). Modest resources have been allocated for the ANH Academy in collaboration with other partners.
6	Reducing as many transaction costs as possible, particularly regarding management burden	All	✓ In addition to reducing costs as much as possible, we also focused on how to be as effective as possible given the management budget. An important lesson from phase 1 was to make sure that CRPs and Centers were working effectively together. We have introduced the concept of Managing Partners, who will play an active role in managing A4NH with IFPRI (Lead Center) to delegate management tasks and make management more effective.
7	Providing greater emphasis on soils, animal genetic conservation and the potential impact of big data across the portfolio, not limited to genetic gain	WLE, all AFS, Livestock, Big Data platform	

1.2 Caveats expressed by the ISPC, dated 9 December 2015

ISPC comments on the portfolio (a paraphrase of a longer document)

No	Item to address	Relevant CRP(s)	Centers' summary of how the matters has been adequately addressed
Portfolio level			
8	Seek explicit prioritization within CRPs (and also between CRPs); balancing research on 'upstream' science with research on how to scale out and up relevant new knowledge and technologies (while leaving the delivery of impact at scale to organizations with that remit)	All	✓ The research agenda for A4NH aligns with the nutrition and health IDOs of the CGIAR SRF. ✓ The nature of research is largely determined by the stage of research and is different for more mature research areas than for new areas. Research on how to scale out is planned in several of the more mature research areas. ✓ The transition from piloting with a scaling perspective and delivery at scale by other organizations will be important for biofortification and is in progress.
9	Important to capture synergies between CRPs so that the System delivers more than the sum of the CRPs (the One System One Portfolio mantra)	All (statement of portfolio synthesis required)	✓ Much greater emphasis in phase 2 on integrating role in the CGIAR system through joint research, communities of practice and other networking functions, and by convening CGIAR to link agriculture with nutrition and health communities. ✓ A4NH has realigned some country activities, within its Africa and South/South-east Asia regional focus to put greater emphasis on ++ site integration countries. We have participated in CGIAR consultations and will commit modest resources at CRP-level in 5 focus countries.
10	Clearer explanations of what W1&2 funding will be used for	All	✓ See budget narrative sections for FPs and CRP ✓ See Additional Annex on Funding the A4NH agenda
11	CRPs should not be expected to adhere to the 'prioritization' undertaken in a very short time-frame to produce the 'Refreshed' submission, but should hold serious discussion with their partners on which activities to prioritize according to the principles which were agreed at FC14	All	✓ There has been an important evolution of the A4NH agenda from phase 1 to phase 2, to address emerging concerns (as reflected by changes in SRF) and to take advantage of scientific and development opportunities. Refining of priorities is an ongoing process within FPs and the CRP. ✓
Platforms			
12	2 new platforms are proposed: Genebanks and Genetic gains. The ISPC is comfortable with the platform on Genebanks	Not applicable	
13	Have concerns about the focus of the proposed Genetic Gains and what	Genetics Gain platform	

No	Item to address	Relevant CRP(s)	Centers' summary of how the matters has been adequately addressed
	the creation of such a platform will mean for the AFS CRPs (and theories of change). The ISPC also found the title of 'Genetic gains' to be inappropriate as what is proposed is only part of the research required to deliver 'genetic gains'. The budget needs to be reviewed		
14	Supports the concept of an initiative in Big Data and does not want to see this de-emphasized	Big Data platform	
15	Identify where budget is placed for other arrangements to meet cross cutting system work originally considered through Expressions of Interest at the pre-proposal stage	All c.f. Guidance doc	
AFS CRPs			
16	DCLAS: The rationale for DCLAS receiving a 'C' rating overall (from the ISPC) related to the breadth of species being considered; the funders are requested to indicate their priorities for this CRP	This addressed to funders not to CRPs	
17	FTA has moved tenure and rights to PIM – although PIM don't mention that. FTA also wants to move the restoration work to WLE. Given the decreased budgets overall, these 2 CRPs may not accept these moves and the topics may hence disappear. Clarity on the potential loss of these areas is required	FTA, PIM, WLE	
18	Livestock and FISH both wish to move some genetics research across to the new platform as may other CRPs, yet the budget sources for those moves are not clear	Livestock, Fish, Genetic Gain platform	
19	Maize propose to move some bilateral projects out of the CRP due to budget cuts. What is an appropriate balance of W1/2 bilateral at the base funding scenario?	MAIZE	
20	RAFS (and presumably other CRPs) proposes to reduce the number of targeted IDOs and sub-IDOs – and both RAFS and Wheat make reference to cutting back on capacity development due to budget cuts. Realistic adjustments to current funding and base scenario funding will need to be considered by CRPs and funders	RAFS, WHEAT.	

No	Item to address	Relevant CRP(s)	Centers' summary of how the matters has been adequately addressed
Global Integrating Programs			
21	The ISPC is glad that PIM has agreed to take on the role of co-ordination of a System-wide platform or Community of Practice for gender work, although we hope that it will be possible to reinstate the original budget. It is hoped that down-rating gender from a Flagship to 'Cross-cutting work' does not reflect diminishing importance of gender	PIM re role of the FP on gender	
22	A4NH and WLE seem to be following the ISPC recommendations (through additional steps for integration with CRPs through defined flagships, while the CCAFS Summary in Annex 2 suggests the budget cuts: 'need a totally new business model', the ISPC understands that only minor changes are now being proposed	A4NH, WLE, CCAFS, PIM	✓ Agree with comment and the proposal highlights how A4NH is following ISPC recommendations for integration with other CRPS through defined FPs, with details in the Annex on CRP Linkages and Site Integration.

1.3 Additional caveats expressed by the Fund Council during its ad hoc meeting on 11 December 2015.

The Fund Council noted that its granting of a 'green light' to move to full proposal development was subject to the caveats noted by the Working Group and ISPC (in their written submission) and the Fund Council's request for enhanced focus on gender and capacity building. The Fund Council also specifically acknowledged that CGIAR is engaged in an incremental process and some concerns raised by Fund Council members will require additional time and attention before the new portfolio of CRPs is approved.

No	Item to address	Relevant CRP(s)	Summary of how the matters has been adequately addressed
23	Enhanced focus on gender and capacity building	All	✓ A4NH continues its strong gender research which is described in detail under gender in section 1.4 and annex 3.4 ✓ Capacity development is approx. 9~~10~~% of budget and highlighted in FPs and at CRP-level (ANH Academy with partners)

3.10.2 Actions Taken in Full Proposal to Address ISPC Commentary on Pre-Proposal

OVERALL COMMENTS FROM THE ISPC

1. The pre-proposal makes little mention of the impact of major nutrition trends/interventions on the environment. Not only is this a major gap relative to the SRF, but also little work has been done elsewhere. As such, this would be an ideal opportunity for the CGIAR to make a mark in the area...The ISPC recommends that consideration of these potential unintended consequences be given more consideration during development of the full proposal.

   - Tradeoffs and synergies between nutrition and health and environmental sustainability are now more explicitly acknowledged and, in some cases, addressed in the research agenda. All FPs address the issue to some extent and it is a key part of the research agenda in FP1: Food Systems for Healthier Diets, which works with CCAFS and WLE on food system sustainability. It is also part of the agenda of FP5: Improving human health, which looks specifically at agricultural intensification processes. FP4 (SPEAR) looks at cross-sectoral policy issues and processes, recognizing the fact that development is inherently multi-objective and involves synergies and tradeoffs across sectors.

   - The tradeoffs and synergies between nutrition/health and environmental objectives (especially non-climate objectives) are context specific and may not be as important for some of our target areas as they are in developed countries, where these issues (e.g., around livestock production and the consumption of animal-source foods) receive considerable attention. An important objectives of A4NH is to raise awareness of the context specificity of these challenges to avoid overly simplistic solutions that could have unintended negative consequences.

2. There remains a strong sense that the work of this CRP is dictated by external interests. A large fraction of the anticipated budget is expected to come from bilateral and Window 3 sources. To the extent that bilateral funding necessarily come attached to specific donor priorities, the ISPC is concerned that this dominance of W3 and bilateral funding may limit the ability of the program to act as a I-CRP that would add value to the whole CGIAR system…The full proposal should be prepared to defend the proposition that there is clear alignment between donors' research interests (especially with respect to biofortification) and the ToCs of the CGIAR.

   - Strategy has been and will be to develop a strong and coherent portfolio and seek W3/bilateral research grants to implement it. This will be even more necessary given the limitations of W1/W2 funding in Phase II. At present the largest portfolios of research grants are in FP2: Biofortification and FP4: Supporting Policies, Programs and Enabling Action through Research (SPEAR), the two most mature areas. These two FPs make major contributions to A4NH IPGs and to the SRF outcomes. Given the importance of this issue to A4NH II, we have developed an annex that summarizes funding for the A4NH research agenda overall and for the different flagships. See "Funding the A4NH Agenda" in Other Annexes. There are relatively few large donors for A4NH W3/bilateral grants. These include quite sophisticated donors (BMGF, Canada, DFID-UK, EC, IFAD, and USAID). We have considerable discussion with these donors on ANH strategic issues and feel we and they are aligned and we are co-developing agendas.

   - The proposal describes the activities A4H will undertake in its role as an ICRP, including not only substantial joint research but also convening 2 learning platforms (food systems; agriculture and health), a CoP (gender-agriculture nutrition) and playing a bridging role between the CGIAR and nutrition and health research and policy communities in key countries. FP2: Biofortification has

a large focus on mainstreaming nutrition into policy and breeding (as described in more detail below). We agree that greater W1/W2 funding would help integrating actions by A4NH. Many of the planned activities will depend on uplift for their realization.

3. The ISPC looks forward to seeing more details of how A4NH plans to undertake its agreed role as an ICRP in the full proposal. The ISPC recommends that the CRP's full proposal should explicitly address integration as an issue for future M&E.

