

Evaluation Study of the IFPRI/A4NH Research Program on *Diet Quality and Health of the Poor*

Jere R. Behrman and Shibani Ghosh



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LIST OF ACRONYMS

3ie	International Initiative for Impact Evaluation
A&T	Alive & Thrive
A4NH	CRP on Agriculture for Nutrition and Health
AAD	agriculture associated diseases
AAU	Addis Ababa University
AED	Academy for Educational Development
AGP	Ethiopian Agricultural Growth Program
ANH	agriculture, nutrition and health
ARENA	Advancing Research on Nutrition and Agriculture
BCC	behavior change communication
BMGF	Bill & Melinda Gates Foundation
CGIAR	With the reforms, “CGIAR” has now been adopted as a name. It was originally the abbreviation of the Consultative Group on International Agricultural Research
CPA	Communications and Public Affairs Division of IFPRI
CRP	CGIAR Research Program
CSA	Central Statistical Agency
DFID	United Kingdom, Department for International Development
FCND	Food Consumption and Nutrition Division of IFPRI
GRP24	Global Research Program, Diet Quality
IAS	Indian Administrative Service
ICAR	Indian Council of Agricultural Research
ILRI	International Livestock Research Institute
IPR	Internal Program Review
IYCF	infant and young child feeding
LANEA	Leveraging Agriculture for Nutrition in East Africa
LANSAs	Leveraging Agriculture for Nutrition in South Asia
MTP	Medium-Term Plan
NGOs	nongovernmental organizations
PHND	Poverty, Health and Nutrition Division of IFPRI
PIM	CRP on Policies, Institutions, and Markets
POSHAN	Partners and Opportunities for Strengthening and Harmonizing Actions for Nutrition in India
PSNP	Ethiopian Productive Safety Net Program

RISE	Retreat for IFPRI Staff Everywhere
SBCC	social behavior change communication
SDGs	Sustainable Development Goals
SES	socioeconomic status
SoC	Stories of Change
SPS	Sanitary and Phytosanitary Agreement
TANDI	Tackling the Agriculture-Nutrition Disconnect in India
TN	Transform Nutrition: Tackling the Neglected Crisis of Undernutrition
TN-WA	Transform Nutrition West Africa

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EXECUTIVE SUMMARY

IFPRI's Poverty, Health, and Nutrition Division (PHND) and the CGIAR Research Program on Agriculture for Nutrition and Health (A4NH) have conducted research on the critical links between nutrition, health, and agriculture since 2003. The work began at IFPRI as Global Research Program 24 (GRP24) on *Diet Quality and Health of the Poor* and evolved over time, becoming part of IFPRI's *Strategic Research Area 2: Promoting Healthy Food Systems (Programs and Policies to Improve Nutrition)* and then, in 2012, it became the flagship on *Integrated Programs and Policies for Nutrition* within A4NH. This evaluation, which was commissioned jointly by IFPRI and A4NH, covers the impact of the combined research program from 2003 to the end of the first phase of the A4NH flagship program in 2016. During this timeframe, the work of the research program was carried out through some 140 projects, among which some of the most important were *Alive & Thrive (A&T)*, *Partners and Opportunities for Strengthening and Harmonizing Actions for Nutrition in India (POSHAN)*, *Transform Nutrition (TN)*, *Stories of Change (SoC)*, *Leveraging Agriculture for Nutrition in South Asia (LANSA)*, and *Advancing Research on Nutrition and Agriculture (ARENA)*, with funding from a number of donors.

Key questions posed for the evaluation include: Did IFPRI/A4NH have the right research strategy and make appropriate adaptations based on internal learning, stakeholder and partner inputs, and evolving circumstances? Has IFPRI/A4NH been effective in identifying, engaging, and supporting key partners and influencing its target audiences: other researchers, development program implementers, policymakers, and donors? How effective has IFPRI/A4NH been in increasing partner capacity, especially in developing countries, for identifying and analyzing data for better investment and policy decisions and designing, implementing, and evaluating multisectoral agriculture-nutrition-health linked interventions? What has been the impact of the programs and policies that IFPRI/A4NH influenced?

To support this assessment, we consulted with researchers, clients, and other stakeholders. We selected India and Ethiopia for in-depth case studies in consultation with GRP24 and A4NH staff. These two countries accounted for a large share of the program's budget. In Ethiopia, PHND/GRP24 invested substantially in evaluation of the Productive Safety Net Program (PSNP) and in India, projects have focused largely on maternal and child nutrition. We conducted 39 interviews with participants, partners, and stakeholders associated with the work conducted in these countries. Interview questions were tailored to the interviewee, but generally addressed experiences with the program, how well the program achieved its objectives, how well it used relevant approaches and methods, and to what extent it contributed to capacity building. Some caveats regarding the information gleaned from the interviews should be mentioned: the interviewees do not constitute a representative sample, and many had worked for GRP24, A4NH, or IFPRI; interviews were conducted in 2018, so answers are likely skewed toward more recent events; and not all interviewees were able to distinguish work under this program from similar or related work. In addition, we reviewed numerous documents, including proposals, project abstracts, internal reviews, and research outputs, as well as measures of impact of the publications produced by the program.

FINDINGS

Relevance of Research Strategy

The primary focus of the *Diet Quality and Health of the Poor* programs was research. These programs were undertaken in the context of changing global challenges in nutrition and food security, including increasing recognition of the importance of nutrition during the first 1000 days, increasing prevalence of overweight and obesity, and substantial market changes. The appropriateness of research strategies, and adaptation to changing circumstances, is therefore integral to the programs' success.

Downloads of project papers, citations of publications, and presence on social media as measured by Altmetrics are useful measures of the appropriateness of research strategies. A number of PHND and A4NH projects generated substantial attention by these measures, including high rankings for several editions of the *Global Nutrition Report*, peer-reviewed literature reviews, and primary research articles.

Perceptions of participants, partners, and stakeholders provide another measure of research strategy appropriateness. The interviews raised several issues: First, while the agriculture-nutrition linkages research strengthened over time, especially after 2011, the programs were less successful in deepening research on the double-burden of malnutrition, overweight and obesity, and urban populations, largely because neither CGIAR and its donors nor most country governments were interested in funding this work. Second, context limited the acceptability of some research strategies, such as randomized controlled trials. In the case of Productive Safety Net Program (PSNP) evaluations in Ethiopia, for example, quasi-experimental methods were used rather than randomly assigning beneficiaries to the safety-net program. Third, the large scale of data collection required significant investment in data quality assurance, but also laid the foundation for more confident conclusions, and interviewees perceived that the data were of high quality. For example, in Ethiopia, the quality of the data and related findings allowed local researchers and policy professionals to bring key issues to the government's attention. The collection of consistent and comparable panel data was particularly important, allowing for a comparable baseline, midline, and endline for PSNP evaluation. In large, heterogeneous countries such as India, localized data can be essential for better investment and policy decisions, and development of Indian district-level profiles through the POSHAN project has been an important contribution.

Identifying, Engaging, and Supporting Key Partners and Influencing the Target Audience

The interviews pointed to successes and failures in engagement. Continuity, including in-country residence and frequent visits, is critical to developing the strong relationships between researchers and stakeholders that allow for policy impact. Relations with donors are also critical to engage them with research strategies. The interviewees often were not aware of the role of PHND or A4NH. However, stakeholders in Ethiopia and India reported that they were quite aware of IFPRI and the activities of programs with which IFPRI interacted or collaborated, such as Alive & Thrive, Ethiopia's PSNP, and POSHAN. For example, a former Ethiopian government official said he was familiar with Alive & Thrive and suggested the project had driven thinking on infant and young child feeding (IYCF) in the country and that IFPRI research has been critical in moving Ethiopia forward with policy and strategy development. In India, stakeholders mentioned familiarity with the district profiling activities of POSHAN and IFPRI's positive relationship with Niti Aayog (the government think tank responsible for India's nutritional mission), and that IFPRI's papers and policy briefs are taken seriously. The generally positive perspective on engagement was tempered by some challenges. For

example, in India, where turnover of government personnel is frequent, the most stable partners were found to be in nongovernmental or “boundary” stakeholders rather than in governments.

Enhancing Partners’ Capacities

Although the primary goal of the PHND and A4NH programs was policy-relevant research, they also contributed to researchers’ and stakeholders’ capacities through “learning by doing” and more general support for research and evidence-based policies. Explicit efforts were made to build capacity for evaluations, including for example, short courses for district officials on nutrition and data in India and work with local universities, local investigators, and research assistants in IFPRI projects in Ethiopia. Work with Ethiopia’s Central Statistical Agency (CSA) on evaluation of the PSNP generated capacity for panel data collection, electronic data collection, and ensuring data quality. A key impact of IFPRI’s capacity building and training has been to change the language of evaluation—moving governments away from a focus on monitoring to evaluation, including systemic comparisons to generate counterfactuals. Despite these strengths in building partners’ capacities, some interviewees suggested that it would have been better to have devoted more resources to direct capacity building, particularly of younger researchers.

Impacts of Projects Related to Diet Quality and Health of the Poor

To evaluate the impact of the PHND and A4NH work in the absence of any quantitative estimates, we rely on narratives about policy influence and outcomes from stakeholder interviews and on data on use of research outputs. As noted above, impact depends on both the quality of the research and continuity of involvement of policy and policy-related stakeholders.

In Ethiopia, researchers have worked closely with stakeholders on evaluation of the PSNP. Analysis of PSNP–III showed that it was failing to have an impact on nutritional outcomes and that there were problems with getting funds to beneficiaries, both of which findings led to changes in the program design. Analysis and the lessons learned from the Alive & Thrive program led to the integration of nutrition and social behavior change communication (SBCC) into PSNP–IV, and SBCC materials are also now widely used in other contexts. Stakeholders reported substantial reliance by the PSNP on research and surveys conducted by IFPRI, noting the importance of the research in showing the impact of PSNP and informing the redesign of the program for a shift toward greater nutrition sensitivity and building long-term resilience. In addition to the shift from monitoring toward evaluation, capacity for data collection increased, and the CSA led the evaluation for PSNP–IV. Findings from Transform Nutrition in Ethiopia have supported work on nutrition-sensitive agriculture, multisectoral coordination, and water, sanitation, and hygiene (WASH) as well as nutrition-specific projects. Also, the *Lancet* papers on nutrition-sensitive interventions have contributed substantially to policy discussions in Ethiopia, driving thinking on nutrition-sensitive agriculture, including helping to identify appropriate interventions and developing indicators. Some efforts were less successful. For example, the Stories of Change project had interesting findings, but these do not appear to have been used much.

