



Since beginning in 2012, the CGIAR Research Program (CRP) on Agriculture for Nutrition and Health (A4NH) has provided an innovative perspective on the relationships between agriculture, nutrition, and health through research that strengthens the knowledge base and through new partnerships that lead to outcomes. We recognize that agricultural development has enormous potential to make significant contributions to improving the nutrition and health of people. The role for agriculture to support better nutrition and health is reflected in the discussions leading up to the United Nations' 2030 Agenda for Sustainable Development and in the new CGIAR Strategy and Results Framework 2016-2030. Regionally, it is reflected in the initiative to support countries in integrating nutrition interventions, from design through implementation, into investment plans related to the Comprehensive Africa Agriculture Development Programme (CAADP).

CGIAR has a long legacy of building global food security, but ensuring consumers can access enough healthy, affordable, and safe food requires a perspective that encompasses far more than agricultural productivity. More work is needed to identify and develop nutrition-enhancing production technologies, institutional innovations that support sustainable access to and/or application of these technologies, and policy options that can increase the contribution of agri-food systems to nutrition and health. There is also an urgent need for additional research on how proven approaches to improving nutrition and health can be scaled and sustained in specific countries and contexts.

While our focus on undernutrition will continue, A4NH recognizes there are challenges related to overweight and obesity among adults and children, the rising burden of foodborne disease, and emerging health risks, like antimicrobial resistance. In addition, it is increasingly recognized that inequality related to gender or other social categories is a development objective in its own right and an important condition for achieving other development objectives, particularly related to nutrition and health.

All of these challenges inform A4NH's approach for its second, six-year phase (2017-2022). Led by the International Food Policy Research Institute (IFPRI), based in Washington, D.C., A4NH's research activities are carried out through five flagship research programs and three cross-cutting units based across the globe working with partners on projects in at least 30 countries. This brief provides A4NH stakeholders with a summary of the full proposal we submitted in March 2016 to the Consortium Board for the next generation of the CRPs.

OUR GOALS

A4NH research is designed to contribute to three goals, or system-level outcomes (SLOs), set by CGIAR to reduce poverty, improve food and nutrition security for health, and improve natural resource systems and ecosystem services. More specifically, A4NH contributes to three of the CGIAR targets related to reduced poverty and improved food and nutrition security for health:

- 20 million more farm households in at least 12 countries (in Africa: Democratic Republic of Congo (DRC), Ethiopia, Kenya, Malawi, Nigeria, Rwanda, Tanzania, Uganda, and Zambia, and in Asia: Bangladesh, India, and Pakistan) will have adopted improved varieties, breeds or trees and/or improved management practices;