   - As described above, we are have planned activities to address all three of the roles that have been defined for I CRPs: namely (1) joint research; (2) networking and mutual learning, and (3) as a bridge between CGIAR and the nutrition and health communities. As shown in Annex 3.6, substantial discussion has taken places with other CRPs to define areas of common interest and collaboration. Integrating functions will have workplans linked to outcomes. We began doing this in Phase I in response to a recommendation from our external evaluation. Progress towards achieving the outcomes will be monitored, evaluated and reported in a new RBM system being developed collectively by all ICRPs.

4. There is some overlap in the objectives of A4NH and PIM, as much of the nutrition and health agenda operates through policies, institutions and markets. It would be helpful to be more explicit about the allocation of responsibilities and scientific specialization between these CRPs, in terms of which kinds of data, methods and research outputs each aims to produce. Another issue that has affected A4NH's linkages with other CRPs has been the dual role of HarvestPlus/Biofortification as a donor and a collaborator. It is important that biofortification should not crowd out other potential areas of collaboration with other CRPs.

   - A4NH focuses on SLO2 while PIM focuses on SLO1 and SLO3. PIM has expertise in developing and maintaining basic tools, approaches, and data for agricultural and development policy analysis: global and national level foresight models; value chain models and tool kits; and mapping and spatial data analysis. A4NH works with PIM to integrate nutrition and health into tools and analysis, as needed. Given the cross-sectoral natural of A4NH's mandate and of nutrition and health outcomes, A4NH focuses its research on political economy and policy processes, and on policy implementation. PIM/IFPRI policy support units and networks such as ReSAKSS and CSSPs often rely on A4NH to address cross-sectoral issues related to nutrition and health raised by countries and regions. In Phase II, PIM will have a CoA on policy process with which A4NH FP4 will work closely. Both CRPs do impact evaluation and gender analysis and frequently work together, especially when analyzing the impacts of complex interventions on multiple outcomes (e.g., integrating nutrition and health into agricultural programs, social protection programs, etc.). See Annex 3.6 on CRP linkages for specific examples of how each FP in A4NH works with PIM on joint research, networking and mutual learning, and on bridging. We also work with PIM on the common M&E platform.

   - It is true that main linkage with AFS-CRPs for staple crops is biofortification however this is likely to change during Phase II as biofortification is increasingly mainstreamed into CGIAR breeding programs rather than support as a project through HarvestPlus. At the same time, A4NH will increase linkages with other AFS-CRPs. In FP1: Food Systems for Healthier Diets, there are important research issues on income and prices of staples with cereal CRPs but major technical innovations are with AFS-CRPs on nutrient-dense foods (animal source foods, pulses, fruits). These partnerships will be expanded and enhanced with Wageningen as leader of FP1. FP3: Food Safety also works closely with CRPs Livestock, Fish, DCL, and MAIZE. FP5 will work with

RICE and WLE on health issues in intensifying agricultural systems, especially related to water management.

5. The pre-proposal calls for an increased W1/W2 funding to a total of USD 53 million for 2017 activities. With the large amounts of funds flowing in from bilateral and W3 sources, the allocation from W1/2 that is requested seems a bit excessive. The ISPC believes that W1/W2 spending needs to be prioritized. For example, given the level of external support and the delivery phase of this work, the ISPC suggests consideration be given to a downward revision of the W1/W2 budget for FP1. Distribution of the budget among the FPs does not seem appropriate to their relative cost, positioning along the R4D continuum and expected impacts. Further, the ISPC is concerned that the W1/W2 funding is not being used to target the global public goods with the greatest potential impact. There may be missed opportunities to propose new initiatives to fill specific research gaps.

   - In the full proposal, W1/W2 base budget funding is $20M which is far from the $53M requested for 2017 in the pre-proposal. The W1/W2 allocations in the base budgets of FPs are now more evenly spread across FPs (21-25%), except for FP5: Improving Human Health which is approximately 12% (as considered appropriate by ISPC). For FP2: Biofortification, their very limited W1/W2 (10% of total FP base budget) is focused purely on research on efficacy, evaluation and scaling out, and on new varietal development. Delivery activities with country partners are funded through W3/bilateral exclusively.

   - Some key IPGs have been initiated in Phase II. Two examples are: food system transformation analysis across countries and cross-country analysis and role of agriculture in development of AMR.

6. Differences between A4NH's scientific structure and IFPRI's management structure could impose very significant costs to researchers' time and attention. To address that concern, it would be helpful for the full proposal to specify more precisely how the CRP will align with the operational structure of the lead center.

   - In Phase II, one FP, SPEAR, will be led by IFPRI. Most of the work in the FP aligns well with the IFPRI division PHND. The CoA on evaluation is mostly IFPRI work since this is a specialized area. The CoA on policy and capacity have external partners (Bioversity, IDS, EVIDENT) who have close working relationships with IFPRI and who will play important roles in linking with broader constituencies with in CGIAR and the broader agricultural sector. In the case of FP2, the HarvestPlus management system, a joint venture between IFPRI and CIAT, for managing relationships between CGIAR centers and partners serves the needs of the CRP. The partnership with WUR to manage FP1 on food systems will provide broader leadership in food systems research than anything CGIAR Center can offer. In FP1, IFPRI will be involved in specific research aspects (diet quality, cross-country analysis of food system transformation, and others) through key researchers across IFPRI Divisions but under the overall leadership of WUR. This is an FP in which many CGIAR centers are involved and which has an important role in linking with and leveraging work of other CRPs. Therefore, a leader like WUR with experience and comparative advantage in this type of role will allow IFPRI staff in this FP to focus on technical issues and on ensuring good links with the relevant policy and value chains work in PIM.

7. For the full proposal, the ISPC would like more detail about what each FP will do, including some discussion of intermediate outputs, in the sense of specific datasets, analytical methods or type of R&D to be conducted.

- Additional information is provided in FP sections and in the PIM Tables.

FP1. FOOD SYSTEMS

1. Though a welcome addition to the CRP, is not well defined in terms of its research activities. The FP needs to clearly specify the research questions as well as the approaches that will be adopted. More details are needed to make the case that the CRP has appropriate partners and a sufficient understanding of the enabling environment for effectively managing diets in the developing world.

   - Much more detail has been provided in the FP section on both the research questions and methods, by cluster. It is important to be clear that this is not an area where there are many examples of success - including from developed countries - that can be studied and modified for developing county contexts (Brazil is one potential example). However the FP addresses a growing concern for countries and we think that our approach, which involves key partners like Wageningen UR, good links to the private sector, and a focus on a small number of countries where we will work closely with governments, is the appropriate one. This FP will generate IPGs in the form of data, methods, metrics for studying the impacts of food system transitions on diets, as well as develop and test interventions to improve outcomes. We will also be working closely with AFS-CRPs and ICRPs to ensure that food systems are considered holistically, a demand expressed by countries in the Rome Declaration on Nutrition.

2. There is a lack of specific detail on the kinds of data, methods and research products which will be targeted. This would, for example, be the place to house large-scale modelling and cross-country analyses on nutrition impacts. Much more detail on what approaches will be adopted is required in the full proposal. Regarding the Performance Indicator Matrix, measures for dietary quality need to move beyond simple diet diversity.

   - More detail is provided on data (both primary and secondary), methods and outputs, and also on how diet quality will be defined and measured.

3. The FP's attention to cross-cutting issues is, however, weak. Given the lack of comparative advantage within the CGIAR in this area, the FP has to involve capacity building, not just within the team but also of delivery partners. Issues of gender are, of course, essential. Environment and climate change should also emerge as important issues, since dietary patterns are bound to change. While each cross-cutting issue is recognized, there is not much detail on how they will be addressed.

   - This has been strengthened in the FP1 proposal. It is also emphasizes the importance of the role of Wageningen, which has broad research capacity across all these areas and with experience and a mandate for capacity building. In some cases like gender and enabling environment, we are building on substantial capacity already existing within A4NH. In the case of climate change, we will work with CCAFS.

4. It is also not clear how A4NH's recommendations for food systems would be put into practice. Sufficient understanding of the enabling environment, especially the policy space, to be able to affect policy choices and other instruments of public policy in developing countries is critical. The ISPC recommends that these issues be mainstreamed and addressed in more depth in the full proposal.

   - Food system research varies by country and thus we agree that a good understanding of the context and enabling environment is essential. This is why the FP is designed with a focus in just four countries where we have good information and links with local researchers and other stakeholders. In these countries, we hope to be able to understand and engage (in action

research mode) in the policy process and to learn generalizable lessons through comparative analysis and synthesis. Specific research projects, for example on value chain or food system innovations might be conducted in other countries but we will focus on context and enabling environment in the four focus countries only.

5. More details on co-funding arrangements with the lead partner will also be essential in the full proposal. It is difficult to comment on the budget given the lack of detail.

   - Wageningen UR will be a managing partner in A4NH, with membership in the A4NH PMC and leadership in FP1. For its roles and budgets we have treated Wageningen UR as any other CGIAR managing partner (likewise LSHTM for FP5). This includes an appropriate share of W1/W2 budget based on its role as well as active participation in building a coherent W3/bilateral grant portfolio linked to the proposal and annual workplans.

FP2. BIOFORTIFICATION

1. A strategy for greater consideration of trade-offs between biofortification and other breeding objectives should be elaborated, together with a strategy for comparing the cost effectiveness of biofortification in relation to other methods of meeting micro-nutrient requirements.

   - Concern over trade-offs among breeding objectives has been part of HarvestPlus since the beginning. A key assumption underlying biofortification is that increased micronutrient levels can be achieved without sacrificing other traits that are important to farmers and consumers. Crop development research to date suggests vitamin and mineral traits can be effectively combined with other desirable agronomic traits. All biofortified crop varieties that have been released to date are competitive with or better than the best varieties farmers currently grow. Mainstreaming nutrition into breeding programs is the best way to ensure that any potential future trade-offs between nutrition and other traits are identified and addressed. Avoiding trade-offs and enhancing synergies will be part of the mainstreaming strategy in Phase II

   - Cost-effectiveness and targets for biofortification are well researched and evidence generally finds that biofortification is cost effective as compared to alternatives (Meenakshi et al, 2010, Birol et al., 2014; Fielder and Lividini, 2015). FP2 is quite unique and to be commended in the CGIAR for work on cost-effectiveness (done because of need for these analysis for comparison of alternative micro-nutrient delivery methods for the public health community).