In India, IFPRI’s work is widely cited and played a key role in bringing the disconnect between India’s rapid economic growth and alleviation of undernutrition into public discussion. A number of projects are reported by researchers and stakeholders to have positive impacts. TANDI was an early project that led to the proliferation of agriculture–nutrition activities in India as well as globally. With findings from a maternal nutritional pilot, Alive & Thrive helped develop a package of maternal nutritional interventions for the Ministry of Health, which is responsible for antenatal health. Niti Aayog’s monitoring of Sustainable Development Goal indicators related to nutrition and health refers to IFPRI’s work, and international organizations working in India make use of IFPRI studies. At

the state level, *Stories of Change* is reported to have had significant traction, for example, leading the government of Odisha to request further policy engagement. POSHAN has developed district-level data that allows for an assessment of nutrition at a disaggregated level and is viewed as providing insightful data analysis and evidence on nutritional priorities. However, a few stakeholders felt that research was not leading to government uptake and policy change. And a problem arose with the *Global Hunger Index*, as many stakeholders perceived methodological problems with its analysis and ranking of nutritional status in India, posing a threat to the perceived quality of IFPRI research.

Quantitative indicators on use of GRP24 and A4NH publications, including citations, Altmetrics, and downloads, provide another measure of how much the broader community is paying attention to, and being affected by, this research. Overall the numbers on use of this work are impressive, suggesting a broad reach to diverse audiences. Looking at 182 GRP24 and A4NH journal articles, there had been 2,689 citations as of early 2018. While some titles were never cited, one received 315 citations, and the median number of citations is 2.0 overall and 0.5 per year since publication. The top 10 were published across more than a decade (2002–2013), including five in nutrition journals, and the top one in an economics journal. Altmetrics provides a weighted count of the amount of attention a publication received in a range of online and other platforms (news stories, blogs, policy documents, and social media). Of 171 research outputs and external publications from GRP24 and A4NH, 29 research outputs and 55 external publications earned scores of 2 or more. The Altmetric score for the 2015 *Global Nutrition Report* is an order of magnitude greater than for any other item. Thirty *Global Nutrition Report*-related items—particularly the 2014, 2015, and 2016 reports and a complementary poster for 2015—accounted for 50 percent of total downloads (193,745), out of 928 GRP24 and A4NH titles. Country and nutritional profiles accounted for another 27 percent.

RECOMMENDATIONS

- (1) Given the importance of changing nutritional problems globally, such as overweight and obesity and dietary change, the key actors in these research programs, and in the CGIAR system more broadly, should revisit whether there are ways of pursuing research on these new issues. Have the traditional donors evolved in their understanding of these issues so that they might be more amenable towards supporting this research now? Are there other funding possibilities that might be explored? For example, in the past IFPRI PHND researchers obtained some funding from the US National Institute of Child Health and Development, which seems interested in these topics. Also, could there be more IFPRI/CGIAR support for researchers engaged in such fund-raising efforts?
- (2) Further consideration should be given to the balance between research and other activities. Might it be possible and desirable to increase research designed to enhance knowledge on how to improve and scale up implementation of promising small-scale programs?
- (3) Consideration should be given to using a wider range of methodological tools, for example, structural economic models, which have the advantage of permitting counterfactual simulations of policy changes or market changes not observed in the data. Also, it would be desirable for some programs to investigate market-wide and general equilibrium effects and for most programs to address directly efficiency versus distributional considerations and possible discrepancies between social and private rates of return. Finally, it would be desirable to consider engaging more broadly with other disciplines beyond nutrition and economics in the research program, for example, with consumer psychology, marketing, or child development psychology.

- (4) For big, populous complex countries—particularly India, but perhaps others—more consideration should be given to developing relations and undertaking studies not only at the national level but also at some more disaggregated level (possibly states or districts). We understand that considerable progress has been made on this point and the next two points in India since 2016, the end of the period for the present review.
- (5) In India, in particular, the practice of engaging stakeholders extensively, including brainstorming about what research topics most merit exploration, should be reinforced. For agriculture-nutrition concerns, this generally should involve the Ministries of Agriculture and Health.
- (6) Research outputs should be “decoded” into simple, easily digestible policy briefs to influence decisionmakers and contextualized to the country to make them more easily understandable.
- (7) Introduction of more online learning modules should be considered as there is high turnover of professionals among partners, who often leave their positions after being trained.
- (8) The focus on small grants for researchers and student internships should be increased, especially in areas where skills are needed, with more support for short-term training, biostatistics, and preparing policy briefs from relevant research findings.
- (9) A better strategy should be developed to communicate what programs are and what they do, including website improvements and distribution of easy-to-understand briefs.
- (10) More emphasis should be placed on formative research and on learning from less successful experiences (for example, orange-fleshed sweet potato in Ethiopia) as well as successful ones.
- (11) IFPRI headquarters organizes webinars for IFPRI staff that would also be helpful for local people if they could access them, for example in the form of a seminar/webinar recording.
- (12) A strength of PHN researchers is that academic interest drives the thinking and projects. Based on interests, it will be important moving forward (if IFPRI/A4NH chooses) to find a way to link the right researchers to each other so that the objective of linking agriculture to nutrition can be better met.

1. INTRODUCTION

This evaluation is of the IFPRI Poverty, Health, and Nutrition Division (PHND) and the CGIAR Research Programs on Agriculture for Nutrition and Health (A4NH) program on *Diet Quality and Health of the Poor* for the years 2003 through 2016. PHND has worked on these topics at least since 2003 as Global Research Program 24 (GRP24). In 2011, following the IFPRI 2020 conference in New Delhi on “Leveraging Agriculture for Improving Nutrition and Health,” PHND led the development of A4NH. IFPRI served as the lead institution for the first phase of the A4NH program in 2012–2016. A4NH was designed to fill a research gap between agricultural development and its health and nutrition benefits. The overall program reflected the CGIAR Strategic Results framework (April 2011), including the objectives of improving human nutrition and health, reducing rural poverty, improving food security, and achieving sustainable management of resources. A subsequent second phase (2016–2018) is beyond the period of this evaluation. The first phase of the A4NH program had four flagships:

- Flagship 1. Value Chains for Enhanced Nutrition
- Flagship 2. Biofortification
- Flagship 3. Agriculture Associated Diseases
- Flagship 4. Integrated Programs and Policies

The rest of this introduction summarizes the evolution of GRP24, provides the statement of work for this evaluation, and summarizes the structure of this report.

1.1 Evolution of GRP24¹

The *Diet Quality and Health of the Poor* research project (GRP24) evolved from a former multicountry project that focused on links between micronutrient malnutrition and agriculture and sought to identify food-based solutions to alleviate micronutrient malnutrition among the poor. GRP24 was established with a wider scope and encompassed the whole spectrum of diet-quality-related problems, from undernutrition and micronutrient deficiencies to overnutrition, obesity, and chronic diseases. It was also intended to go beyond agriculture and consider a larger set of policy and program options to address the dietary and nutritional transition and its potentially harmful impacts on health.

GRP24 was launched in 2003. Its original objective, as defined in the Medium-Term Plan (MTP) 2004–06, was to generate a global understanding of the main drivers of current trends in dietary quality and dietary changes in order to identify effective policy levers to improve dietary quality of the poor, reduce food insecurity and under- and overnutrition, and redirect the nutritional transition toward health, especially for the poor. Specifically, the research project was set up to:

1. Build an understanding of how and why diets are changing in countries and regions at different stages of the dietary transition;
2. Identify the key food-system drivers behind these changes in diets, nutrition, and health;
3. Identify effective food-policy and food-based interventions to improve dietary quality among the poor, including policies that have synergistic benefits for the agricultural sector; and

¹ Based on background information provided by IFPRI.

4. Develop and validate tools to measure dietary quality and to include dietary quality concerns into poverty measures.

The objectives of GRP24 were modified somewhat over time, apparently as progress and available funding dictated. By the 2011–13 MTP, the overall goal of this project had become: to build a greater understanding of dietary changes among the poor and identify food policies and interventions to improve dietary quality. Specifically, the project sought to answer the following questions:

1. What strategies can improve dietary quality for the poorest, most vulnerable, women and their children, and how can we measure progress?
2. How and why are diets changing across different types of households and among different household members, including women, in countries at different stages of the nutritional transition?
3. What policies are needed to reorient these changes?
4. What are the “win-win” solutions for both agriculture and dietary quality?

Tracking GRP24 after 2011 becomes more complicated because it became part of IFPRI’s Strategic Research Area 2: *Promoting Healthy Food Systems* (Programs and Policies to Improve Nutrition). As stated in the 2015 RISE (Retreat for IFPRI Staff Everywhere) report from PHND, the focus of the research had become limited to programs and policies to improve dietary quality, nutritional status, and health of mothers, infants, and young children in impoverished environments. During this period, GRP24 research focused on interventions to improve nutrition during the early-life “window of opportunity”—the 1000 days from conception to when the child reaches 24 months of age—and on preventing, rather than treating, childhood undernutrition, as well as analyzing patterns and trends in undernutrition to inform program and policy design. GRP24 was also linked into A4NH beginning in 2012.

1.2 Statement of Work for This Evaluation

“IFPRI’s work on *Diet Quality and Health of the Poor* began as a multi-country research program (GRP24) in 2003 and has evolved to become a flagship project (Integrated Programs and Policies for Improved Nutrition) within the CGIAR’s multicenter research program on Agriculture for Nutrition and Health (A4NH). IFPRI and A4NH jointly wish to hire ... consultant[s] to undertake an evaluation of this program of work to determine what influence and impact the program has had on the research community, and on the policies and nutrition and health programs of governments, nongovernmental organizations (NGOs), and development assistance agencies. The evaluation will cover the research program activities undertaken over the period 2003 to the end of the first phase of the A4NH flagship program (2016). Relevant questions for the study include:

1. Did IFPRI/A4NH have the right research strategy over the period of study, making appropriate adaptations based on internal learning, stakeholder and partner input, and evolving external circumstances? Did the research team use the most relevant approaches and methods?
2. Has IFPRI/A4NH been effective in identifying, engaging, and supporting key partners and influencing its target audiences: other researchers, development program implementers, and enablers, including policymakers and donors? Have strategies for engaging and influencing evolved appropriately over time?