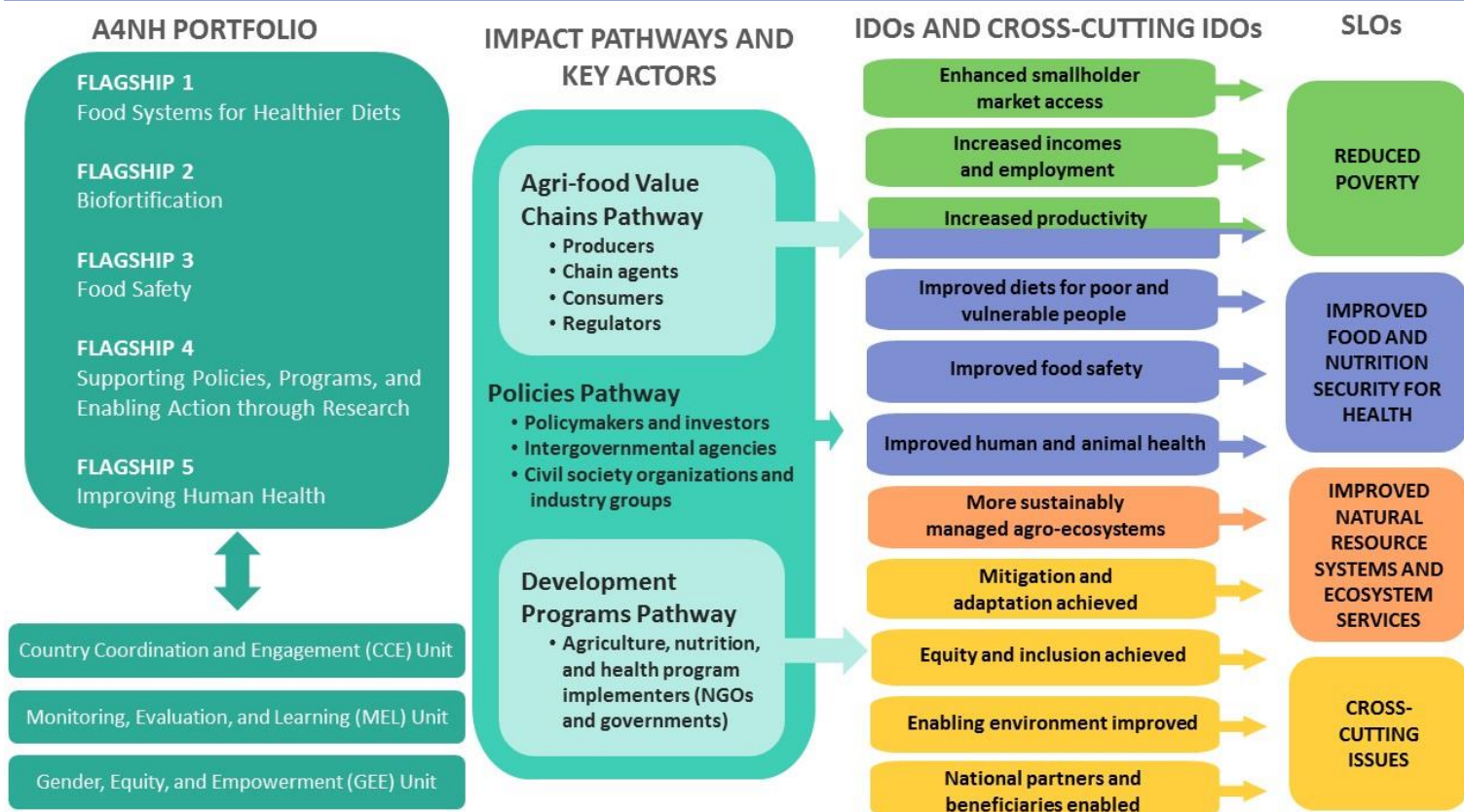
Mother and child. (A.Sanabria/ Courtesy of Photoshare)

- 150 million more people, of which 50% are women, in at least 14 countries (in Africa: Burkina Faso, DRC, Ethiopia, Malawi, Mali, Nepal, Nigeria, Rwanda, Tanzania, Uganda, and Zambia, and in Asia: Bangladesh, India, Nepal, and Pakistan) will be without deficiencies of one or more of the following essential micronutrients: iron, zinc, iodine, vitamin A, folate, and vitamin B12; and
- 10% fewer women of reproductive age will be consuming less than the adequate number of food groups in Ethiopia, Bangladesh, Vietnam and Nigeria.

Beyond these targets, there are several intermediate development outcomes (IDOs) that we use to describe interim results or progress towards reaching the long-term objectives articulated in the SLOs. Through research and activities with our partners, A4NH contributes to achieving 11 of the IDOs by 2022 (Figure 1, shown below).

The A4NH Results Framework describes our impact pathways, reflecting the different ways in which A4NH research activities and outputs, including knowledge, technologies, capacity, and stakeholder engagement, contribute to development outcomes. In some cases, A4NH research provides value chain actors with technologies and capacity to enhance and protect the nutritional content of foods, while mitigating key food safety risks (*agri-food value chains pathway*). We also provide evidence and tools to development implementers to increase the effectiveness of their nutrition- and health-sensitive agricultural programming (*development programs pathway*). Finally, we support governments and donors to improve an enabling environment and create better-informed, better-targeted, and better-implemented policies (*policies pathway*). While we seek to have impact through individual pathways, it is always with an eye toward how the changes in the pathway(s) will influence the system as a whole. The three pathways are mutually reinforcing, with the policy pathway underlying and sustaining the other two