2. The description of the challenge is honest in saying that the long-term solution is to improve the quality and diversity of diets, but the ISPC considers that there are risks that what is proposed is too dominated by the one technology. For example, neither the trade-offs between biofortification and other breeding objectives, nor the advantages and disadvantages of biofortification relative to old-fashioned fortification, diversification, and supplementation receive much attention.

   - See above on trade-offs in breeding objectives and on cost-effectiveness of alternative approaches to addressing micronutrient deficiency.

   - Biofortification is also progressively adopting a food basket rather than individual varietal approach to micronutrient sufficiency which fits better with food systems.

   - The work on mainstreaming biofortification in policy looks at the overall enabling environment for nutrition and the role of biofortification in that.

3. The ISPC would have expected to see strong links with PIM regarding the intention to mainstream biofortification into policy… The ISPC would encourage more discussion of interaction around value chains with PIM and other CRPs.

   - Mainstreaming biofortification into policy is being coordinated with the ReSAKSS network and ReSAKSS FP4 SPEAR partnership. ReSAKSS is governed by AU and RECs and supports African continental, regional and national efforts to include nutrition objectives into CAADP.

   - Biofortification works closely with economists in IFPRI and other centers on value chains however it does not appear as collaboration with PIM since the centers are also part of A4NH, through HarvestPlus. Thus, there is an implicit link with value chain research in PIM.

4. The section on evidence gaps, research questions and issues is sound but not exciting. The ISPC is not convinced that facilitator and convenor roles should be priorities for precious W1/W2 funding. It is acceptable if these roles are fully supported by W3/bilateral funding. Similarly, the ISPC questions why HarvestPlus should develop regulatory standards and advocacy partnerships - both of which seem to veer into deep waters, especially given the complexity of the enabling environments in many target countries.

   - Not sure we agree since impact evaluation, delivery science and mainstreaming are essential parts of achieving outcomes at scale and are under-researched areas. Facilitating and convening roles are funded by W3/bilateral grants exclusively. Some of these are quite crucial, such as having biofortification defined in *Codex Alimentarius*.

5. More discussion of the priority setting within this FP, i.e. how decisions will be made on which biofortification interventions should be scaled up in an equitable manner would be prudent. An enhanced focus on understanding the nutritional benefits to inform the longer-term strategy of diversifying and improving the quality of diets would be more convincing.

   - FP2 has been in operation for some time and the priority setting behind targeting and reaching micronutrient deficient populations has been considerable. Priority setting is continuously improving based on research results (e.g. actual rather than estimated micronutrient levels in crops) and on evidence from delivery (e.g., actual rather than assumed adoption rates and consumption levels). In Phase II, delivery, which is funded with W3/bilateral, is being pursued in all 9 target countries, depending on release of biofortified varieties. Lessons from all countries will be shared and synthesized and will be the basis for others—not FP2—to make decisions about where and how to further scale biofortification. These decisions will also be aided through tools such as the Biofortification Prioritization Index (BPI), developed in phase 1 to support decisions about where to invest in biofortification.

6. The ISPC notes that this FP has the largest budget of all FPs: USD 50 million for 2017, whereas the guidance gave a maximum budget for a FP (over 6 years) of USD100 million.

   - Our understanding are that these limits no longer apply. In general, we think CRPs should have larger FPs with greater critical mass.

FP3. FOOD SAFETY

1. The ToC could have focused more on who the key stakeholders are and how have they been engaged…A lot of partners are mentioned, however, and in the full proposal it will be imperative to see a strategic partnership strategy. Who are the core partners? What is their role in the FP? What is the role of donor partners, of international agencies, and other actors, etc.? The ISPC suggests that

the full proposal should provide additional information about links with other CRPs as well as how this FP will be embedded with other FPs in A4NH.

- More detail has been provided on the types and role of partners in the FP3 impact pathways. Specific partners with which the FP is already working are identified, as are areas where additional partnerships will be needed. It is important to note that this FP works closely with other CRPs, integrating food safety issues into their work. Examples are CRPs Livestock and Fish for the cluster on Safe Fresh Foods and MAIZE and DCL for the cluster on Aflatoxin Mitigation. The implication of this is that this FP will work in the partnership networks established by those CRPs.

2. Gender consideration seems to be implicit in the pre-proposal rather than explicit, and it will need to be more obvious in the full proposal. There are also key issues related to value chains. The exposure to different food safety issues will depend critically on where the processing is done; and this in turn will have implications for gender, since in many systems women are responsible for guaranteeing household food safety through their selection of ingredients, methods of food preparation, and food service.

- FP3 recognizes the powerful role gender has in shaping the behavior of actors in value chains, exposing actors to risks, and ultimately, health outcomes. The full proposal specifies the assumptions behind the gender and equity related outcomes that the research intends to achieve. The full proposal describes a number of specific gender research questions that this FP will undertake in Phase II. Our opinion is that the FP3 full proposal takes explicit consideration of gender.
- We agree that women have an important role in household food security, but want to point out that this FP looks at gender issues along the value chain as well as in the household. For food safety issues related to perishables, FP3 will focus on market agents rather than households since many food safety ssues arise along the value chain and can be cost-effectively addressed at this stage. In the case of aflatoxin mitigation, improved management at the household level, especially on-farm, post-harvest and storage practices, will be important and gender will be a key issue in determining adoption and impact of changes in practice.

FP4. IMPROVING HUMAN HEALTH

1. Greater emphasis is needed on understanding where the system may not have comparative advantage and if the CGIAR should be active in certain areas of research.

- The emphasis should be on joint health – agriculture issues for human health in which agriculture can play a critical role. The comparative advantage of CGIAR Centers doing the work by themselves or in partnership with public health researchers is very different. It seems the question is one of priority setting and how CGIAR W1/W2 funding should be used to address the SRF IDOs. Priorities were initially set through regional and global consultations. During Phase II, more explicit analysis for priority setting is planned.

2. For the full proposal, it would be helpful to draw more focused conclusions from the convened consultations and the researchers' specialist knowledge about the most significant agriculture-related diseases to offer more granular detail about the datasets, epidemiological methods and interventions that are likely to have the greatest impact.

- More detail is provided by CoA on what the priority health issues are and what the outputs will be.

3. The one at the landscapes level raises some concerns (as did the nutrition-sensitive landscapes in the extension proposal) in terms of the impact pathway - how will the research outputs lead to outcomes? The focus on prioritization as an initial step is encouraging, but this will need much more development for the full proposal.

   - The outputs would lead to outcomes through their influence on the policies that influencing agricultural intensification and on programs (agricultural and health) with farming/rural communities that influence their knowledge, attitudes and practices. Research in this cluster is at an early stage, so they types of early outcomes we expect will be collaboration on research design, especially methods and metrics, and implementation among agriculture and public health researchers.

4. For the second area on zoonotic diseases, a lot of information already exists. The text mentions two priority diseases but then has a research question on "Characterization and prioritization" (presumably on the two priority diseases to keep the focus tight, but that is not clear). There is evidence of building on lessons learnt, but not strong enough.

   - In the proposal, there is emphasis on piloting and eventually supporting scaling out of control for cysticercosis, a globally established zoonosis priority. This is also an appropriate priority given the necessity of combined public health and agriculture interventions and the links to CRP Livestock pork value chain research.

   - The other major element of zoonoses research is continued evidence on the role that livestock system change (with overall agricultural intensification) plays in zoonotic disease emergence and what agricultural solutions are possible to mitigate the risks of disease emergence.

5. This FP is strong on capacity development and claims good links with key players in the enabling environment. There is also some reference to climate change impacts. Gender questions at least refer to women's time but without more definition of the agenda, it is difficult to see where and how these cross-cutting issues will enter.

   - Contribution to cross-cutting sub-IDOs have been clarified, including gender research questions and outcomes. Gender-issues associated with health outcomes at household level in CoA1 and CoA2 are critical to both improving health benefits through agricultural contributions to income and diet quality and to reducing specific health risks.

6. While the budget is probably appropriate for what is promised, more detail on the co-funding arrangements with the lead partner would be desirable (interactions with partners can become quite unequal if they are the ones bringing all of the resources; there is a danger that the partners would end up driving the intellectual agenda).

   - FP5 is co-led by LSHTM and ILRI. The FP leader, Prof Eric Fevre will be supported by one senior ILRI and LSHTM manager to ensure close cooperation between the 2 leads in planning, fund raising and research implementation. LSHTM is treated the same as any other A4NH managing partner and has an allocated share of resources and is committed to building the W3/bilateral grant portfolio. These will be reviewed by the PMC and assessed by the ISC for all A4NH managing partners on an annual basis.

FP5. SUPPORTING POLICIES, PROGRAMS, AND ENABLING ACTION THROUGH RESEARCH (SPEAR)
Two FPs – Integrated Programs to Improve Nutrition and Supporting Country Outcomes through Research on Enabling Environments – were presented in the A4NH pre-proposal. In response to

comments, elements of the two flagships were merged into a single FP in the full proposal. The actions taken to address the ISPC's recommendations in the re-design of this flagship are summarized below.

1. Research agenda needs to be designed proactively and driven by specific questions that reflect the CGIAR's comparative advantage.

   - Research questions for each CoA are clearly stated, as is the fact that the research is about understanding and enhancing the nutrition-sensitivity of food and agricultural programs and policies.

   - This FP, especially CoA3, has a key role in bridging between CGIAR and nutrition and health communities and responding to policy and political economy issues from other CRPs.