3. How effective has IFPRI/A4NH been in enabling partner capacity, especially in developing countries? Enabling would include capacity for (1) designing, implementing and evaluating multi-sector interventions, especially agriculture-nutrition-health linked interventions; and (2) identifying and analyzing data for decisionmaking and evidence support to better investment and policy decisions designed to improve nutrition and health outcomes among the poor?
4. In selected countries, what has been the impact of the programs and policies that IFPRI/A4NH influenced?

It is expected that the study will involve:

- A comprehensive review and assessment of the overall contributions of the research program in terms of the relevance and quality of its research, research capacity building, and communications activities and outputs;
- Developing a conceptual framework (impact pathway) for assessing the economic and social impacts of its main outputs at international and national levels, including its impacts on integrated agriculture, nutrition and health programs and projects;
- Consulting with researchers, clients and other stakeholders involved in the studies/activities to develop a first assessment of perceived impacts as well as challenges in achieving impacts.
- Selecting and undertaking 2 or 3 project case studies from within the research program portfolio where impacts can be demonstrated. This will include tracing the pathways and influences of the project on key stakeholders at international, regional, national, or organizational levels; identifying policy responses and other effects generated or influenced by the project; and if possible, measuring the ultimate impacts in qualitative and quantitative terms.
- Evaluating IFPRI's role in the case study projects and more generally within the research program through stakeholder questionnaires and interviews, document searches, etc. The objective here is not to so much to make direct attributions of benefits to IFPRI/A4NH, but rather to demonstrate the types of influence IFPRI/A4NH had on key partners.
- Drawing lessons for IFPRI and A4NH as learning organizations aimed at improving the potentials for future impact from programs of this nature and in general; and

A clear identification of the international public goods that the program has produced.” (IFPRI/A4NH 2018).

1.3 Organization of Report

Section 2 sets the stage with a conceptual framework to provide structure for the study and a summary of the multiplicity of information sources on which the study is based. The next four sections focus on the four questions (outlined above) that the study addresses. Section 3 considers whether IFPRI/A4NH had the right research strategy over the period of study, making appropriate adaptations based on internal learning, stakeholder and partner input, and evolving external

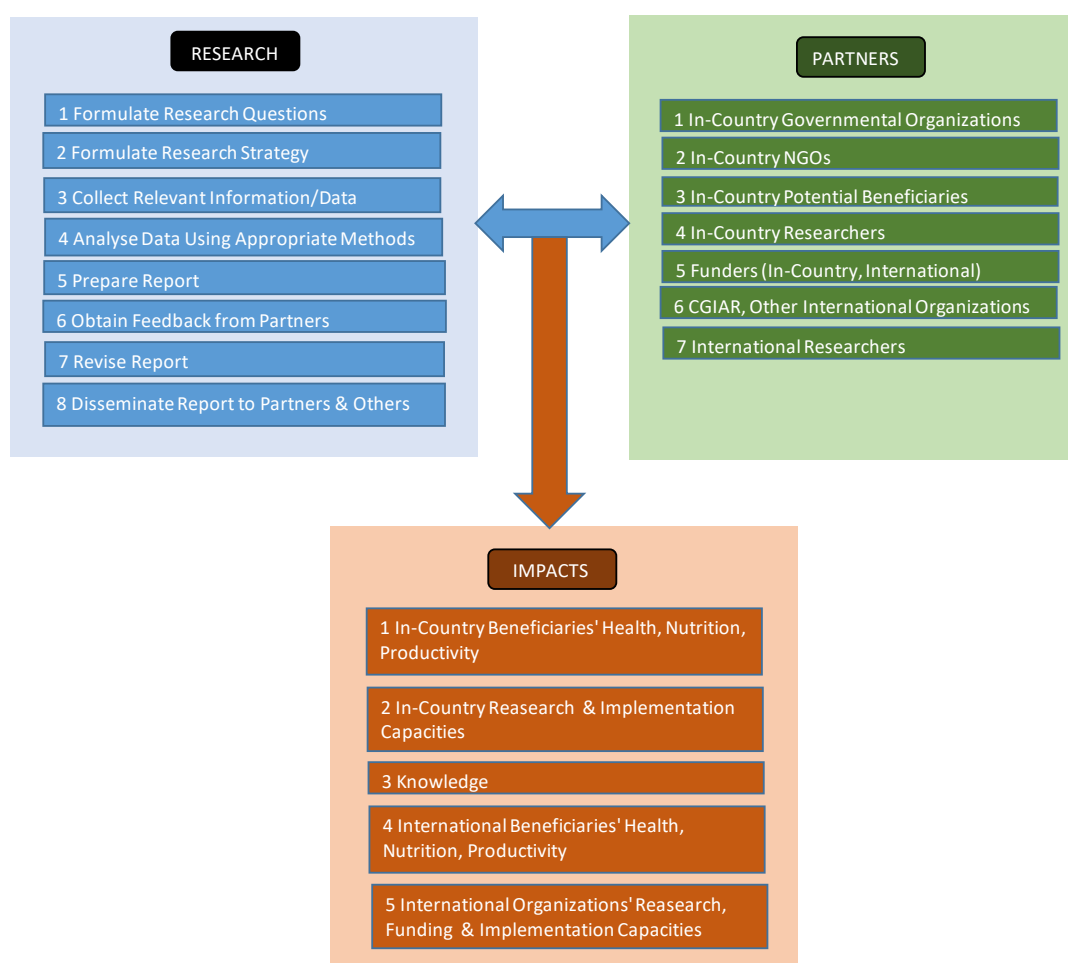
circumstances. Section 4 addresses whether IFPRI/A4NH has been effective in identifying, engaging, and supporting key partners and influencing its target audiences. Section 5 considers enabling partner capacities. Section 6 addresses what has been the impact of the programs and policies that IFPRI/A4NH influenced. Section 7 summarizes and concludes. The annexes provide more details on selected topics. Annex A summarizes the objectives as presented in the documents proposing the GRP24 and the A4NH. Annex B summarizes major projects in the period covered by this report. Annex C gives brief summaries of the contents of the studies with the greatest impact as measured by citations, Altmetrics, and downloads.

2. SETTING THE STAGE: CONCEPTUAL FRAMEWORK AND BASIC APPROACH AND INFORMATION SOURCES

2.1 Conceptual Framework

Because the questions under consideration are complicated and cover multiple interacting stages of the IFPRI/A4NH processes, the full conceptual framework is complicated. But it is useful to have a simplified version as in Figure 1, which builds explicitly on the three broad questions under study pertaining to Research, Partners, and Impacts. This framework covers various types of products including primary data analyses, research reports and country briefs (though the nature of the feedback may be truncated for some items such as the country briefs) and both Ethiopia and India.

Figure 1. Simplified Conceptual Framework: Research, Partners, Impacts



Research requires a number of steps, a stylized version of which is presented in Figure 1: (1) formulating, in cooperation with partners, the research questions or hypotheses on the basis of prior understanding about what topics can potentially generate the most useful knowledge (of course, what is potentially useful knowledge depends on the objectives under consideration, which in this case include health and nutrition, particularly of the poor, in addition to agricultural productivity; (2)

formulating the research strategy in light of the research questions and the information that is available or probably obtainable; (3) collecting the relevant data and information, which may include collection of primary data and data from secondary sources and, if necessary, modifying the research strategy in view of the data obtained; (4) analyzing the data using methods that are appropriate in light of the research questions and hypotheses, the relevant models of underlying behaviors, the data available, and the most suitable estimation method; (5) preparing a report that details the process; (6) obtaining feedback from partners; (7) revising the report in light of feedback from partners; and (8) disseminating the revised report to partners and to other interested stakeholders, with feedback possibly leading to further revisions and further dissemination.

Also presented in Figure 1, are the multiplicity of partners, some in-country (governmental organizations, NGOs, potential beneficiaries, researchers, funders) and some international (NGOs, researchers, international organizations, funders). It is desirable to interact with different partners to different degrees and at different stages of the research process. For example, it may be desirable to interact with multiple partners at the first stage of formulating the research question, but only with selected partners at the subsequent stages of formulating the research strategy, collecting relevant data, and analyzing the data, and again with a broader array of partners/stakeholders once preliminary results are available.

As further indicated in Figure 1, the research may impact the health, nutrition, and productivity of a range of in-country and international beneficiaries, in-country and international researchers, and general knowledge of the research topics investigated (which in turn may lead to future impacts on beneficiaries and researchers). As also indicated in Figure 1, the nature of the partnerships may shape considerably the degree and the types of such impacts, since some partners serve as major channels for transmission of research results.

2.2 Justification for Policy Interventions

There are two major economic justifications for policy interventions:

1. *Efficiency/productivity*: Economic efficiency is defined as a situation in which, given resources and technology, no one can be made better off without at least one person being made worse off. Economic inefficiency, in contrast, exists if someone can be made better off without anyone being made worse off. Reducing economic inefficiency by making some people better off without making anyone worse off thus seems socially desirable. Economic inefficiency prevails if there are “distortions” so that the marginal private benefits (costs) of an action or a resource use differ from the marginal social benefits (costs) of the same action or resource use. Distortions may arise because of “market failures” or “policy failures.” Important examples of market failures include “spillovers” due to the absence of markets for pollution or contagious diseases or due to the entities having “market power” so that they can increase the prices of products (or reduce the prices for production inputs) by restricting the quantities sold or purchased. Quantitative or price policy interventions may reduce particular distortions by, for example, pricing spillovers so that private decisions incorporate the benefits or costs associated with spillovers, by regulating prices so that they reflect the true marginal social benefits or costs, or by improving information dissemination. “Policy failures” that result in inefficiencies include price or quantity restrictions that keep prices from adjusting to the levels at which the private marginal benefits or costs equal the social marginal benefits or costs. These distortions can be lessened by relaxing or eliminating the policies that cause them. Generally, the presumption is that lessening any distortion, whether due to

market failures or policy failures, is likely to reduce inefficiencies unless a particular distortion that is being reduced in part offsets some other distortion that remains (the “theory of the second best” suggests, for example, that removing only one of two counterbalancing distortions may increase inefficiency). If there were no inefficiencies, then there would be no efficiency/productivity motivation for policy interventions because the private incentives for all activities would be equal to the social incentives. Research in general, and research in ANH (Agriculture, Nutrition, and Health) in particular, however, is an activity for which the private incentives are likely to be inadequate due to the “public goods” nature of knowledge and the declining social marginal cost of dissemination of new information. Thus, there is a strong a priori argument for public support for research in ANH on efficiency/productivity grounds alone.