FIGURE 1. A4NH Results Framework

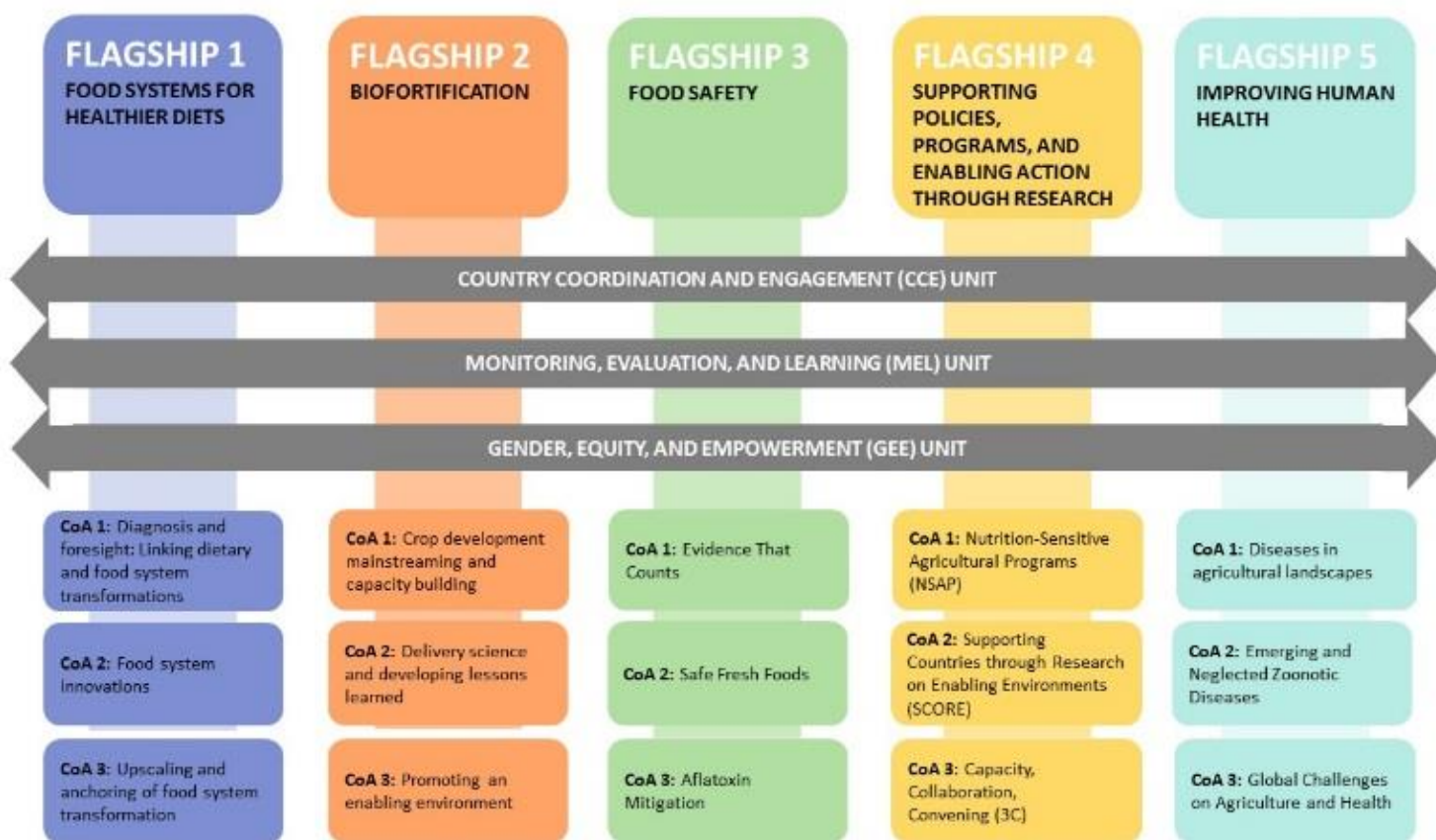


OUR FIVE RESEARCH FLAGSHIPS

A4NH is organized into five flagships, which cover critical research areas in agriculture research for development. The flagships are a collection of projects that are strategically and scientifically defined and involve multiple partnering institutions inside and outside CGIAR (Figure 2, shown on following page). Flagships bring together people, ideas, and resources. Within each flagship, projects are grouped into clusters of activities according to the research outcomes the flagship aims to achieve.