2. Evaluation work should be aligned more closely with other FPs.

   - The evaluations in the portfolio focus more on agriculture and look at more types of programs and platforms (e.g., women's self-help groups) and implementers (e.g., Ministry of Agriculture in Bangladesh). These are the types of platforms and partners that CGIAR works with.

   - In Phase 1 this FP4 researchers worked with FP2 on evaluations. In Phase II, joint work is being planned (or funding sought) with FP1 (e.g., agricultural value chains project in Bangladesh in Bangladesh) and with FP3 (impacts of a food safety intervention in Kenya on nutrition and health). FP4 will also explore collaboration with FP5 on methods for evaluating agriculture-health programs. FP4 is closely aligned with the cross-cutting unit on Gender, equity and Empowerment that has and will continue to work with evaluation leaders in other CRPs

3. Clarity is needed on the constituency for the evaluations conducted.

   - Results of individual studies and especially of synthesis of multiple studies, are used by implementers and also by enablers (donors and policymakers). Other researchers benefit from the findings (conceptual and empirical) and the tools, methods and data. More detail is provided in the FP section.

4. Revisit focus on policies relevant to the CGIAR's SLOs.

   - There is a clear emphasis on nutrition- and health-sensitive agricultural policies, and clear links with CCAFS and PIM. Some examples of policies that have been identified for analysis by this FP include: the Productive Safety Net Program (PSNP) in Ethiopia, National Rural Livelihood Mission in India, and the Country Investment Plan on Agriculture, Food Security, and Nutrition in Bangladesh. See FP section for more details.

5. Justify the proposition that A4NH is the right actor to influence the policy environment in developing countries.

   - A4NH is the right actor to understand the enabling environments and political economy issues, to provide evidence and build capacity, and to represent the CGIAR in nutrition and health policy processes. IFPRI and partners already play this role (links to CSSPs, ReSAKSS). Strategic partners like IDS strengthen the links with agriculture in developing countries, and new joint staffing arrangements will enhance the ability of centers like Bioversity to support mainstreaming of nutrition into Rome-Based agencies.
   - In our experience, donors, policy makers and program implementers demand the evidence that research can provide as well as the contribution that research can make to planning, implementation and evaluation of interventions and to policy making using systematic learning

(research) approaches. The skills of A4NH researchers in the combination of rigorous research on interventions, methods for monitoring and evaluation of outcomes, and policy research (analyses of policies and policy processes) had led to strong demand for these contributions not only to improve agricultural solutions to nutrition and health outcomes but also in supporting broader multi-sectoral processes to support countries and donors in their desire to urgently improve nutrition and health outcomes.

3.10.3 Funding the A4NH Agenda: Contribution of Grant Funding and Use of W1/W2

As noted in the A4NH pre-proposal for Phase II and in the ISPC commentary, A4NH has a large proportion of W3/bilateral funding relative to W1/W2 funding. The W3/bilateral grant portfolio is particularly large for two flagship programs (FPs) – FP2: Biofortification and FP4: SPEAR. This large portfolio relates not only to both the high demand for this research from donors and countries and the experience and skill of the research teams, but also to the nature and stage of the research itself. Given the relative size and importance of grants to the A4NH Phase II proposal and the important synergies with W1 and W2 funding, we provide further information and a strategic synthesis of the A4NH research grant portfolio. We feel this grant synthesis is important and timely, because of the large effort required to plan and fund such a grant portfolio as well as the lessons learned from our experience given the relative decline in W1/W2 funding and the importance of bringing together a portfolio of W3/bilateral research grants into a coherent research program for all A4NH FPs.

As part of its results-based management system, A4NH PMU works with A4NH Centers and partners in planning, funding and monitoring W3/bilateral grants. Below, we summarize the current information on grants for the first 3 years of Phase II of A4NH (2017-19 but most continuing from 2016), on the nature of the funding, and its contribution to the FP outputs and outcomes. Of the 5 FPs for Phase II, there are major differences in the grant portfolio and funding strategy. As described, two FPs, FP2 and FP4, have large grant portfolios, and relatively small percentages of W1/W2 funding (10% for FP2 and 15% for FP4). For each, W1/W2 funding is used strategically to leverage a much larger portfolio of program and project grants, described further below. Two newer FPs, FP1: Food Systems for Healthier Diets and FP5: Improving Human Health, have small initial W3/bilateral grant portfolios. We plan to build a grant portfolio in each based on new partnerships with highly-performing research institutions (Wageningen University and Research Centre for FP1 and the London School of Hygiene and Tropical Medicine (LSHTM) convening a group of public health research institutions for FP5). The other FP, FP3: Food Safety, is somewhat intermediate. The research cluster on aflatoxin control has a portfolio of research and development grants in close partnership with the African Union Commission and countries for which W1/W2 funding provides critical research on risk analysis and economic incentives. The other research clusters have small starting grant portfolios that we hope to grow based on recent evidence of much higher priority for food safety in low and middle income countries, following on the recommendations of a recent external review and the opportunity to leverage value chain research funding for perishable foods in other CRPs.

In this document, we summarize the grant portfolio and contributions of W3/bilateral grants and W1/W2 funding to the research portfolios of different FPs and A4NH. We conclude by summarizing lessons on research funding from Phase I and how this influences our research and resource mobilization plans in Phase II.

FP1: Food Systems for Healthier Diets

W3/bilateral grants for Phase II build on projects developed in the value chains for enhanced nutrition (VCN) flagship in Phase I. Both the Food Systems and the VCN flagships define research agendas at the "discovery" stage. Researchable issues relevant to important development outcomes have been identified and work is ongoing to better understand the issues and identify potential solutions. Key research outputs at this stage include data, metrics and the development and validation of conceptual framework. In Phase I, A4NH W1/W2 funding supported research on value chain for nutrition frameworks as well as seed grants to various CGIAR Centers and AVRDC (The World Vegetable Center) for targeted value chain development linked to improved diet quality. This initial funding has led to

successful grants using frameworks, methods and tools developed that will continue into Phase II. These include a CIAT-led value chain for nutrition project in East Africa (using the example of beans and amaranth value chains) funded by BMZ and several Bioversity International grants looking at enhancing nutrition from diverse foods funded by a variety of donors (Carasso Foundation, Australia, and IFAD). There is also a project with funding from Germany to IFAD on value chains for nutrition in Nigeria and Brazil in which A4NH researchers contribute as part of the A4NH-IFAD agriculture-nutrition partnership. Of particular interest, are improving the efficiency and effectiveness of value chain interventions for nutrient-dense foods, particularly in countries with low diet diversity / diet quality such as Bangladesh. In Phase II, IFPRI will lead two projects to improve value chains for fish in Bangladesh from 2017-19 with a variety of partners for approximately $1.5M p.a.

To extend the value chain framework developed in Phase I, IFPRI and partners have a grant from the IMMANA initiative coordinated by LSHTM on food system metrics, taking a multi-chain approach and including structured demand value chains. Wageningen UR has a number of smaller grants ($200-300K p.a.) on food innovation and diet quality diagnostics in the four focus countries. However, most grant funding remains to be secured and developing the grant portfolio pipeline will be a priority in 2016 and 2017.

In Phase II, evidence from these grants will be further systematized and synthesized and the framework adapted, using W1/2 funds. Promising interventions will be further validated and potential new ones identified and tested, largely through grants and in close collaboration with other CRPs.

FP2: Biofortification

Biofortification is a research program at the stage of scaling up and out. The science behind the technical aspects of biofortification has largely been demonstrated, and there is a growing evidence base on nutritional efficacy and cost-effectiveness. Key research issues for Phase II of A4NH are around the science of delivery and around how best to mainstream. These research questions, which were identified as an important gap in past CGIAR technology development (Dahlberg report) are crucial to scale and sustain impact. However they can only be addressed in the context of large scale delivery, which means that significant development investments need to be made and aligned with the research. The strength of the evidence base on potential impact justifies these investments, which donors make using W3/bilateral funds.

In Phase II, Biofortification (HarvestPlus) has three main clusters of activities (CoAs):

1. Crop Development (35%)
2. Nutritional Efficacy, Impact Assessment, Monitoring and Learning, Policy and Regulation (10%)
3. Delivery (both learning about delivery and working with development partners on delivery) (55%)

The research clusters are supported by cross-cutting areas of gender, communications and strategic alliances.

Given its track record as a strong and focused research and development program, HarvestPlus has been able to attract large W3/bilateral grants that support the overall program across all research/development clusters. The two largest grants are from the UK DFID ($13.3M per annum, 2016-19) and BMGF ($8M per annum, 2014-18). As noted in the external evaluation of A4NH, this allows the team to strategically align work to impact pathways and theories of change and bring in strong monitoring evaluation and learning research as well as nutritional efficacy studies. There is also a

continuing stream of research for development of competitive crop varieties with high levels of micronutrients.
As noted, there is also strong donor interest in promoting delivery at scale and piloting delivery for specific varieties in target countries. This leads to a second set of W3/bilateral grants supporting delivery of specific biofortified varieties in specific countries which are usually provided by donors through their missions in the target countries. These grants tend to be 2-3 years in duration. For 2016, grants are from USAID (approximately $4.5M p.a.; Rwanda/Uganda/Zambia), EC ($1.5M p.a. – Bangladesh) and FAO/DFID ($4.2 million total from 2016-18 for Zimbabwe). Beyond proof-of-concept in these target countries, we also work with delivery partners to set up a strong coalition for delivery at scale globally.

W1/W2 funding has been used strategically in Phase I for research to support longer-term varietal development, gender, and evaluation and learning about delivery and nutritional efficacy in target populations in target countries. In Phase II, W1/W2 funding is currently budgeted at 10% of overall FP2 funding, focusing on these research issues.