2. *Distribution*: An economy, at least in the abstract, may be perfectly efficient, but may not have maximized social welfare because the distribution of purchasing power or consumption is not desirable. CGIAR in general and IFPRI in particular place great emphasis on the inadequate consumption of the poorer members of society, and the stated reasons for the PHND and A4NH programs on *Diet Quality and Health of the Poor* emphasize improving the welfare of the poor, particularly their agricultural productivity, income, nutrition, and health. Thus, there is a strong a priori argument for public support for research in ANH on pro-poor distributional grounds alone.

Policies often reflect interactions between the efficiency/productivity and the distributional motives. These interactions may work in both directions. For example, policies designed to improve distribution may have trade-offs with efficiency/productivity—examples might include minimum wages or restrictions on exports of basic foods. But other policies may be “win-win,” both increasing efficiency/productivity and improving distribution. For instance, poorer members of society are widely thought to suffer relatively more from imperfect capital markets and poor information, so that policies that increase efficiency by improving capital markets or information may be win-win because the poorer may be important beneficiaries.

2.3 Basic Method/Approach, Information Sources, and Country Focus for This Report

Interviews with Selected Stakeholders, Partners and Participants

As part of the evaluation of GRP24 and the Integrated Programs and Policies to Improve Nutrition of A4NH phase 1, Ethiopia and India were selected in collaboration with GRP24 and A4NH staff as countries for case studies. Due to resource constraints, we chose only one case study country from South Asia and one from Africa. In South Asia, both Bangladesh and India were considered, as these were the countries with the largest share of the program budget (nearly 15 percent each), and in both countries the governments have been seeking evidence on the success of programs targeting nutrition. India was chosen because of its diverse portfolio of programs that include both targeted nutrition interventions and productive safety net programs with different designs and implementation systems. In India, GRP24 had also pioneered work on agriculture-nutrition pathways (in a project called Tackling the Agriculture-Nutrition Disconnect in India or TANDI) that was widely adopted elsewhere. For Africa, six countries had shares of program budget between 3 and 6 percent. From these we chose Ethiopia, the largest country by population in eastern Africa, where research activities were driven by government demand for evidence to support its nutritional strategy and program plans. The Ethiopian government revised its emergency food aid system in 2005 and launched the Productive Safety Net Program (PSNP), a more productive approach to providing a

safety net to vulnerable populations. Through the Ethiopia Strategy Support Program (ESSP), IFPRI was deeply involved in the pre-CGIAR research program (CRP) period. Though designed as a social protection intervention, IFPRI has been involved in looking at the nutritional outcomes of this large-scale program in Ethiopia as well as Transform Nutrition and other nutrition-sensitive programs. With the advent of CRPs, Ethiopia has become one of the five focus countries in A4NH. (The earlier PSNP and ESSP map into the CGIAR Research Program on Policies, Institutions, and Markets (PIM) in the period of CRPs.) A4NH has worked closely with the Ethiopian Public Health Institute and several federal programs on nutrition and nutrition-sensitive programs, from agriculture and food systems to safety nets and others, have built on this earlier work.

The list of potential interviewees was assembled largely from recommendations from PHND and A4NH staff, particularly John McDermott, Devesh Roy, Marie Ruel, Stuart Gillespie, Tigist Defabachew, Manika Sharma, and Elena Martinez, as well as suggestions that came up in the interviews. Some interviews occurred early in the project at IFPRI: Behrman (together with Peter Hazell, Devesh Roy, Elena Martinez, and John McDermott) met with Marie Ruel at IFPRI on April 5, 2018; Behrman (together with Peter Hazell, Devesh Roy, and Elena Martinez) met with John McDermott at IFPRI on April 6, 2018; and Behrman (together with Peter Hazell, Devesh Roy, and Elena Martinez) met virtually (Skype) with Stuart Gillespie on April 6, 2018. Most of the interviews took place in Addis Ababa, Ethiopia, between July 23 and 27, 2018, and in New Delhi, India, between July 30 and August 3, 2018. Behrman and Ghosh both were involved in almost all these interviews, with a few exceptions in which they separated in order to cover more interviews. For cases in which interviews could not be arranged while Behrman and Ghosh were in Ethiopia and India, efforts were made by Defabachew (for Ethiopia) and by Roy and Sharma (for India) to arrange interviews with Behrman and Ghosh subsequently via Skype.

Prior to most interviews, the interviewees were sent a two-page memo giving background on the project, on Behrman and Ghosh, and a set of questions to guide the interviews (see Table 1 at end of this section). For the interviews themselves, these questions were modified to reflect the particular experiences that the interviewee had had with the PHND and A4NH research programs on *Diet Quality and Health of the Poor*. For all interviews, notes were made during the interview, consolidated versions of which were shared with the interviewees soon after to confirm accuracy and agreement to be cited in this report. References in the text below to these notes use the surnames of the interviewees.

Table 2 lists 21 of the 22 persons interviewed related to Ethiopia; the 22nd was Purnima Menon, interviewed regarding both countries, who was interviewed in New Delhi and therefore included in Table 3. The tables provide the names of the interviewees, their designations, organizations, and date of interview. Most interviews were undertaken in person. Fourteen interviews were conducted in person while Behrman and Ghosh were in Addis Ababa. Seven interviews were held via Skype in subsequent weeks with people with whom in-person meetings in Addis Ababa were not possible, usually because the interviewee was not in Addis Ababa between July 23 and 27, 2018, or were not based in Ethiopia. A total of 22 interviews were held related to Ethiopia, including the one with Menon in New Delhi.

Table 3 lists 18 of the 19 persons interviewed related to India (except for Harold Alderman, interviewed regarding both countries, who is in Table 2), again giving for each potential interviewee name, designation, organization and date of interview. Similar to Ethiopia, most interviews were prioritized to be undertaken in person. A total of 16 interviews were conducted by Behrman and Ghosh in New Delhi. Two interviews were held via Skype in the subsequent weeks with people with whom in-person meetings in New Delhi were not possible because the interviewee was not in New

Delhi between July 30 and August 2, 2018, or was not based in India. A total of 19 interviews (including Alderman) were conducted in relation to India.

Some caveats are important regarding the information gathered from these interviews: First, the pools of potential interviewees were largely derived from conversations with and recommendations from IFPRI/A4NH personnel, though we played active roles in suggesting possibilities and in prioritizing alternative interviews among the possibilities suggested. This means that there may have been a bias, perhaps unconscious, toward potential interviewees who are more knowledgeable and/or favorable toward IFPRI/A4NH (though certainly a number of those actually interviewed had criticisms to share). Second, a number of the interviewees either currently or in the past had worked for GRP24, A4NH, or IFPRI, which had the advantage of their having greater knowledge of the programs, but also meant that they may have been positively predisposed toward these programs. Third, the interviewees were purposively chosen to include a range of informed partners, stakeholders, and collaborators, which means, of course, they are not a representative sample of some larger population. Therefore, one cannot generalize from the interviews to a larger population in the way one might generalize from random samples. Fourth, the interviews were all conducted in 2018, well after the study period of interest of 2003–2016. Therefore, the information collected in the interviews inevitably is weighted toward the end of the study period. In principle, there may have been potential interviewees who are equally knowledgeable about the start of the study period, but who have moved on to other positions and possibly other locales. Moreover, the interviewees probably did not limit their remarks to events through 2016 because more recent events probably were fresher in their minds and, to them, the cutoff of 2016 probably was arbitrary. Thus, their comments probably often referred significantly to the 2016–2018 period. To the extent that more recent experience builds on the foundation of the experience in the 2003–2016 study period, this fuzziness about the end of the period of relevance probably does not distort their comments much. Fifth, to be able to answer the questions well, the interviewees needed to be familiar with the GRP24 and A4NH programs components related to diet quality and health. But a number of interviewees either did not know GRP24 or A4NH explicitly, or if they did know of them, did not distinguish well the diet quality and health components from other components of these programs or from IFPRI in general. Thus, it is difficult to be sure in some of the responses whether the interviewees are responding with respect to the diet quality and health components of GRP24 and A4NH or to some broader aspects of IFPRI or of other partners such as Transform Nutrition or Leveraging Agriculture for Nutrition in South Asia (LANSA). Sixth, the interviewees included some, but perhaps fewer representatives of international organizations than might have been desirable because they might have been more knowledgeable about public-goods dimensions of GRP24 and A4NH.

Citations, Altmetrics, and Download Counts

The IFPRI Communications and Public Affairs Division (CPA) prepared counts of citations, Altmetrics (a weighted count of the amount of attention in a range of online and other platforms for research outputs, with the highest weights for news stories, blogs, Wikipedia, and policy documents and the lowest weights for Facebook, YouTube, Reddit/Pinterest, and Q&A), and downloads (Altmetric 2018a, 2018b). These are indicators of the attention received by project outputs in different communities that reflect a combination of the perceived quality and importance of the research and the resources devoted to communication strategies. In some cases, the research was largely undertaken in the 2003–2016 period under review, but due to publication lags the studies only became available in 2017 or 2018.

Reports, Articles, and Other Documents

Key Proposal and Evaluation Documents: We highlight three such documents:

- Ruel, M. T., and L. Haddad. 2003. *Diet Quality and Diet Changes: Global and Regional Research Program (GRP24) PROPOSAL*. Washington, DC: IFPRI.
- IFPRI (International Food Policy Research Institute). 2011. *CGIAR Research Program 4: Agriculture for Improved Nutrition & Health*. Washington, DC.
- Compton, J., D. McLean, B. Emmens, and M. Balagamwala. 2015. [Independent CRP-Commissioned External Evaluation of the CGIAR Research Program on Agriculture for Nutrition and Health \(A4NH\)](#). Washington, DC: IFPRI.