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FIGURE 2. A4NH Program Structure



Food Systems for Healthier Diets (Flagship 1) focuses on food systems through the agri-food value chains impact pathway and the associated policy enabling required to accelerate food system innovation, scaling, and anchoring. A food system is the full set of processes, activities, infrastructure, and environment that encompass production, processing, distribution, waste disposal, and food consumption. Food systems are multidimensional, including sociocultural, economic, environmental, and political aspects, and complex, with multiple actors (food producers, food-chain actors, and consumers) managing multiple linked and nested agri-food value chains within dynamic and interactive food environments. This flagship responds to concerns about global diet trends, and demands from countries for systemic solutions that address problems, such as food insecurity, undernutrition, and overnutrition. By focusing on how food systems establish the food environment in which consumers make dietary choices, A4NH engages with the agri-food system CRPs and complements the sustainable food systems approaches of other CRPs. This flagship plays an important role in building capacity within CGIAR in food systems approaches and in integrating diet, nutrition, and equity concerns through a learning platform, which draws upon expertise from across A4NH and our partners. Since food systems lies outside CGIAR’s traditional expertise, A4NH is excited to have Wageningen University and Research Centre (Wageningen UR) leading the flagship.

Research is organized into three main clusters of activities designed to achieve particular outcomes:

- 1) *Diagnosis and Foresight* assesses regional and sub-regional drivers of food system transformation, and options and constraints for dietary change in order to see partners and other CRPs incorporate nutrition, health and gender in agri-food value chains and food system programs.
- 2) *Food System Innovations* tests concrete agri-food value chains innovations and interventions for improving diet quality and diversity so that stakeholders – investors, civil society, policymakers – consider healthier diets in processes related to food systems.
- 3) *Scaling up and Anchoring* supports the scaling up of successful actions through effective engagement of multi-stakeholder platforms and multisectoral mechanisms so that partners can implement A4NH strategies for agri-food value chain and/or food system innovations at scale.

Biofortification (Flagship 2) builds on the strong track record of the HarvestPlus program. HarvestPlus and its partners develop and deliver new, more nutritious varieties of staple food crops that provide higher amounts of vitamin A, iron, or zinc, the three micronutrients identified by the World Health Organization as

most lacking in diets globally, through a process known as biofortification. Flagship 2 builds on HarvestPlus' highly successful phases of discovery (2003-2007) and development (2008-2013). Its delivery phase, which started in 2014, introduces new questions on how biofortification can work at scale for specific crops and crop-country combinations. Innovative research in the delivery phase focuses on identifying and addressing technical, social (including gender), and institutional constraints associated with ensuring that 20 million farm households will be growing and consuming biofortified crops in nine target countries in Africa (Democratic Republic of Congo, Ethiopia, Nigeria, Rwanda, Uganda, and Zambia) and in Asia (Bangladesh, India, and Pakistan) by 2020. Rarely have agricultural researchers, especially in CGIAR, focused on delivery science, and the HarvestPlus experience represents important opportunities to generate lessons and methods with potential application well beyond biofortification to other issues in A4NH. As part of building an enabling environment for biofortification in the future, A4NH engages in policy analysis and evidence sharing at national and international levels and build capacity of key research and development partners to mainstream biofortification in their research and programming.

Specifically, the three main clusters of activities in Biofortification are:

- 1) *Crop development mainstreaming and capacity building*, which focuses on making sure high-yielding micronutrient enhanced varieties are developed and released in target and expansion countries and that biofortification is mainstreamed into CGIAR and NARS breeding efforts.
- 2) *Delivery science and developing lessons learned*, which works with partners to deliver high-yielding micronutrient enhanced varieties at scale in target and expansion countries and ensure that evidence on nutritional efficacy and impact informs value chain actors, as well as national and international investors.
- 3) *Promoting an enabling environment* in order to see biofortification supported by global institutions and incorporated into plans and policies by stakeholders.