FP3: Food Safety
The largest group of grants aligned in a programmatic fashion is for the research cluster on aflatoxin control coordinated by IITA. Similar to the case of HarvestPlus, this work is about testing delivery at scale of a technology that was developed and shown to be efficacious in past research. These grants include a large new 5-year grant for scaling up biocontrol delivery (2016-20) of approximately $3.5M per annum as well as the final stages of an on-going World Bank AgResults project looking at private sector delivery models in Nigeria. There have and will be a number of grants by USAID in a number of countries for assessing the risk of aflatoxin contamination and testing the efficacy of biocontrol methods. These grants are coordinated within the overall framework of aflatoxin control in Africa coordinated by PACA (AU Commission). W1/W2 funding (approximately $1.5M per annum) provides complementary research looking at diagnostic testing, health risks and market incentives. Unlike HarvestPlus, the discovery and development stages of the biocontrol research did not include significant investments assessing the economic, nutrition and health outcomes, and these now need to be integrated into the current research agenda.

There are a few small continuing grants for the clusters on Safe Fresh Food and Evidence that Counts. This CoA on Safe Fresh foods is at a proof of concept stage where W3/bilateral grants for implementation and evaluation at scale will be needed to move forward. Proposals on food safety have and will be developed and will be aligned to CRP Livestock value chain research on pigs in Uganda and Viet Nam and on dairy in Tanzania (and Kenya).

FP4: SPEAR
This flagship has three clusters of activities (CoAs).
1. Nutrition-sensitive agriculture programs – what works and how can we implement better
2. Supporting Countries through Research and Enabling Environments (SPEAR) – evidence and processes; political economy analysis and identification of strategies to build and sustain enabling environment for agriculture to contribute to nutrition and health
3. 3C - Capacity, Collaboration, Convening to test alternative approaches to strengthening enabling environments, including through better engaging and leveraging CGIAR

This FP is focused mainly on generating evidence so the “pipeline” stages of research (discovery, proof of concept, delivery at scale) are less appropriate. However, the research is at a fairly advanced stage in the sense that it is based on a good understanding of the current situation; the availability of solid

conceptual frameworks (for both program and policy work) and well defined metrics and methods for conducting the analysis (though refinements of these will result from the research); and stakeholder analysis and engagement with potential users of the research results (program implementers, governments, donors) so that the demand for research is understood and the pathways to uptake at scale identified.

CoA1: Nutrition-Sensitive Agricultural Programs (NSAP) – what works and how to implement

One of the big demands from the 2011 Leveraging Agriculture for Nutrition and Health conference in Delhi was for evidence of what works and how it works. Noting the large number of meta-analyses and systematic reviews that had already been done on the meager existing evidence base of secondary and evaluations, most of which were not designed to look at agriculture's impacts on nutrition and health, it was decided that investments in new data and rigorous impact evaluations were needed. Impact evaluations, would need to be conducted in the context of development interventions, and close alignment between research and development investments would be required so that the development programs could be implemented in ways that would permit rigorous evaluation. This often meant that the same donor(s) funded both the program and the evaluation. Selection of the program was negotiated between donors, program implementer and evaluators, and the generalizability of the lessons that could be learned from the evaluation was one of the criteria considered.

Given the focus on maternal and child nutrition (1,000 days window of opportunity), the initial selection of studies focused on programs that were most likely, on the basis of their design (e.g., homestead food production combined with nutrition and health education) to be able to demonstrate an impact on nutritional outcomes for mothers and children, such as micronutrient status, anemia or stunting. Based on both preliminary findings (largely positive but difficulty affecting stunting in short time frames) and on increased interest in nutrition-related outcomes such as diet quality and women's empowerment that are more closely linked to agriculture, the portfolio of programs and platforms to be evaluated expanded during Phase I to include more agricultural programming.

There are a number of grants working with program implementers that were started in phase 1 that will continue early in Phase II plus new grants just beginning in 2016 and planned for 2017. The largest geographic concentration of projects is in South Asia, which has the highest absolute burden of under-nutrition. New grants that are just beginning and will last for 2-5 years in Phase II include:

- Targeting and re-aligning agriculture to improve nutrition in Bangladesh and India (TRAIN) – (approximately $1M p.a. 2016-18)
- Women Improving Nutrition through Group-Based Strategies (WINGS) together with the agricultural NGO PRADAN. (approximately $800K p.a. for 5 years 2016-20)
- Agriculture, Nutrition, Gender Linkages (ANGeL) – initial pilot period 2016-18 (approximately $800K p.a. for 3 years)
- Research component of the Tata-Cornell led Technical Assistance and Research for *Indian* Nutrition and Agriculture (TARINA) – approximately $700K p.a. for 4 years from 2016

CoA2: Supporting Countries through Research and Enabling Environments (SCORE) – evidence and processes

Given the nature of this research, much of it is carried out in "action research" mode, which means that investments in research and in development are aligned around a common agenda. Two large consortia

grants, one led by IFPRI (Transform Nutrition) and one in which IFPRI participates (LANSA – led by MS Swaminathan Research Foundation) will continue in 2017. The Institute of Development Studies (IDS) is also a major partner in these grants.

There are also a number of smaller grants ($200-$400K) per annum in 2017 and 2018, such as Advancing Research in Nutrition and Agriculture (ARENA) that conducts analyses of cross-country agriculture-nutrition trends and a number of proposals being developed.

CoA3: Capacity, Collaboration, Convening (3C)

This CoA also operates in an action research mode. Given the perceived agriculture-nutrition disconnect in India and the complex policy and partnership environment, a major research and capacity enabling initiative funded largely by a grant from the BMGF called Partnerships and Opportunities to Strengthen and Harmonize Actions for Nutrition in India (POSHAN - http://poshan.ifpri.info/) was initiated just before Phase I. It included strong elements of knowledge and evidence synthesis and translation and through that building coalitions and partnerships for nutrition actions. Given its success a second phase of POSHAN is commencing in 2016 (5 years, $1M p.a.). IFPRI also coordinates activities for the Global Nutrition report, which has proved a powerful tool for monitoring indicators of country performance in nutrition and providing research knowledge, evidence and options for improving country performance. In Phase II, we will also team up with other groups, in partnership with the University of Antwerp-led EVIDENT network.

For FP4 in 2017, W1/W2 is budgeted at $4M, which is 15% of expected funding. W1/W2 funding will used for research analyses across grants, coordination and strategic planning with national partners and research synthesis, communication, and convening of ANH partners from national to international levels.

FP5: Improving Human Health
This FP is at an early stage of the research process. W1/W2 funding will be used to provide evidence and establish immediate research priorities to support grant applications. We have created comparative advantage bringing agriculture and public health researchers together so should be more competitive, and are optimistic that this should help success in grant funding as this joint research capacity can fill the evidence and knowledge gaps demanded for the urgent agriculture-health challenges identified.

One area where research is a bit more advanced is CoA2 on zoonotic diseases. This builds on zoonosis / One Health research – evidence on evolving zoonotic disease risk for people given changes in livestock production and also testing of appropriate solutions, initially at pilot scale and as expanding as funding allows, for priority neglected zoonoses, such as cysticercosis. Three research projects of moderate size ($200-800K per annum) looking at zoonotic disease risks in urban and peri-urban livestock systems in Kenya and India and syntheses of just completed grants looking at spatial analysis of zoonotic disease risk with agricultural intensification.

Cross-cutting units – Gender, Equity and Empowerment (GEE) / Monitoring, Evaluation and Learning (MEL) and Country Coordination and Engagement (CCE)
In Phase I, these cross-cutting research support functions had modest objectives and were funded as part of CRP management. However in Phase II, following a recommendation of our external evaluation, these functions are being recognized as having not only management but also research functions. Thus, it is appropriate that they be supported by a combination of W1/W2 and W3/bilateral grant funding.

At present, we have one large grant ($1M p.a., 2016-2020) supporting gender-nutrition and M&E - research in 16 CGIAR and partner projects (Gender and Agricultural Assets Program II) and another on Linking Research to Impact that has just been approved for full proposal development . We plan to propose additional grants for both GEE and MEL units and will also consider options for grants in the five A4NH focus countries (each has a small amount of W1/W2 funding to support initial collaborative research).

Lessons learned and next steps

1. Grant funding will remain the largest proportion of funding in the short to medium term (between 75 and 90% of overall funding).
2. For program areas in more advanced stages of research and with a track record of performance (see #4 below), it is possible to get grants for both individual projects and for program funding. With a large enough project portfolio and track record, it is possible (but difficult) to create a coherent portfolio of large grants supported strategically by W1/W2 funding to fill in research gaps and create partnerships for research results to enable development outcomes.
3. For newer or less mature research areas, we will initially start with a higher proportion of W1/W2 funding to provide results that make the case for building a coherent research portfolio from individual project grants.
4. For research program areas that have been successful – important elements have been: credible research results that are relevant for real-world planning, implementation and policy decisions; ability to engage stakeholders and donors in a dialogue on critical issues to get a common understanding and consensus; and agreeing objectives and meeting joint expectations through managing research quality and performance.
5. The CGIAR approach to developing impact pathways and theories of change for how its research contributes to achieving priority nutrition and health outcomes has been useful. This approach provides tools and a process for helping A4NH to align its research objectives to the interests of donors, clients (governments, civil society, target populations). Even in the early stages of research, theories of change can help researchers identify and engage with donors and other stakeholders so that research answers the right questions and results are effectively translated to development outcomes.
6. For the common nutrition and health outcomes of the SDGs, CGIAR SRF, CAADP results framework and national strategies and plans, agriculture is a critical sector in low and middle income countries. There is consensus among donors and stakeholders on the importance of agriculture for nutrition and health and that good quality research is critical to shaping and leveraging agriculture for nutrition and health outcomes. This has been a good starting position for co-developing the research agenda and portfolio with donors and clients. In our experience donors, policy makers and program implementers demand the evidence that research can provide as well as the contribution that research can make to planning, implementation and evaluation of interventions and to policy making using systematic learning (research) approaches. The skills of A4NH researchers in the combination of rigorous research on interventions, methods for monitoring and evaluation of outcomes, and policy research had led to strong demand for these contributions not only to improve agricultural solutions to nutrition and health outcomes but also in supporting broader multi-sectoral processes to support countries and donors in their desire to urgently improve nutrition and health outcomes.