The first of these three documents proposed the PHND research program on *Diet Quality and Health of the Poor* that lasted from 2003–2011, the second proposed the A4NH program for the 2012–2016 period, and the third is an initial evaluation of the A4NH program. The first two give extensive detail about the rationale and the initial perspective on the components of the programs and the third provides an evaluation of the latter program. They are valuable for establishing a perspective on the topics of this report, but they cover much more than the program evaluation provided in this report.

Project Proposal Abstracts: These abstracts provide information on the initial formulation of the projects and what they were intended to do. They cover 140 projects over the evaluation period. Annex B includes 12 of them, with the selection based on the recommendations of Marie Ruel and Stuart Gillespie regarding what projects are most important for this evaluation. Note that this material is provided for background only. We do not particularly focus on the projects summarized in this annex, nor use the inclusion of a project in this list as an indicator of project quality. Because the abstracts were often customized for the requirements of the prospective funders, they are heterogeneous with respect to the detail and format provided.

Internal Program Review (IPR) and RISE: IPRs are available for 2002–2011 for the Food Consumption and Nutrition Division (FCND) of IFPRI and RISE documents are available for 2012–2017 for the Poverty, Health, and Nutrition Division (PHND) of IFPRI. These reports typically summarize accomplishments and problems encountered in the past year and evolving plans for the next year or longer and include substantial information. Unfortunately, there is a limit in the extent to which they inform this report because they vary in format and information across the period of interest and they include information on activities beyond the scope of this report.

Possible Biases in Information Sources

Possible biases, some of which have been noted above, are toward (1) more recent projects and products (e.g., interviews, projects recommended for Annex B) and (2) more successful projects and products (e.g., interviews, citations, Altmetrics, downloads; projects recommended for Annex B, though as noted above the inclusion in Annex B does not directly affect our project evaluation). Some bias toward more recent experiences may not be bad in that what is learned from recent experiences may be more informative for future development and options. Some bias toward more successful outcomes also may not be bad in that, though important lessons maybe learned from failures, probably the more successful projects and products play larger roles in overall impacts, both because they are more likely to be scaled up and because they account for a large proportion of average impacts as measured by quantitative indicators that at least in this case tend to be skewed toward the right. To try to limit such biases, we attempted to be cognizant of them as much as possible and to probe as much as possible in interviews and in our investigation of other information sources.

Table 1. Project Description and Generic Interview Questions Shared in Advance with Interviewees

**EVALUATION STUDY OF THE IFPRI/A4NH RESEARCH PROGRAM ON
DIET QUALITY AND HEALTH OF THE POOR**

The International Food Policy Research Institute (IFPRI) in its efforts to provide research-based policy solutions to sustainably reduce poverty and end hunger and malnutrition in developing countries has been working on *Diet Quality and Health of the Poor* as a multi-country research program (GRP24) since 2003. This has evolved to become a flagship project (Integrated Programs and Policies for Improved Nutrition) within the CGIAR's multi-center research program on Agriculture for Nutrition and Health (A4NH).

To get a comprehensive understanding of the impact and to draw lessons for IFPRI and A4NH, we are looking to evaluate this program in terms of its influence and impact on the nutrition and health policies and programs and research communities in the governmental and non-governmental sectors and development agencies. For this we are reaching out to organizations and individuals who are a part of the food, nutrition and health policy and program landscape. The evaluation will cover the research program activities undertaken over the period 2003 to the end of the first phase of the A4NH flagship program (2016).

It is expected that the study will involve a comprehensive review and assessment of the overall contributions of the research program in terms of the relevance and quality of its research, research capacity building, and communications activities and outputs. This will be undertaken by developing a conceptual framework (impact pathway) for assessing the economic and social impacts of its main outputs, including its impacts on integrated agriculture, nutrition and health programs and projects.

The key objective for the evaluation is to determine the **effectiveness of IFPRI/A4NH strategy in terms of:**

- research strategy being contextual and informed by the internal and external stakeholder inputs.
- utilizing the relevant approaches and methods.
- identifying, engaging and supporting key partners.
- influencing the target audience of policymakers, donors and development program implementers.
- enabling capacity development of partners in terms of (1) designing, implementing and evaluating multi-sector interventions, especially agriculture-nutrition-health linked interventions; and (2) identifying and analyzing data for decisionmaking and evidence support to better investment and policy decisions designed to improve nutrition and health outcomes among the poor.

Another major objective of the study is to **determine the impact of the programs and policies that IFPRI/A4NH influenced.**

The evaluation team consists of Dr. Jere R. Behrman and Dr. Shibani Ghosh. A brief bio of the team is below:

- **Dr. Jere R. Behrman** is the William R. Kenan, Jr. Professor of Economics at University of Pennsylvania since 1983. He has also been the Fulbright 40th Anniversary Distinguished Fellow and Econometric Society Fellow. He has more than five decades of experience and has published over 440 professional articles (primarily in leading general and field economic journals, also in leading demographic, sociology, public health, nutritional and biomedical journals) and 35 books. He has been a researcher with the International Food Policy Research Institute, World Bank, Asian Development Bank, Inter-American Development Bank, United Nations Development Program, United Nations Children's Fund (UNICEF), other international organizations, and various governments. He is a leading international researcher in empirical microeconomics, with emphasis on developing economies. His research interests include empirical microeconomics, project evaluation, labor economics, early childhood development, education, health, nutrition, economic demography, incentive systems and household behaviors.

- **Dr. Shibani Ghosh** is the Associate Director for the Feed the Future Innovation Lab for Nutrition and a Research Associate Professor at Friedman School of Nutrition Science and Policy at Tufts University. She has over 15 years of experience working in Middle East, Asia and Africa. She works on understanding the agriculture-nutrition linkages, examining biological determinants of stunting, diet and other non-diet determinants of stunting in infants and young children and testing interventions to improve the protein and micronutrient quality of complementary foods with the aim to improve linear growth. Her research interests include examining malnutrition, formulating and implementing evidence-based interventions and translation of innovative basic and clinical sciences research into applied community-based research.

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Shibani Ghosh, Associate Director, Research Associate Professor, Friedman School of Nutrition Science and Policy, Tufts University, 150 Harrison Avenue, Room 255, Boston, MA 02111, Telephone: +1(617) 636-3771, email: shibani.ghosh@tufts.edu Citizenship: India

QUESTIONS FOR STAKEHOLDERS IN IFPRI/A4NH RESEARCH PROGRAM ON DIET QUALITY AND HEALTH OF THE POOR: We would like to get your perspective on the following questions about this Program. For all of these questions we would like to learn what you know or understand, though we realize that in some cases you may not have the basis for much of a response.

1. Are you familiar with the IFPRI/A4NH program? What was the nature of your relation to this program? If you worked directly on or with particularly IFPRI/A4NH projects:
 - a. Which one(s) were they (e.g. Alive & Thrive, Transform Nutrition, Stories of Change, Productive Safety Net Program evaluation or any other)?
 - b. How well did IFPRI/A4NH communicate the project's objectives?
 - c. How well did they support the project?
2. How well did the project:
 - a. Identify, engage and support key partners/stakeholder,
 - b. Was the project contextualized and informed by the internal and external stakeholder inputs,
 - c. Influence the target audience of policymakers, donors and development program implementers? And what were the impacts of the programs and policies that IFPRI/A4NH influenced?
3. How well did the project utilize relevant approaches and methods?
4. How much did the project enable capacity development of partners in terms of:
 - a. Designing, implementing and evaluating multi-sector interventions, especially agriculture-nutrition-health linked interventions?
 - b. Identifying and analyzing data for decisionmaking and evidence support to better investment and policy decisions—designed to improve nutrition and health outcomes among the poor?
5. In summary, what were the major strengths and weaknesses of the project, the most important products of the project and how could the projects have been improved?

Table 2. Interviews Related to Ethiopia

	Name	Designation	Institution	Date
Addis Ababa, Ethiopia (in Person)				
1	Kaleab Baye	Addis Ababa University (AAU) Honorary Research Fellow, Bioversity International	Bioversity-Contact	25-Jul-18
2	Anne Bossuyt	Deputy Regional Secretary for Africa. World Senior technical and policy advisor for the national information platform for nutrition at	IFPRI NIPN Project based in EPHI	16-Jul-18
3	Solomon Eshetu	Current Acting Director	Food Science and Nutrition Research Directorate, EPHI	24-Jul-18
4	Aweke Kebede	Former Nutrition Policy Advisor	Federal Ministry of Health	23-Jul-18
5	Ferew Lemma	Nutrition advisor	Federal Ministry of Health	23-Jul-18
6	Laila Lokosang	Food Security and Nutrition Advisor	Department of Rural Economy and Agriculture, African Union, Addis	27-Jul-18
7	Ato Tewodros Hali Mariam		Ministry of Agriculture (MoA)	25-Jul-18
8	Teferi Mequaninte		ATA	25-Jul-18
9	Bart Minten	Senior Research Fellow, IFPRI	IFPRI/ESSP	26-Jul-18
10	Sisay Sinamo	Head of Seqota Declaration	Program Delivery unit	24-Jul-18
11	Alemayehu Seyoum Taffesse	Senior Research Fellow, IFPRI	IFPRI/ESSP	27-Jul-18
12	Ato Tamene Tesfaye	Head of Nutrition Case Team	Federal Ministry of Agriculture and Livestock, Seconded by GIZ Responsible for the Nutrition Sensitive Agriculture Strategy	26-Jul-18
13	Pierre-Luc Vanaeverbeke	Food security Advisor	EU Delegation to Ethiopia	24-Jul-18
14	Tesfaye Tilahun Workineh		The World Bank/Ethiopia	23-Jul-18
Skype				
1	Harold Alderman	Senior Research Fellow, IFPRI	IFPRI, Washington DC	5-Sep-18
2	Tesfave Hailu Bekele	Former Director	Food Science and Nutrition Research Directorate. EPHI	29-Aug-18
3	Nomukolo Covic	Research Coordinator/IFPRI	IFPRI/A4NH	5-Sep-18
4	Daniel Gilligan	Senior Research Fellow, IFPRI	IFPRI, Washington DC	17-Dec-18
5	Kalle Hirvonen	Research Fellow/ IFPRI	A4NH country team and works with Derek Hedley	28-Aug-18
6	John Hoddinott	H.E. Babcock Professor of Food & Nutrition Economics and Policy	Cornell University; 2002-2015 Deputy Division Director, Senior Research Fellow, International Food Policy Research Institute	5-Dec-18
7	Andrea Warren	lead of Stories of Change, Ethiopia	United States	29-Aug-18