Food safety is moving rapidly up the development agenda as major new studies reveal its severely under-estimated importance. Solutions that are effective in developed countries and export systems have not translated well to informal or formalizing markets. There is an urgent need for technical and institutional solutions to food safety challenges, and broader policy and regulatory approaches to manage food safety risks in dynamic, developing markets. **Food Safety (Flagship 3)** addresses these challenges through targeted research on technological and institutional solutions and appropriate policy and regulatory options that align public health goals with country priorities to ensure that food is both safe and equitable for the poor. Primarily, this flagship focuses on mitigating aflatoxin contamination in key staples and on managing risks in informal markets for nutrient-rich perishables like meat, milk, fish, and vegetables. In close collaboration with value chain research in other CRPs and with partners,



Mother and child, India. (A.Peterman/IFPRI)

this flagship will reach tens of millions of consumers, millions of farmers, and thousands of market agents working in priority countries in Africa and Asia.

The Flagship 3 topics are consolidated into three main clusters of activities:

- 1) *Evidence that Counts* generates evidence on questions at the interface of agriculture and foodborne diseases so that key food safety evidence users (donors, academics, INGOs, national policymakers, civil society, and industry) are aware of and use evidence in the support, formulation and/or implementation of pro-poor and risk-based food safety approaches.
- 2) *Safe Fresh Foods* conducts research on how an institutional innovation known as training & certification (T&C) can improve the quality and safety of fresh foods (initially limited to dairy and meat), in order that market-based food safety innovations, like T&C, are delivered at scale in key countries along with understanding of their impact and appropriate use.
- 3) *Aflatoxin Mitigation* looks at how use of farm-level mitigation technologies and practices, like good agricultural practices, resistant varieties, and/or biocontrol (aflasafe™), could reduce aflatoxin exposure among consumers with the goal of seeing biocontrol and good agricultural practices delivered at scale in key countries along with understanding of their impact and appropriate use.

With agriculture's close links to both the direct causes of undernutrition (e.g., diets, feeding practices, and health) and the underlying factors (e.g. income, food security, education, access to water, sanitation, hygiene and health services, and gender equity), the agriculture sector can play a much stronger role in improving nutrition outcomes. Yet to date, there is little evidence that agricultural interventions are benefiting nutrition or that agricultural growth consistently leads to nutritional improvements.

In many low- and middle-income countries, where a high dependence on agriculture-based livelihoods coexists with a high burden of undernutrition, large changes in agricultural policy and practice have generated relatively small changes in nutrition. In short, there is a disconnect between agriculture and nutrition.

Supporting Policies, Programs, and Enabling Action through Research, SPEAR (Flagship 4) seeks to address major gaps which remain in our understanding of the agriculture-nutrition disconnect. SPEAR will build on current involvement of A4NH staff and partners with global and regional initiatives in Africa and South Asia to support countries in tackling these goals.

To do so, Flagship 4 is structured into three interacting clusters of activities:

- 1) *Integrated Programs to Improve Nutrition (IPIN)* focuses on understanding and documenting the contribution of integrated agriculture and nutrition programs to improvements in maternal and child nutrition in order for development program implementers and investors (governments, NGOs, UN institutions) to use the evidence, tools, and methods to design and implement cost-effective nutrition-sensitive agricultural programs at scale and for researchers and evaluators, including in CGIAR and other CRPs, to use evidence, tools, and methods to design high-quality evaluations of nutrition-sensitive agricultural programs and other multisectoral programs, and strengthen the evidence base.
- 2) *Supporting Countries through Research on Enabling Environments (SCORE)* focuses on understanding how enabling environments—such as policies, institutions, and governance—for nutrition can be created and sustained so that regional, international, and UN agencies and initiatives, as well as investors, can use evidence, tools, and methods to inform decisions and investment strategies to guide and support nutrition-sensitive agricultural programming and nutrition-sensitive policies and so that national policymakers and stakeholders from different sectors, civil society, and industry can use evidence to design effective nutrition-sensitive policies and strategies to enable effective programming.
- 3) *Capacity, Collaboration, Convening (3C)* focuses on strengthening capacity to use and demand evidence, and on providing a bridge to other flagships, CRPs, and relevant national, regional, and global processes in order for stakeholders from different sectors, civil society, and industry, including CGIAR and other CRPs, to have improved capacity to generate and use evidence to improve nutrition-sensitive agricultural programming, nutrition-sensitive policymaking, and implementation.