3.10.4 Country-specific Materials

To reduce the total size of the Annexes, we have elected to remove the files that were part of Annex 3.10.4 Country-Specific Materials. Instead, please click on this link to our web site where the materials prepared for the 2015-2016 Site Integration meetings can be downloaded.

3.10.5 A4NH Communication Strategy

Strategic communication is central to the impact of the CGIAR Research Program (CRP) on Agriculture for Nutrition and Health (A4NH) and to CGIAR as a whole. Rigorous, high-quality research and evidence must first be accessible, and then shared, discussed, adapted, and used in order to achieve the CRP's outcomes and those outlined in the CGIAR's Strategy and Results Framework (SRF).

A4NH helps realize the potential of agricultural development to deliver gender-equitable health and nutritional benefits to the poor, by maximizing the benefits and minimizing the risks of agricultural actions. A4NH will generate and disseminate a broad range of research products, contributing to changes in policies, programs, and investments that can improve nutrition and health outcomes of those who need it most.

The A4NH communication strategy plays a key role in achieving this. Not only can communications raise visibility and demonstrate accountability of the program and CGIAR, but it can also contribute to achieving CRP outcomes by making evidence, tools, and resources available and accessible to those who can use them to bring about much-needed change. By generating and communicating outputs, A4NH can enable agricultural researchers, value chain actors, program implementers, and policymakers to better contribute to nutrition and health outcomes and impacts through their decisions, policies, and actions.

This strategy outlines A4NH's communication objectives, use of various communication elements, target audiences and their main needs, as well as an overview of how A4NH organizes and manages its communication work.

1) A4NH communication objectives

The following objectives were developed during Phase I by the A4NH Program Management Unit (PMU), with input from both the Planning and Management Committee (PMC) and the Independent Advisory Committee (IAC). These objectives are intended to guide the program's communications activities.

1.1 Influence food and agriculture development agenda;
1.2 Support decisionmakers with the information, evidence, and tools they need to make change;
1.3 Generate and promote high quality evidence on nutrition-sensitive agriculture; and
1.4 Increase visibility and demonstrate accountability of A4NH and CGIAR.

2) Elements of communication strategy

A4NH employs a combination of the following six communication elements in its strategic communication strategy:

I. Engaging in policy dialogue to scale up results,
II. Engaging with actors on the ground to scale out technologies and practices,
III. Communicating the program, the science, results, and progress towards achievements of the SRF 2022 targets throughout the CRP lifecycle,
IV. Communicating and engaging with partners for effective development impact,
V. Promoting learning and sharing of information to improve communication and collaboration within and across CRPs, and
VI. Making CRP information and resources open and accessible.

Within these elements and others, A4NH implements the following types of activities: facilitating and/or participating in high-level policy engagement platforms (i.e. policy briefings, discussions, webinars, and research dissemination events); translating A4NH knowledge and findings into useful formats (i.e. briefs, slides, posters, blogs, and videos) tailored for specific target groups; making A4NH evidence, tools, and resources openly and prominently accessible through online platforms and portals (i.e. the A4NH website and International Food Policy Research Institute [IFPRI] publications repository); ensuring consistent and accurate CRP visibility and helping partners to do the same, via A4NH branding guidelines and communications toolkit (planned for Phase II); and liaising with IFPRI's knowledge management unit and with partners to ensure all A4NH publications and knowledge products are available and accessible, in line with CGIAR frameworks on Open Access (see Annex 3.8) and Intellectual Assets (see Annex 3.9).

3) A4NH target audiences and needs

This table presents A4NH's main target audiences, their communication needs, and how A4NH can help meet those needs. Through regular monitoring and evaluation of communication across the program, A4NH will adapt these target groups, needs, and approaches throughout the CRP lifecycle.

Target audiences	Main communication needs	Communication approach
Within CGIAR		
Participating CGIAR Partners	Frameworks/tools/evidence/outcomes that can be shared or used by other partners or donors; guidance on program branding and communication; access to program documents (reports, evaluations, etc.), news, plans, events, and opportunities.	• Portfolio of A4NH-branded materials, by topic/region/outcome (ongoing); • A4NH branding guidelines (posted online) and communications toolkit (planned); • A4NH website (newsfeed, Gender-Nutrition Idea Exchange [GNIE] blog) video channel, and e-newsletter [planned]); • Relevant information-sharing and capacity support via Gender, Equity, and Empowerment (GEE) Unit and Community of Practice (CoP) (planned); • Program website (resources tab) for frameworks, tools, guidelines, program documents, publications, etc.; • Open access (where possible) to searchable repository of A4NH outputs (in IFPRI repository and linked to partner repositories with A4NH- generated outputs); • Participation in relevant webinars and community-of-practice platforms; • Face-to-face and virtual meetings; and • Annual scientific event (i.e. Agriculture, Nutrition, and Health Academy [ANH Academy] Week).
Other CGIAR Research Programs (CRPs)	Access to news; general information on program and program documents; information on where we work and on who to contact for more information about a topic; opportunities to share research on agriculture, nutrition, and health.	
Beyond CGIAR		

Policymakers – national and international level (members of national and subnational governments)	Strategic advice on national and regional nutrition-sensitive policies; country and/or region-specific news, activities, or results.	• Face-to-face consultations; • A4NH policy and evidence briefs, notes, discussion papers, case studies; • A4NH annual report; and • Multimedia products, including presentations and videos.
Regional networks and international organizations (i.e. African Union, CAADP, NEPAD, SUN, etc.)	Strategic support for joint agriculture-nutrition-health initiatives and global processes; information on who is doing what where.	• Face-to-face consultations; • Policy and evidence briefs, notes, discussion papers, case studies; • A4NH annual report; • Multimedia products, including presentations and videos; and • Capacity building opportunities (i.e. ANH Academy).
Donors (bilateral, CGIAR Fund, etc.)	Evidence of outcomes and impacts (progress towards targets); outcome stories and cases; donor recognition; findings of external evaluations	• Direct donor engagement (roundtables, meetings); • Web features (blogs), social media content, and outcome stories, case studies by donor/topic/region/outcome; • Multimedia products, including presentations and videos; • A4NH annual report and other brochures (featuring work supported by a specific donor and/or measurable performance indicators); and • Acknowledgement of support (websites, publications, blogs, events, social media).
Development practitioners and implementers (non-governmental organizations [NGOs] and other development organizations contributing to evidence-generation or research activities, such as Helen Keller International	Research highlights, frameworks, tools, and evidence generated from partnerships; program materials featuring collaborations; information about program news, opportunities, and events.	• Face-to-face meetings and site visits; • A4NH website (calendar, opportunities, events tabs), e-newsletter (planned); • Web features/blogs (including GNIE), social media content, and outcome stories, case studies by partner/topic/region/outcome; • A4NH annual report; • Multimedia products, including presentations and videos; • Capacity building opportunities (i.e. ANH Academy); and • Capacity building materials developed with partners.

[HKI], Food and Agriculture Organization of the United Nations [FAO], International Fund for Agricultural Development [IFAD])		
Research community (non-CGIAR researchers, universities, academia)	Datasets and publications; resources, such as frameworks, tools, and evidence; program materials featuring collaborations; information about program news, opportunities, and events.	• Open access (where possible) to searchable repository of A4NH outputs; • Face-to-face meetings and site visits; • A4NH website (calendar, opportunities, events tabs), e-newsletter (planned); • Web features/blogs (including GNIE blog), social media content, and outcome stories, case studies by partner/topic/region/outcome; • Multimedia products, including presentations and videos; and • Capacity building opportunities (i.e. ANH Academy).
Private sector and/or value chain partners	Business case for potential investment in A4NH research and activities; contact information for individuals with whom they can follow up for more information.	• A4NH annual report, brochures, case studies, or presentations on research evidence and context-specific application of tools or approaches; and • Face-to-face engagement (presentations, meetings, site visits).

4) How A4NH communication work is organized

In Phase I, A4NH employed one communications specialist at 50 percent time in the Program Management Unit at A4NH's lead Center (IFPRI). In Phase II, A4NH plans to continue employing one communication specialist, but will increase to 100 percent time. With the increase from 50 percent to 100 percent communications staff time, Phase II will see the addition of several new initiatives and strengthened collaboration with cross-CGIAR center and cross-CRP partners to better compile, promote, and share results, tools, and evidence.

A4NH communications and research dissemination is a shared responsibility among communication specialists, scientists, and research partners working in A4NH flagships and projects. The A4NH communication specialist collaborates with and relies on resources, networks, content, and capacity from the lead Center (IFPRI) communications team as well as A4NH flagship leaders, communicators, and scientists from participating CGIAR Centers, other CRPs, and non-CGIAR research partners in order to deliver comprehensive outreach products and activities that represent the full A4NH portfolio.

Collective ownership of A4NH communications by participating Centers, partners, and researchers is essential to deliver impactful reach in Phase II. A4NH flagship leaders and others—including those involved with the GEE Unit, Monitoring, Evaluation, and Learning (MEL) Unit, and Country Coordination and Engagement Unit—will be expected to identify outcomes, tools, and resources from their portfolios which can be promoted and disseminated, and where possible, will designate staff with responsibility for communications, or earmark funds for communications products and initiatives as part of their overall budgeting. As part of CGIAR communications, A4NH will use and support system-wide platforms and opportunities including CGIAR websites, events, initiatives, etc.

Communication activities from Phase I that will continue include:

- Manage and curate the A4NH website and GNIE blog;
- Manage and curate the A4NH video channel;
- Production of an annual report, in both print and web magazine formats;
- Production of visual and multimedia materials highlighting research outcomes, findings, frameworks, and tools, such as briefs, project notes, videos, slides, brochures, etc.;
- Update and manage use of A4NH Branding and Acknowledgement Guidelines;
- Liaise with the IFPRI Communications and Knowledge Management (CKM) division for shared IFPRI/A4NH communication activities including outreach, events, and publications management and cataloguing; and
- Support in organizing, promoting, and reporting on A4NH-relevant events.