Table 3. Interviews Related to India

	Name	Designation	Organization	Date
New Delhi, India (in Person)				
1	Farzana Afridi	Professor	Indian Statistical Institute	01.08.2019
2	Ramesh Chandra	Member, NITI Aayog	Niti Ayog	31.07.2018
3	Sebanti Ghosh	Senior Technical Advisor	FHI Solutions LLC – Alive & Thrive Project	02.08.2018
4	Rajesh Kumar	Joint Secretary, MWCD & Mission Director,	Ministry of Women and Child Development	02.08.2018
5	Krishna Kumar	Co-ordinator	Bioversity International	31.07.2018
6	Meela Marla			02.08.2018
7	Purnima Menon	Sr. Research Fellow	IFPRI - PHN	30.07.2018
8	Habibar Rahman	Regional Representative, South Asia	International Livestock Research Institute (ILRI)	31.07.2018
9	Bharat Ramaswamy	Professor	Indian Statistical Institute	01.08.2018
10	Alok Ranjan	Country Lead (Nutrition)	BMGF	02.08.2018
11	Rubina Shaheen	Director, Food Safety Management System	Food Safety and Standards Authority of India	31.07.2018
12	Anupa Siddhu	Director	Lady Irwin College	01.08.2018
13	Pratibha Singh	Regional Manager - South Asia	Australian Centre for International Agricultural	01.08.2018
14	Satendra Kumar Singh	Scientific Advisor to Minister	Ministry of Agriculture and Farmers' Welfare	30.07.2018
15	Sukhdeo Thorat	Professor Emeritus, CRD	Jawaharlal Nehru University (JNU)	01.08.2018
16	Suneeti Tuteja	Director, Food Fortification Resource Center	Food Safety and Standards Authority of India	31.07.2018
Skype				
1	Arvind Panagariya	Jagdish N. Bhagwati Professor of Indian Political Economy (exVice Chairman of the Niti	Columbia School of International and Public Affairs	20.12.2018
2	Nitya Rao	Professor	University of East Anglia	14.12.2018

3. RESEARCH STRATEGY OVER THE PERIOD OF STUDY

The primary focus of the PHND and A4NH research programs on *Diet Quality and Health of the Poor* for the 2003–2016 period has been on research. These programs were undertaken in the context of the changing global challenges in nutrition and food security during this period, most notably increasing recognition of the importance of the quality of nutrition for improving health particularly in the first 1000 days after conception, the increasing prevalence of overweight and obesity and lessening though still substantial prevalence of undernutrition, and substantial market changes including the near doubling of wheat, maize and rice prices that occurred in 2007–2008. The GRP24 program was an early research entrant that helped to launch bigger research programs like A4NH. The appropriateness of the research strategies used, therefore, is integral to the success of these research programs. One important set of metrics of the appropriateness of the research strategies pertain to the number of downloads of project papers, citations of project publications, presence in social media as measured by Altmetrics, and perceived success by participants, partners, and stakeholders (Section 6 summarizes these metrics in some detail). A number of PHND and A4NH projects generated substantial attention by these metrics, though there also a number that generated limited or no attention. The former group, in a revealed preference sense, suggests that some audiences found that the research strategies provided useful results. The latter group, in the same revealed preference sense, suggests that some results were not deemed useful, at least by the audiences covered in Section 6, perhaps in some cases because of the lack of satisfactory research strategies but probably also for other reasons, such as being scooped by other studies or changes in key personnel or in objectives of stakeholders. Undertaking research is an uncertain activity, often with considerable lags and changing circumstances so, particularly in light of the size of the PHND and A4NH portfolio over the period under study, it is likely that some projects and products will have limited impact.

To illuminate further the appropriateness of PHND and A4NH projects' research strategies, beyond the indirect inferences possible by the metrics that are summarized in Section 5, Section 3.1 summarizes what we learned in interviews about research strategies, and Section 3.2 reviews the research strategies of a selected group of studies

3.1 Comments about Research Strategies in Interviews

The interviewees who were more distant from the research undertaken in the GRP24 and A4NH programs generally had no perspective on the details of the research strategies, though some perceived that the research was of high quality. Therefore, most insights about the research strategies came from those interviewees who were directly involved in the research program. The following points attempt to summarize their comments.

- (1) Evolution of the research program: GRP24 had elements of both assessing the double burden of malnutrition and understanding the role of dietary quality and agriculture and nutrition inter-relationships (Ruel and Haddad 2003). While the agriculture-nutrition linkages research has strengthened over time, the focus with respect to outcomes is on undernutrition and there has been little movement around the area of the double burden, urban populations, or

overweight and obesity. Furthermore, PHND has focused mainly on programs and less on policy levers. The main reason for the deviation from the original proposed strategy was constraints in fund-raising. The program was never successful in raising money to study overnutrition, and so ended-up deepening research into undernutrition. Furthermore, CGIAR and its donors did not want to work on urban populations and overweight/obesity. Donors did recognize the problem of overnutrition but did not know how to fit it into their funding strategies. Latin American countries have government-funded research and policy work on overweight and obesity and rural/urban health (including their own strong research institutions), but governments in Africa and South Asia are not yet reacting to overweight and obesity and governmental policies focus on supporting staples, which has implications for agricultural production, food availability, and people's diets. While the goals of GRP24 were not entirely achieved, three case studies on urban nutrition were completed. There was another GRP on urban nutrition, which eventually was shut down due to lack of funding. GRP24 eventually merged with A4NH. Prior to 2011, the program focused on nutrition alone, but since 2011 attention is being given to understanding agriculture-nutrition linkages, while continuing work on important nutritional issues such as severe acute malnutrition. More recently, PHND has begun assessing the potential for nutritional programs to do harm in terms of the double-burden. But it remains difficult to get funding for urban nutritional work. Currently, most of PHND's core funding on agriculture comes from A4NH. CGIAR reformation forced PHND to work on agriculture-nutrition linkages rather than just nutrition, and A4NH, in Phase 1, showed some increased focus on overnutrition and urban nutrition through food systems research. However, donors are still focusing on the Sustainable Development Goals (SDGs) and undernutrition and not prioritizing overnutrition and urban nutrition.

- (2) Research design: Some research strategies, such as using randomized controlled trials (RCTs), may not be acceptable to key partners or acceptable only after substantial discussions over time. For example, in the case of Ethiopia's Productive Safety Net Program (PSNP), the decision to use a quasi-experimental approach was linked to the understanding of IFPRI researchers that donors and the Government of Ethiopia perceived that randomly assigning beneficiaries to PSNP would be unethical (despite the fact that not all eligible people were receiving PSNP).² Furthermore, at the time of the design of the Ethiopia PSNP impact evaluation, the use of RCTs was not common. Therefore, quasi-experimental methods were used coupled with propensity score matching techniques and difference-in-difference analysis. Controls were selected within the same enumeration areas.
- (3) Scale of data collection: Much of the research involved large-scale quantitative data collection, with inherent trade-offs. On the positive side, this approach laid the foundation for more confident conclusions and for investigating heterogeneity. On the other hand, data quality was more difficult to maintain with such large studies, and more time and resources were needed. There is clearly a need to balance between large and smaller quantitative studies and between quantitative and qualitative studies.

² The Ethiopia PSNP has a technical committee in which the government and all the donors are members and thus decisionmaking is linked very much to policy and politics of program implementation.

- (4) Data quality: IFPRI findings generally are trustworthy/dependable, but it is important to maintain their credibility, particularly since the writings/findings can influence policies. Field data collection challenges are often present a bigger problem than the actual research question. If data quality is an issue, one may apply high-end econometric techniques under some assumptions, but the outcomes may not be trusted. Interviewees perceived IFPRI's data to be of high quality, but there were still issues. In Ethiopia, several key informants indicated that the quality of data and thus the findings were trustworthy and allowed local researchers and policy professionals to bring key issues to the attention of the Government of Ethiopia. A clear example of this is the anthropometric analysis led by John Hoddinott as part of the PSNP evaluation, which supported the recommendation from the World Bank to the Government of Ethiopia to highlight nutrition in the fourth phase of the PSNP. Work done by IFPRI globally and within Ethiopia (through Transform Nutrition and Alive & Thrive) is being used by local policy researchers to draft the country's food and nutrition policy strategy. IFPRI's analytical strength and deep understanding of nutrition was highlighted in both Ethiopia and India. However, in India, some policymakers and researchers indicated deep concerns over the findings of the Global Hunger Index report, with criticisms linked to the analytical strategy used.
- (5) Panel data: Panel data have significant advantages in that they permit tracing dynamics and controlling for unobserved fixed effects over time that otherwise may cause biases. An example of consistent and comparable panel data collection is the Ethiopian PSNP evaluation. The PSNP is currently in its fourth phase and IFPRI conducted an impact evaluation for each phase since the start of the program in 2005. Each evaluation included rigorous panel surveys every two years, providing a baseline, midline, and endline (for each PSNP phase). Thus, between 2006 and 2014, panel surveys were conducted for PSNP1, 2, and 3, and a new baseline panel survey was conducted in 2016 and a midline in 2018 for PSNP4. Significant efforts were made to maintain comparability. For example, surveys were conducted at the same time of year in each round, thereby addressing seasonality; the set of core questions remained the same; and the core team remained the same (John Hoddinott, Alemayhu Seyoum, and Yisehac Yohannes). The stability of the core team helped retain institutional memory and credibility. While consistency was maintained with the quantitative evaluation, from 2008, the researchers added the use of mixed methods, including structured questionnaires and focus group discussions with officials relevant to PSNP focusing on implementation capacity including training, access to equipment, and infrastructure. The researchers also collaborated with the Institute of Development Studies to conduct a qualitative process evaluation in 10 selected *woredas* to contextualize the impact evaluation findings. While researchers at IFPRI have maintained the integrity of the overall study, there were issues within each phase evaluation including, but not limited to, the triangulation of the qualitative and quantitative findings and significant churning, with controls becoming beneficiaries. The solution for the lack of sufficient controls was to use instrumental variables. Similarly, a request from the Government of Ethiopia, which wanted to set up systematic graduation criteria, led to a development by IFPRI of asset-based cutoffs by region; however, different regions have different objectives and different decisionmakers, complicating the implementation of the defined criteria.