Research that bridges disciplinary divisions and enhances links between agriculture and health provides a largely untapped opportunity to improve the health and livelihoods of poor people, especially in rural areas where ill health may be the most critical



Market scene (Z.Lahaming/ Photoshare)

pathway for staying or becoming poor, and undermines the benefits of agricultural development. **Improving Human Health (Flagship 5)** is an innovative collaboration between public health and agriculture researchers aimed at mitigating health risks and optimizing benefits in agricultural systems. This flagship is led by a joint partnership arrangement co-convened by the London School of Hygiene and Tropical Medicine and the International Livestock Research Institute (ILRI), thus bridging agriculture and public health research to deliver high-quality scientific outputs and to identify new key opportunities for integrated actions that improve human health. Flagship 5 will also host a Platform for Public Health and Agriculture Research Collaboration, convened by the London School of Hygiene and Tropical Medicine, which will serve as a resource for other CRPs looking to collaborate on agriculture and health.

Priorities for cross-sectoral research fall into three clusters of activities:

- 1) *Diseases in Agricultural Landscapes* concentrates on understanding the health effects of agricultural intensification, including changes in water use, so that agricultural research initiatives, including those in farming communities, are more aware of how and why it is important to measure health risks and benefits;
- 2) *Emerging and Neglected Zoonotic Diseases* studies shared human and animal disease risks and explores the impacts of co-locating and aligning health and agricultural interventions for effective management so that agricultural and public health policymakers and implementers deliver coordinated and effective solutions to cysticercosis, in particular, and other zoonotic threats; and public and private sector policymakers
- 3) *Global Challenges on Agriculture and Health* coordinates research on tackling emerging, common problems for health and agriculture, such as antimicrobial resistance and pesticide resistance, in order for public and private sector policymakers to implement measures to reduce health risks from antimicrobial resistance in hotspot livestock systems

CROSS-CUTTING UNITS

The **Country Coordination and Engagement (CCE)** unit exists to make the way we conduct research more efficient by formalizing ways to share information between A4NH flagships working in select countries and between A4NH and our national partners working across agriculture, nutrition, and health. The unit is made up of five in-country research teams comprised of flagship representatives in the five A4NH focus countries – Bangladesh, Ethiopia, India, Nigeria, and Vietnam. These five countries are where A4NH will target efforts to enhance the orientation of our research so that it supports country leaders, capacity, and performance for healthier food systems and more effective cross-sectoral policies and investments. The five were selected from the countries where A4NH was active during Phase I because they represent populations with significant nutritional deficiencies and health burdens and our flagship teams have the capacity and existing networks in which to carry out our ambitious agenda. There is a possibility that the CCE unit will expand over the course of Phase II to include other countries where flagships operate. A secondary purpose of this unit is to serve as a link between A4NH and the CGIAR Site Integration process, an initiative to help the CGIAR system work, think, coordinate, and collaborate more like a system rather than as separate, independent organizations. Site Integration is being carried out in 20 priority countries. The A4NH focus countries are also CGIAR's priority countries for Site Integration and four of them – Bangladesh, Ethiopia, Nigeria, and Vietnam – are classified as high priority.