New A4NH communication activities planned for Phase II include:

- Establish recurring A4NH e-newsletter;
- Establish and grow A4NH social media accounts;
- Establish an A4NH communication toolkit (including A4NH-branded promotional materials, success stories and results, and branding and acknowledgement guidelines) to help A4NH partners, researchers, and implementers represent and advocate on behalf of the program, globally; and
- Continue and expand information-sharing and support activities from current GNIE blog platform into the planned GEE Unit, and respond to demand for knowledge-sharing support for all A4NH-relevant CoPs; and
- Support in planning and organizing an annual scientific event on agriculture, nutrition, and health.

3.10.6 Potential Indicators for Key IDOs to which A4NH Contributes

The Guidance for Annex 3.5 on Results-Based Management requests "a table of IDO indicators to be used and explanation of how they will be collected." The table has since been made optional.

Table 1 builds on work done in Phase I, including for the Extension Proposal, to identify the IDO indicators we will use to assess A4NH performance. This table complements information provided in the Performance Indicator Matrix Tables on CGIAR 2022 Targets (Table A) and flagship outcomes (Table B) and milestones (Table D). Data for the indicators will mainly be collected in the impact evaluations, adoption studies, and impact assessments described in Table 2 below. In a few specific cases (e.g., the target countries of FP1: Food Systems for Healthier Diets) we will track specific indicators at national level. However, in most cases, we will rely on country processes or CGIAR System-led processes to do that. We will continue to provide technical support to these processes on defining nutrition-related outcomes and indicators.

Table 1. Potential indicators to be used for key IDOs to which A4NH is contributing

Key IDOs for A4NH	Proposed Indicators and methods	Key relevant SDG indicators http://unstats.un.org/unsd/statcom/47th-session/documents/2016-2-IAEG-SDGs-Rev1-E.pdf
1.4 Increased productivity (FP2)	Adoption of technology or practice (by sex) Yield (in some cases by ownership of plot); % increase compared to current variety or practice Yield quality • Micronutrient content of biofortified variety; % meeting minimum target level • Aflatoxin contamination level; % meeting standards Costs of production; profit (when expected to be different from current practice)	***SDG indicators*** 10: Crop yield gap (actual yield as % of attainable yield) 14: [Access to drying, storage and processing facilities] - to be developed 74: Global Food Loss Indicator [or other indicator to be developed to track the share of food lost or wasted in the value chain after harvest] ***Complementary national indicators***: 2.3: Cereal yield growth rate (% p.a.) 2.4: Livestock yield gap (actual yield as % of attainable yield) 2.7: [Indicator on genetic diversity in agriculture] - to be developed 2.8: [Indicator on irrigation access gap] - to be developed 2.10: Public and private R&D expenditure on agriculture and rural development (% of GNI) 15.4: [Indicator on access to genetic resources] - to be developed
2.1 Improved diets for poor and vulnerable people (FP1, FP2, FP4)	Measures of individual diet quality (for women and children): • Full diet analysis (total food and nutrient intakes); adequacy as compared to dietary guidelines and recommended requirements • Individual dietary diversity scores (WDDS and children); % of population with inadequate diets • Intake of specific foods Proxy for diet quality at national level: Share of calories from staples	***Complementary national indicators***: **2.1**: Percentage of population with shortfalls of: iron, zinc, iodine, vitamin A, folate, vitamin B12, [and vitamin D] **2.2**: Proportion of infants 6–23 months of age who receive a minimum acceptable diet **2.6**: Percentage of total daily energy intake from protein in adults **3.23**: Fraction of calories from added saturated fats and sugars

2.2 Improved food safety (FP3, FP4)	Improved food safety Reduction in exposure at point of consumption, as measured by prevalence of pathogen in food X quantity consumed per capita by target beneficiaries A proxy that is frequently used is prevalence of pathogen in food system (e.g., milk, milk or grain quality at different points in the value chain). Using this indicator could overestimate impact where consumers use risk mitigating practices.	***Complementary national indicators***: 12.3: [Indicator on chemical pollution] - to be developed
2.3 Improved human and animal health through better agricultural practices (FP4, FP5)	Direct exposure to pathogen/ hazard in agri-food system, as measured by • Prevalence of target disease in animal population on farm, at slaughter, at market • Reduction in disease transmission opportunities TBD for new areas as in Clusters 1 and 3 of FP5	***SDG indicators*** 49: Percentage of population with access to safely managed water services, by urban/rural (modified MDG Indicator) 60: Ratification and implementation of fundamental ILO labor standards and compliance in law and practice ***Complementary national indicators***: 6.3: Proportion of the population connected to collective sewers or with on-site storage of all domestic wastewaters 6.6: Proportion of the flows of treated municipal wastewater that are directly and safely reused 6.8: [Indicator on Integrated Water Resources Management (IWRM)] - to be developed 8.3: [Indicator of decent work] - to be developed
B.1 Equity and inclusion achieved (all FPs)	Women's empowerment in agriculture index (WEAI) and component indicators (e.g., assets, decisionmaking, leadership, time use); WEAI score as compared to empowerment threshold WEAI proposes specific easy to measure the domains of empowerment but there are also other ways of measuring and sources of data, including nationally representative data sets with standardized questions, eg the DHS (for decision-making especially related to food, nutrition and health) and LSMS-ISA (women's assets) Measures of gender norms and attitudes, usually subjective questions	***SDG indicators*** 5: Percentage of population in rural areas with secure rights to land, measured by (i) percentage with documented or recognized evidence of tenure, and (ii) percentage who perceive their rights to land are recognized and protected 45: Average number of hours spent on paid and unpaid work combined (total work burden), by sex ***Complementary national indicators***: 5.3: Percentage of women without incomes of their own
C.1 Enabling environment improved (all FPs)	# of countries, programs, investments (or donors) using evidence and methods developed by A4NH; type and degree of influence (qualitative assessment)	***Complementary national indicators***: 17.3: Gross domestic expenditure on R&D as share of GDP 17.4: [Indicator on technology sharing and diffusion] - to be developed 17.5: [Indicator on the creation of / subscription to the Technology Bank and STI (Science, Technology and Innovation) Capacity Building Mechanism for LDCs by 2017] - Number of national and investment policy reforms adopted that incorporate sustainable development objectives or safeguards by country 17.7: Value of LDC exports as a percentage of global exports

		17.8: [Indicator on investment promotion regimes for LDCs] - to be developed 17.9: Percent of official development assistance (ODA), net private grants, and official climate finance channeled through priority pooled multilateral financing mechanisms
D1. National partners and beneficiaries enabled (all FPs)	# of people trained, improvement in knowledge (as measured by pre-post tests), change in practice reflecting improve capacity, subjective assessments by beneficiaries of enhanced capacity.	17.9.1 The dollar value of financial and technical assistance, including through North-South, South-South and triangular cooperation, committed to developing countries' designing and implementing a holistic policy mix that aims at sustainable development in three dimensions (including elements such as reducing inequality within a country and governance) 17.16.1 Mutual accountability among development cooperation actors is strengthened through inclusive reviews 17.18.1 Proportion of sustainable development indicators produced at the national level with full disaggregation when relevant to the target, in accordance with the Fundamental Principles of Official Statistics 17.19.1 Dollar value of all resources made available to strengthen statistical capacity in developing countries

3.10.7 Explanatory Note on the Performance Indicator Matrix – Tables

TABLE A.
CGIAR 2022 target: 100 million more farm households have adopted improved varieties, breeds or trees and/or improved management practices

A4NH's contribution = 20.5 million more farm households

A4NH will contribute to this target through two channels:

1. 20 million farm households have adopted biofortified crops (via FP2: Biofortification)

The number of farm households reached with biofortified crops is based on the HarvestPlus monitoring system. The system has data collected by the country teams in collaboration with their delivery partners. For planting material delivered through partnerships with NGOs and public extension officers, these partners keep records on the names and locations of the beneficiaries. For planting material that is delivered through partnerships with seed companies, a record of quantity of planting material sold in each location and the average quantity purchased by farming households is kept, from which the number of households reached can be calculated. In all countries, country teams conduct spot checks in order to verify the reports by partners.

The breakdown by country for this target can be found in the table below:

Country	Target (in millions)
Bangladesh	3.1
DRC	2.6
Ethiopia	0.5
India	2.5
Malawi	0.5
Nigeria	2.7
Pakistan	1
Rwanda	1.2
Tanzania	0.5
Uganda	1.8
Zambia	0.6
Rest of the World (Brazil, Bolivia, Colombia, China Guatemala, Haiti, Nicaragua, Panama)	3
TOTAL	**20**

2. 461,000 farmers have adopted Good Agricultural Practices and/or biocontrol to mitigate aflatoxin contamination (via FP3: Food Safety)

The number of farmers directly reached by aflatoxin projects under FP3: Food Safety is estimated using a bottom-up approach based on a mix of expert opinion and project-level monitoring reports.

For this target, the breakdown by country and crop can be found in the table below:

Country	Groundnut	Maize	Total
Ghana	15,000	20,000	35,000
India	3,000		3,000
Kenya		161,000	161,000
Malawi	13,000	10,000	23,000
Mali	2,000		2000
Mozambique	15,000	10,000	25,000
Niger	2,000		2,000
Nigeria	17,000	70,000	87,000
Senegal	30,000	20,000	50,000
Tanzania	30,000	30,000	60,000
Zambia	11,000	10,000	21,000
TOTAL	**138,000**	**331,000**	**469,000**

Note: In Performance Indicator Matrix - Table A, Mali, Mozambique, Niger, Senegal and Ghana have been grouped together as 'Rest of the World' because individual targets for these countries, after combining with HarvestPlus targets, are less than 50,000 households and since we must report in terms of millions of households, the contribution from the individual countries would appear as close to zero in the table.