- (6) Importance of disaggregated data: In large heterogeneous countries with significant local authority, such as Ethiopia or even more so, India, localized data may be critical to support better understanding and investment and policy decisions. District-level profiles developed in India (for over 600 districts), though mostly descriptive, allow the districts to understand patterns and trends. The district profile diagnostics are also being used by the Tata Trust as they set up their activities in over 300 districts.
- (7) Multisectoral approach to investigating agriculture-nutrition-health links: Designing, implementing, and evaluating multisectoral interventions, especially agriculture-nutrition-health linked interventions, is important, as is identifying and analyzing data for decisionmaking and evidence to support better investment and policy decisions that are designed to improve nutrition and health outcomes among the poor.
- (8) Variation in research strategies and policy successes by country and project: IFPRI researchers overall were identified as significant in pushing thinking in the policy domain in Ethiopia and to some extent in India. IFPRI researchers were generally considered as being technically and analytically strong. Some stakeholders perceive that the IFPRI researchers not only have the research capacity but are also able to reach out to many players and use all the levers to bring research findings into the policy domain. But this depends on the context, the scale of the research and, to a certain extent, the need for the research being undertaken. For example, the research conducted within the LANSA program in Pakistan was at the national level (large survey of 1,100 mother-child dyads); further it addressed a subject area that had a significant knowledge gap (gender empowerment). In contrast, similar work in India was hampered by the diversity in the population and the sheer size of the country, and while a study would add to the literature, in the Indian context, it was less likely to have a significant policy impact. In Bangladesh, in the same project, there was not sufficient momentum to keep the project going due to loss of key personnel.

3.2 Reviews of Research Strategies of a Selected Group of Most Prominent Studies

This subsection summarizes some important dimensions of the methodologies for the 14 studies, the content of which are summarized in Annex C, because they are among the top five in citations per year since publication, Altmetrics, or downloads (there are 14 because one study, the *Global Nutrition Report 2015*, is among the top five in both Altmetrics and downloads).³ It is useful to group these studies into three groups for discussing their research strategies:

Global Nutrition Report Related Studies:

1. IFPRI (International Food Policy Research Institute). 2014. [Global Nutrition Report 2014: Actions and Accountability to Accelerate the World's Progress on Nutrition](#). Washington, DC.
2. IFPRI. 2015. [Global Nutrition Report 2015: Actions and Accountability to Advance Nutrition and Sustainable Development](#). Washington, DC.

³ We note that the Global Nutrition Report and the Global Hunger Index are IFPRI-wide programs, not program specific. We include them in our report, however, because they were included in the information that IFPRI provided to us to analyze, with no qualifications suggesting that they be excluded.

3. IFPRI. 2015. [Think Your Country Doesn't Have a Nutrition Problem? Think Again](#). Global Nutrition Report 2015, Supplementary Online Material. Washington, DC.
4. IFPRI. 2016. [Global Nutrition Report 2016: From Promise to Impact: Ending Malnutrition by 2030](#). Washington, DC.
5. IFPRI. 2016. [Global Nutrition Report 2016: From Promise to Impact: Ending Malnutrition by 2030: Summary](#). Washington, DC.

These five Global Nutrition Report studies are not focused on primary research per se, but are descriptive studies, summaries of other studies, and compilations of activities related to nutrition globally in the past year.

Literature Reviews:

1. 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* 32 (1_suppl1): S31–S40.
2. Doss, C., R. Meinzen-Dick, A. Quisumbing, and S. Theis. 2018. "Women in Agriculture: Four Myths." *Global Food Security* 16: 69–74.
3. Gillespie, S., P. Menon, and A. L. Kennedy. 2015. "Scaling Up Impact on Nutrition: What Will It Take?" *Advances in Nutrition* 6 (4): 440–451.
4. Hawkes, C. 2006. "Uneven Dietary Development: Linking the Policies and Processes of Globalization with the Nutrition Transition, Obesity and Diet-Related Chronic Diseases." *Globalization and Health* 2 (March): 4.
5. van Ginkel, M., J. Sayer, F. Sinclair, A. Aw-Hassan, D. Bossio, P. Craufurd, M. El Mourid, et al. 2013. "An Integrated Agro-ecosystem and Livelihood Systems Approach for the Poor and Vulnerable in Dry Areas." *Food Security* 5 (6): 751–767.
6. Ruel, M. T., and H. Alderman. 2013. "Nutrition-Sensitive Interventions and Programmes: How Can They Help to Accelerate Progress in Improving Maternal and Child Nutrition?" *Lancet* 382 (9891): 536–551.

These six reviews all systematically summarize literatures relevant to their topics and draw conclusions. Limitations of these surveys include that some do not explicitly define the strategy used to identify what studies are covered in a way that would allow for replication and some do not adequately cover the limitations of the underlying studies being reviewed. The third and fourth also present case studies, but do not articulate under what conditions generalizations can be made from these case studies.

Primary Research Studies:

1. Alderman, H., J. Hoddinott, and B. Kinsey. 2006. "Long Term Consequences of Early Childhood Malnutrition." *Oxford Economic Papers* 58 (3): 450–474.
2. Arimond, M., and M. T. Ruel. 2004. "Dietary Diversity Is Associated with Child Nutritional Status: Evidence from 11 Demographic and Health Surveys." *Journal of Nutrition* 134 (10): 2579–2585.
3. Menon, P., P. H. Nguyen, K. K. Saha, A. Khaled, A. Kennedy, L. M. Tran, T. Sanghvi, et al. 2016. "Impacts on Breastfeeding Practices of At-Scale Strategies That Combine Intensive Interpersonal Counseling, Mass Media, and Community Mobilization: Results of Cluster-

Randomized Program Evaluations in Bangladesh and Viet Nam.” *PLOS Medicine* 13 (10): e1002159.

The first and third of these studies use relatively sophisticated estimation approaches to attempt to identify causal relations. The *first study* uses a maternal fixed effects—instrumental variables (MFE-IV) estimator with a long-term panel data set from Zimbabwe. Civil war and drought shocks are used to identify differences in preschool nutritional status across siblings. The civil war and drought shocks permit controlling for time-varying factors that might affect siblings differentially through IV methods (though with the assumption that these shocks affected children’s human capital outcomes only through preschool height-for-age). The *third study* uses power calculations to determine sample sizes, randomization, pre- and posttreatment data, monitoring evaluation during treatment, strong integration with relevant local institutions but separation between implementers and evaluators, and use of appropriate multivariate estimation methods using differences-in-differences with control for clustering to obtain intent-to-treat estimates in Bangladesh and Viet Nam. One limitation is that their impact estimates may underestimate the full potential of such multipronged interventions because the evaluation lacked a “pure control” area. The *second study* has different methodological strengths, which include using fairly rich demographic and health survey (DHS) data to investigate these relations in 11 different low- and middle-income countries, using systematic selection criteria for country inclusion, using factor analysis for data reduction of multiple indicators of socioeconomic status (SES), and testing for the robustness of the estimates to inclusion of confounders. Possible weaknesses include basing the SES indicator in part on production inputs for particular types of production (i.e., agriculture) without comparable production inputs for other types of production (e.g., services), treating dietary diversity as exogenous once observed variables are controlled (prior studies suggest that the usually observed SES factors only partially control for important family and community factors and that estimates that control for broader family and community factors through fixed effects or instrumental variables for key variables such as dietary diversity often differ substantially from those that do not), and disregarding possibly useful information by reducing the dietary diversity to a three-category variable.

4. IDENTIFYING, ENGAGING, AND SUPPORTING KEY PARTNERS AND INFLUENCING TARGET AUDIENCES

The interviews suggest some important points about this topic.

- (1) Continuity is important. Undertaking policy-relevant research and having policy impact requires ongoing relations with research partners and stakeholders, not just sporadic interactions. This means that in-country residence and frequent visits of those with international bases are important. The importance of continuity is clear from experiences in both Ethiopia and India. The dominant perception among stakeholders and partners is that IFPRI and A4NH generally have been good about maintaining continuity, but some perceived that insufficient efforts were made to maintain continuity with stakeholders.
- (2) Relations with donors are critical for successfully attaining desired research goals. While there have been a number of successes in engaging donors in parts of the proposed research strategies, it has not been possible to engage donors and South Asian and Africa governments sufficiently to be able to undertake the proposed research on overnutrition and urban nutrition in much depth (as noted in Section 3.2).
- (3) Engagement in some cases is extensive and successful, but not explicitly recognized as being with IFPRI PHND or A4NH. For instance, in Ethiopia, while all interviewees were aware of IFPRI and its role in policy-oriented research, few were aware of A4NH as a CGIAR program and/or of the specific modalities within A4NH Flagship 4 (Nutrition programs and policy). For example, some international organization staff in Ethiopia said that they work closely with IFPRI on the Ethiopia Productive Safety Net Program (PSNP). They interacted closely with the PSNP Impact Evaluation team at IFPRI including John Hoddinott, Alemayhu Seyoum Taffesse, and Kalle Hirvonen, and they perceived that PSNP/World Bank relies significantly on the research and surveys conducted by IFPRI and that the evaluation component of each PSNP iteration has been critical, since these provided evidence of the program's impact on beneficiaries and informed the re-designing/designing of the next PSNP phase. But they did not identify this activity as being related to PHND or A4NH.
- (4) Partner and stakeholder awareness and use of IFPRI research findings is substantial in a number of cases, but with significant variation: A number of relevant stakeholders in Ethiopia and India said they were quite aware of IFPRI and the activities of programs such as Alive & Thrive, Ethiopia's PSNP, and Partners and Opportunities for Strengthening and Harmonizing Actions for Nutrition in India (POSHAN). In *ETHIOPIA*, for example, one former government official said that he was familiar with Alive & Thrive and suggested that Alive & Thrive has driven infant and young child feeding (IYCF) thinking in Ethiopia, that social behavior change communication (SBCC) materials are widely utilized and help bring the facts based on careful fieldwork in very easy language to partners and experts, that he appreciates IFPRI PHND and A4NH problem identification methods at the community level, that training materials are appreciated and used nationally, that IFPRI has driven thinking within the context of nutrition-sensitive agriculture in part related to the 2013 *Lancet* article, that technical assistance from IFPRI has been critical for moving forward with policy and strategy

development, and that Stories of Change materials are being circulated. Another Ethiopian stakeholder emphasized two examples of successful engagement: (1) with Alive & Thrive, through various meetings, a lot of stakeholders were involved, including religious leaders (that was a new way of addressing fasting and child nutrition) that resulted in sustainable engagement (e.g., many resources used, such as behavioral change communication [BCC] tools, are now being used in many contexts, for instance health extension programs); and (2) with PSNP, the Ethiopian Development Research Institute (EDRI) worked closely with the ESSP/PHND/DSGD, with nutrition emphasized increasingly and evaluation results utilized to determine how program operated. A third emphasized that IFPRI research is very important in influencing policymakers. Several other stakeholders in Ethiopia emphasized that IFPRI research always follows the national priorities identified by the government and other stakeholders and is trying to generate evidence to change/improve how development is tackled, working most closely with the Ministry of Agriculture with considerable stakeholder engagement and frequent communication. One primary focus of awareness was on the work around food safety (aflatoxin in milk) and biofortification (sweet potato).