The **Gender, Equity and Empowerment (GEE)** unit ensures that gender and equity is integrated into the research and activities of A4NH. Gender is widely recognized as an integral part of the different systems of agriculture, nutrition, and health. Women are traditionally thought of as the guardians of household food security and nutrition, yet decisions about what foods to produce and how to produce them, which foods are sold and purchased, and how foods are prepared and allocated to different household members can be made by both men and women. These household decisions have varying effects on agricultural outcomes and on the health and nutritional status of household members, and are therefore fundamental to A4NH research and impact. All of the flagships expect their research to contribute to CGIAR-designated outcomes, such as *gender equitable control of productive assets and resources* and *improved capacity of women and young people to participate in decisionmaking*. The GEE unit adds expertise and strengthens capacity across both A4NH and CGIAR to reach these goals. The GEE unit hosts workshops and webinars, shares lessons learned and resources through the A4NH Gender-Nutrition Idea Exchange blog, and conducts other capacity development activities identified and carried out through a growing community of practice of researchers and practitioners working on gender and nutrition issues in agricultural programs. The unit also conducts its own strategic research that builds evidence on key conceptual and methodological questions, and develops and validates indicators, tools, and met-



Schoolchildren enjoying lunch. (A.Hoel/World Bank)

rics that can be used to measure impacts of agricultural programs and policies on gender, equity, and empowerment issues. Strategic research carried out by the GEE unit generates evidence across four priority areas: (i) how women's empowerment affects nutrition and health; (ii) how to engage men in nutrition and health; (iii) how to target youth, especially adolescent girls; and (iv) linkages between gender, agriculture, health, and nutrition.

The purpose of the **Monitoring, Evaluation, and Learning (MEL)** unit is to support results-based management and learning, driven by the A4NH theories of change. The current A4NH results framework (see Figure 1) describes the primary 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 flagships 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 GEE – are expected to contribute to immediate and intermediate development outcomes. The MEL unit helps each flagship develop and refine another set of impact pathways at the level of cluster of activities, which provide more detail on the causal chain from specific outputs and related activities to outcomes and identify and assess the assumptions and risks that underlie anticipated linkages in the sequence of outcomes. These theories of change are tools the MEL unit can use to support real-time management and monitoring of the flagships. At the CRP level, the MEL unit manages monitoring, reporting, evaluation, and impact assessment activities and at the flagship level, operationalizes a variety of measures that support learning in ways that strengthen results-based management. As an example, the MEL unit and flagship teams annually review and revise the theories of change based on the collected evidence, and to the extent possible, conducts contribution analysis to reflect and strengthen A4NH performance.

PARTNERSHIPS

A4NH partnerships are driven by the three impact pathways through which we expect A4NH research to deliver results: agri-

food value chains, development programs, and policies. We recognize that partners are critical at all stages of research from discovery through proof-of-concept to delivery at scale. The number of A4NH partners reaches the hundreds and are too numerous to list here. Instead, we classify partners into four broad categories, depending on their role in the impact pathway: researchers (other CRPs, academic institutions), actors in value chains (consumers, transporters, wholesalers, farmers), development program implementers (NGOs, government ministries, UN agencies), and enablers (policymakers, decisionmakers, investors). 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. In Phase II, we will build on these partnerships, but with greater emphasis on the following:

- Support to country planning, actions and champions, which are the foundation of improving nutrition and health outcomes;
- Greater engagement with the private sector, particularly small and medium-size enterprises in Africa and Asia that will be key drivers of food system transformation; and
- More strategic research partnerships with research leaders linking evolving agriculture, nutrition, and health issues in food science, consumer behavior, and public health.

A smaller set of seven institutions play a key role in managing A4NH. These **managing partners** include IFPRI, as the Lead Center, plus Bioversity International, CIAT, IITA, ILRI, the London School of Hygiene and Tropical Medicine, and Wageningen UR. Managing partners are essential to effectively implementing the A4NH research agenda and research-for-development partnerships. All managing partners commit to specific research and country engagement leadership roles and to building and co-managing the human and financial resources of A4NH. Managing partners are part of the A4NH Planning and Management Committee and actively support A4NH communication and advocacy. With two managing partners outside the CGIAR system – the London School of Hygiene and Tropical Medicine and Wageningen UR – A4NH gains comparative advantage in research areas like public health and food systems, and links to new strategic partners from their respective disciplines and from the private sector, through the platforms and consortia they lead and support.