CGIAR 2022 target: 150 million more people, of which 50% are women, without deficiencies of one or more of the following essential micronutrients: iron, zinc, iodine, vitamin A, folate, and vitamin B12

A4NHs contribution = 116.1 million more people

A4NH will contribute to this target through two main channels:

1. 43.1 million more people from smallholder households whose micronutrient deficiencies are alleviated from the consumption of biofortified crops (via FP2: Biofortification)

The number of individuals in smallholder households is calculated using the number of households growing biofortified crops, based on data from the HarvestPlus monitoring system and a projection model to account for diffusion and disadoption, and the average household size in each country. Roughly half of the household members are assumed to be female.

It is assumed that that the number of people who increase their micronutrient intake and reduce their deficiency (or deficiencies) varies by crop, depending on the micronutrient level currently available in biofortified varieties (iron beans, orange fleshed sweet potato, iron pearl millet and zinc wheat have full or near full targets), as well as vitamin and mineral retention in typical preparation and storage conditions.

For this target, the breakdown by country can be found in the table below:

Country	Target (in millions)
Bangladesh	8.6
DRC	4.5
Ethiopia	0.6
India	7.7
Malawi	0.6
Nigeria	3.8
Pakistan	1.8
Rwanda	3
Tanzania	1
Uganda	4.7
Zambia	0.8
Rest of the World (Brazil, Bolivia, Colombia, China Guatemala, Haiti, Nicaragua, Panama)	6
TOTAL	**43.1**

2. 73 million more women without anemia, as a result of nutrition-sensitive agricultural programs and policies

This figure was estimated by calculating the gap in 2022 between the current trends for women of reproductive age (15 – 49 years) with anemia in each country and the World Health Assembly (WHA) target (achieve a 50 per cent reduction of anemia in women of reproductive age globally) of achieving an average annual rate of reduction of 5.2%. The assumption is that FP4: Supporting Policies, Programs and Enabling Action through Research (SPEAR) will, by leveraging current policies and investments, help countries to reach a target that they would not otherwise reach. Data on anemia was obtained from the WHO Global targets tracking tool[19].

The table below shows the calculations by country:

Target countries	# in 2022 if current trend continues (in millions)	# in 2022 if WHA Target 2025 applied (in millions)	Difference (in millions)
Bangladesh	19.8	11.8	8.0
Burkina Faso	2.3	1.4	0.9
Ethiopia	3.8	3.2	0.6
India	157.4	97.8	59.5
Malawi	1.0	0.8	0.2
Mali	2.4	1.5	0.9
Nepal	2.5	1.8	0.7
Tanzania	5.3	3.4	1.8
Vietnam	1.9	2.0	-0.1
Zambia	1.2	0.8	0.4
TOTAL	**195.6**	**122.6**	**73**

[19] Updated September 2015, accessed 23 February 2016

Source: Calculations based on the WHO global targets tracking tool; population data obtained from the online data tool of the UN Population Division's World Population Prospects, 2015

Note: Vietnam has been excluded from Performance Indicator Matrix - Table A and the total because it is on track to achieve its WHA 2025 targets. A4NH research will help to ensure that the country stays on track.

CGIAR 2022 target: 10% reduction in women of reproductive age who are consuming less than the adequate number of food groups

A4NHs contribution: 10% reduction in women of reproductive age who are consuming less than the adequate number of food groups, in four priority countries

Data on women's dietary diversity is not consistently collected at national level. This estimate is based on expert opinion, informed by trends based on available data and program evaluations that collected data on diets. However, a new indicator, the Minimum Diet Diversity-Women or MDD-W under the second Women's Dietary Diversity Project (WDDP II), was endorsed in 2014, making it possible to assess changes in women's dietary diversity from survey data. Baseline data for this indicator will be developed in Phase II. A4NH aims to contribute to a 10% reduction in women of reproductive age who are consuming less than the adequate number of food groups in the each of the four priority countries of FP1: Food Systems for Healthier Diets – Bangladesh, Ethiopia, Nigeria and Vietnam. The changes are expected to come about from research on the drivers of and constraints to diet changes among target populations and food system performance related to healthier diets, from tested interventions designed to improve the performance of multiple nutrient-rich agri-food value chains, and from identified options to upscale effective food system innovations to large segments of target populations.

TABLES B. AND C.

Our FP outcomes map to clusters so we used cluster budgets to derive budgets per FP outcome, both the total amount needed and the amount needed from W1/2 (Table B). Since each FP outcome contributes to multiple sub-IDOs, we mapped each FP outcome to the relevant sub-IDOs and apportioned the outcome budget across them. This resulted in an FP-specific cost per sub-IDO and an FP-specific share of W1/2 for each sub-IDO. We then summed these amounts across FP to get CRP totals per sub-IDO (Table C). Unfortunately we could not enter the results in the online tool since the tool only accepts "W1/2 percentage" to 2 decimals places but does not allow for the (inevitable) rounding errors when it checks the consistency of FP budget and % of W1/2 across the two tables. Therefore, to accommodate the online tool, we used our outcome and sub-IDO specific estimates of the total cost (from all funding sources) for each outcome and sub-IDO but applied the FP average W1/2 percentage (rather than the outcome and sub-IDO specific percentages) to estimate the share of W1/2 needed per outcome and sub-IDO.

In one FP there was a small amount (2%) of W3 funding but this could not be included in the analysis since it was lost in the rounding error.

3.10.8 Reference Lists for Phase II Proposal

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3.10.9 Fund Effectiveness Working Group (FEWG) Criteria and Where to Find Information in the A4NH Full Proposal

Note: In anticipation of additional reviews relative to criteria proposed by the Fund Effectiveness Working Group (FEWG), (criteria were circulated in draft form), A4NH we provide a matrix of the draft criteria and sections of the A4NH Full Proposal where relevant information can be found. As the proposal was not structured relative to these criteria, there is not always an identifiable section that be specifically linked to the individual criteria. Hopefully, this will help reviewers identify relevant information, as best as possible.

Flagship review criteria (based on DRAFT version 11 July 2016)	**Section in the A4NH Full Proposal**
1. Potential Impact	
a. Have the proposed impacts pathways of the research – community (social, economic, environmental), capacity building or scientific impacts – been clearly identified?	a. Flagship Project Narrative plus… - *CRP Narrative Section 1.0.3 Impact Pathway and Theory of Change* - *Annex 3.5 Results Based Management*
b. Who stands to benefit? (numbers of households, farmers and/or consumers, in which regions/countries/agro-ecological zones, etc.)	b. Flagship Project Narrative, plus… - *Performance Indicator Matrix (PIM) Table A* for contributions to the SRF targets. - *Annex 3.10.7 Explanatory Note on the PIM Tables* provides more details on methodology and approach - Some flagships describe adoption targets in *PIM Table D*
c. If relevant, is the design (including partnerships) supportive of delivering impact within 5-10 years or > 10 years? (high/ medium/ low)	c. Flagship Project Narrative, plus… - *Annex 3.10.3 Funding the A4NH Agenda* - *Annex 3.1 Partnership Strategy*
d. Is there organizational buy-in from implementing or scale-up partners? (high/ medium/ low)	d. Flagship Project Narrative
e. Does it explicitly outline how gender considerations will be incorporated into the research objectives, methodology and implementation	e. Flagship Project Narrative, plus… - *Annex 3.3 Gender Strategy*
2. Strategic alignment, logistical viability and governance	
a. Is there strong alignment between the proposed interventions or research	a. Flagship Project Narrative, plus… - *CRP Narrative Section 1.0.1 Rationale and Scope*

products and established diagnoses of challenges/problems?	
b. Are the problems, the priorities, the justification for the flagship and the proposed collaborators clearly articulated?	b. Flagship Project Narrative
c. Are appropriate partners identified and roles adequately defined? (including private sector and NGOs etc.)	c. Flagship Project Narrative, plus… - *Annex 3.1 Partnership Strategy*
d. Are institutional arrangements and management clearly articulated and reasonable (e.g., cost-effective)?	*d. CRP Section 1.1.3 CRP Management and Support Costs* and *CRP Section 1.1.4 CRP Financial Management Principles*
3. Comparative Advantage and cost effectiveness/value for money	
a. Are there alternatives sources of supply for the proposed research? (Yes/No) b. Will funding this research through the CGIAR deliver a greater gain than funding other organizations or other research to tackle the identified problem? c. How well aligned is the research with the unique assets and strengths of the CGIAR? d. Is the scale of investment in the research commensurate with the proposed outcomes and scale of impact? (justify the scale of the budget)	Information on comparative advantage and value for money is more generally woven into the CRP and Flagship Project Narratives. Some specific sources of information in the proposal include: - *CRP Narrative Section 1.0.8 Partnerships and Comparative Advantage* and *Section 1.0.9 Evidence of Demand and Stakeholder Commitment.* - *Flagship Projective Narratives* – usually in the introductory sections (Rationale and Scope, Objectives and Targets, Science Quality, Lessons Learned, and Partnerships. Additional information relative to FP1 is found in *A4NH Addenda Responses to the ISPC.* Also information in the following annexes: - *Annex 3.1 Partnerships* - *Annex 3.6 Linkages with other CRPs* (and country coordination) - *Annex 3.10.3 Funding the A4NH Agenda* - *PIM Table A*
4. Monitoring, evaluation and learning (MEL)	
a. Does the plan for ME&L provide sufficient information for interim assessment or review of whether incremental progress is being made?	All the criteria related to MEL apply to the CRP, rather than Flagship level. SMART - Specific, Measurable, Achievable, Realistic and Timely – milestones for each Flagship outcome are described by year in PIM Table D, which was revised for the re-submission.

b. Does the ME&L plan where applicable, even for upstream research, sufficiently map to progress in product development? c. Is it clear which outcomes of the research will be measureable within the timeframe of the flagship/CRP?	- *Annex 3.5 Results Based Management* - *PIM Table D*