Beyond the managing partners, there is an influential group of **strategic partners** that dedicate human and financial resources in important research areas, and actively engage in planning and implementing research with others in A4NH. Potential strategic partners come from CGIAR (Centers and CRPs) and from the broader research community (for example, the Institute of Development Studies, Public Health Foundation of India, and Hanoi

School of Public Health), actors in value chains (such as, seed companies, the Global Alliance for Improved Nutrition, and the Pulse Innovation Platform), development implementers (such as, BRAC, Helen Keller International, and World Vision), and enablers (such as, national governments, the Partnership for Aflatoxin Control in Africa, International Fund for Agricultural Development, World Health Organization, Food and Agriculture Organization of the United Nations, and the World Bank). **Collaborative partners** include hundreds more entities with which A4NH works on specific research, capacity building, or stakeholder engagement activities.

ADDING VALUE TO CGIAR

A4NH works in a complementary, joint relationship with the other CRPs to contribute to the achievement of the goals of CGIAR. While A4NH has its own set of research questions, impact pathways, and outcome targets against which we must report progress, in most cases we plan and implement research in close collaboration with other CRPs. A4NH has coordination and support functions for CGIAR related to nutrition and health context setting, synthesis, convening or engagement in specific policy processes, and supporting networking and mutual learning through communities of practice and other learning platforms. Our approach is built on a couple of assumptions about our role in the CGIAR system. First, our focus on the drivers of food demand and on diets complements CGIAR strengths on supply and on individual commodities. Second, our research activities can foster willingness and capacity to work across sectors.

In this regard, A4NH proposes to fulfill this role in CGIAR through three mechanisms:

1. Joint research, or closely aligned research, between A4NH and other CRPs to help each CRP and CGIAR as a whole achieve its ambitious outcomes and make a worthwhile contribution to the Sustainable Development Goals. Joint research is characterized by joint planning, investment, and reporting.
2. Networking and mutual learning, through learning platforms and communities of practice, 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.

GOVERNANCE

The IFPRI Director General and IFPRI Board of Trustees are responsible for the overall governance and performance of A4NH. The Program Director manages a small Program Management

Unit within IFPRI, chairs the Planning and Management Committee, and is accountable to the Director General of the Lead Center and the Lead Center Board. The Planning and Management Committee consists of the Program Director, flagship leaders, a representative from both the GEE and MEL units, and a senior leader from each of the managing partners. An Independent Steering Committee is delegated a governance role by the IFPRI Board of Trustees. The Independent Steering Committee makes decisions about annual work plans and budgets, commissions external evaluations, and reviews the annual performance of the Program Director.

BUDGET FOR PHASE II

A4NH proposes a six-year base budget of \$618 million for its second phase (See Table 1). Our budget comes from multiple sources. Around 22%, or \$134 million, comes from the CGIAR Fund. The remainder comes through program and project grants. Actual levels of funding and the indicative allocation among flagships may vary in the course of implementation in response to realized funds and priorities of partners. The indicative budget presented in the proposal shows 96% for research, and 4% for management and cross-cutting functions performed by the A4NH Program Management Unit.

TABLE 1. A4NH Proposed Phase II Budget

Flagship	Windows 1 and 2, in USD	Window 3/bilateral, in USD	Total Budget, in USD
Flagship 1: Food Systems for Healthier Diets	27.7 million	65.6 million	93.3 million
Flagship 2: Biofortification	22.1 million	208.0 million	230.1 million
Flagship 3: Food Safety	23.8 million	55.4 million	79.2 million
Flagship 4: SPEAR	26.4 million	114.0 million	140.4 million
Flagship 5: Improving Human Health	13.6 million	41.1 million	54.7 million
Management and Support	20.4 million	-	20.4 million
Total			618.1 million

WANT TO LEARN MORE ABOUT A4NH?

1. Visit our website: a4nh.cgiar.org
2. Hear about results directly from our researchers: vimeo.com/a4nh
3. Contact A4NH Director, John McDermott: j.mcdermott@cgiar.org

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