In INDIA, several stakeholders mentioned that they were familiar with IFPRI activities such as Purnima Menon’s work, the district profiling activities of POSHAN (an “excellent resource” that the Food Safety and Standards Authority sends to the states), the Global Hunger Index report, and the significant role that IFPRI played in emphasizing the extent of India’s malnutrition at the major Delhi 2011 conference on agriculture and nutrition; that Niti Aayog’s monitoring of the SDG indicators related to nutrition and health refers to the work of IFPRI; that IFPRI research papers and policy briefs are taken seriously and with respect; and that IFPRI is quick to pick up emerging issues, which increases the relevance of research at IFPRI within the context of India. Some stakeholders in international organizations working in India said that they were heavily dependent on IFPRI research products and that IFPRI staff are always present at meetings/conferences as presenters and/or participants and are helping define content (e.g., increasing nutrition sensitivity in the Ethiopian PSNP).

Many of the partners and stakeholders in both INDIA and ETHIOPIA were not explicitly aware, however, of how these activities linked to PHND and A4NH and/or the particular work of PHND and A4NH. Some also commented about IFPRI not connecting sufficiently to some domestic (Indian Council of Agricultural Research [ICAR]; Women and Child Development [WCD]) and international organizations (e.g., American University [AU], International Livestock Research Institute [ILRI]) and some expressed doubts about the extent of IFPRI’s influence on policy. In both Ethiopia and India, finally, some stakeholders also suggested that IFPRI could be more involved in helping people in implementation—that is, helping the systems to implement what has been identified in the research.

- (5) Perspectives of IFPRI researchers on engagement and awareness at the policy level generally are positive but with some ongoing challenges. An interesting example of the range of engagement is provided by the effort to integrate gender into LANSA in South Asia. A 2014 Colombo meeting brought together researchers from Bangladesh, India, and Pakistan to generate research plans for each country within the context of gender. The workshop was particularly important for researchers from Pakistan and they changed their research agenda based on their learnings in the workshop. Subsequent to the meeting, the projects from the

three countries diverged substantially in terms of engagement. In *Pakistan*, the researchers made very good progress with policy and political stakeholders (e.g., the then-ruling party Pakistan Peoples Party [PPP]) at the national level and also made headway at the provincial level in Sindh as well as with civil society. This could be because this sector is not as well developed as in India. Examples of Pakistani stakeholders include: Sindh assembly, National Assembly from PPP (Bhutto party) and National Commission of Women. *Bangladesh*, where the program folded, was at the other extreme. *INDIA* was intermediate. In India, LANSA identified key stakeholders but the current government scenario was not supportive. The previous National Commission for Women and the then-commissioner were very supportive and there was support from international stakeholders. However, with the current national government, the project has not made much headway with the Ministry of Agriculture and Ministry of Women and Children, possibly due to ideological issues. There has been better response in the state of Odisha. LANSA also works with major Indian organizations that work on women farmers rights (Forum for Women Farmer's Rights [MAKAAM]). LANSA-linked researchers have attended many meetings and made presentations at a forum of women scientists organized by the Ministry of Women and Children on International Women's Day. Some IFPRI researchers suggested that, instead of a focus at the national level, in India, it might be better to focus on the regional/state level, particularly due to the good response in Odisha and the significant variability of issues across the country which do not converge at the national level.

More broadly, IFPRI has tried to focus on wide range of stakeholders in *INDIA* since people in government turn over a lot while some of other relevant communities (boundary partners) are relatively stable. The *Stories of Change* project in India includes all states but with an emphasis on states with larger changes, such as changes in stunting, and looks at drivers of such changes. From interactions with states, demand has arisen for evidence and new evaluations of programs (e.g., Odisha and Chattisgarh). POSHAN has an explicit mandate to take a broader perspective and allows researchers and stakeholders to step back and take a larger view, working with publicly available data. Given the current emphasis and need for consistent communication, POSHAN now has two people at IFPRI working on advocacy, engagement, and communications. Descriptive statistics from POSHAN are useful for many stakeholders. Evidence gap maps help engage potential funders (e.g., UNICEF) who are not familiar with evaluation research and/or those who commission evaluations. IFPRI is trying to get people to think about data and evidence on nutrition and evaluations. The TANDI findings were transformational and got the conversation on the multiple pathways from agriculture to nutrition started. In *INDIA*, most of the POSHAN work with Niti Aayog is focused on understanding the potential for geographic co-location of programs and multisectoral action and its effects on households, individuals, and communities. As credibility has been built around POSHAN, there has been more engagement with the Indian government, including with Niti Aayog, culminating in a MOU that involves providing data and evidence support to Niti Aayog. The first report has been provided to the Prime Minister's office. POSHAN is now building connections with UNICEF, bringing evidence to boundary partners and the government.

In *ETHIOPIA*, as well, the extent of engagement has varied considerably. Engagement was relatively successful with PSNP, which was redesigned in 2014 to make it more nutrition-

sensitive. To do this at the ground level was very difficult since the Ministry of Agriculture thought it was the Ministry of Health's work. This is where evidence became very important. Dissemination was a key effort at the regional level, federal level, to donors, and to the research community (conferences, publications, working papers). The IFPRI findings (Hoddinott and Alderman's presentations) were used to generate awareness at the policy level. Following presentation of the evidence, a process of negotiation occurred. On the other hand, several IFPRI researchers stated that they perceived the *Stories of Change* project and its findings in Ethiopia did not have much direct influence, though it may have indirectly helped to shape the policy dialogue.

5. ENHANCING PARTNERS' CAPACITIES

Common themes in the interviews with researchers are that:

- (1) The primary goal of the IFPRI PHND and A4NH programs under review is policy-relevant research, not capacity building or having proximate effects on policies (though the policy effects reviewed in Section 6 are important).
- (2) In addition to any specific activities directed towards capacity building, capacity building with researchers and stakeholder occurs through “learning by doing” in the projects’ interactions and through more general support for research and evidence-based policies in the local research and policy communities.
- (3) Nevertheless, there have been some explicit efforts at more formal capacity building related to evaluations.

Examples of such efforts in India with a range of partner organizations include:

- Lal Bahadur Shastri Academy for Indian Administrative Services (IAS) officers: Short courses for district officials and magistrates, using nutrition policy notes and data
- Tata Trust: Uses the data generated from the POSHAN analyses
- 3ie: Evidence gap map focused on India, shedding light on the poor evidence base on implementing nutrition interventions in the country

Likewise, for Ethiopia, some examples are:

- The current Ethiopian Agricultural Growth Program (AGP) baseline has a nutrition component that is based on IFPRI’s work
- Seminars and discussions at EDRI, increasingly involve Ministry of Health
- Discussions with the PSNP Nutrition Task Force; IFPRI has shared survey results with the PSNP Nutrition Task Force
- Local investigators and research assistants work on IFPRI projects
- Building capacity to understand nutrition
- The work of A4NH projects with local universities

Several researchers also noted that PSNP impact evaluations were conducted with the Central Statistical Agency (CSA). While CSA had been familiar with large cross-sectional data sets being collected (e.g., agricultural consumption surveys), the impact evaluations focused on generating capacity for panel data collection, introducing electronic data collection (CAPI), and working closely with CSA to ensure data quality.

- (4) Overall, an important dimension of IFPRI’s capacity building and training has been to change the language of evaluation, particularly in Ethiopia. While earlier there was only monitoring, with little focus on systematic comparisons to generate counterfactuals, the conversation and the practice of evaluation have changed. Every project now has an evaluation component. Every key ministry has an evaluation unit. External evaluators are being hired. There is a reasonable degree of independence. While this observation refers to the broader

IFPRI work, an important component of the evaluation has been related to PHND and A4NH studies on diet quality and health.

- (5) A number of the stakeholders and partners interviewed commented on capacity building. They tended to agree with the second and third points above. Some also had some additional comments.

With regard to *ETHIOPIA*, these included: (a) a recommendation that more risks be taken to engage local partners irrespective of their levels of capacity in hopes of improving their capacities through the engagements; (b) a recommendation that more students and universities might be engaged, perhaps through small research grants; (c) sensitivity to the problem that gender inequality in the Ethiopian higher-level education system increases the likelihood of male candidates being selected; (d) research-based information is a source for building capacity in institutions/line ministries; (e) need to build capacity in knowledge about nutrition in the Ministry of Agriculture and Livestock in order to increase nutrition sensitivity, but because nutrition is a cross-cutting activity, it often is a difficult concept for this ministry; (f) there is an MOU to provide support for developing nutritional dimension of policies, building on A4NH or other CGIAR research results in part, to provide a strong platform for the national evidence generation process by providing technical support and capacity building.

With regard to *INDIA* these comments included: (a) technical support unit in research in Uttar Pradesh and Bihar states (BMGF-created) for which IFPRI and Alive & Thrive (A&T) had co-convened the trainings, with IFPRI focusing on implementation and how it can be done at the state level; (b) need for implementation research, understanding evidence gaps, what issues can be taken up; (c) ICAR and IFPRI have an MOU under which agricultural economists are sent over to IFPRI (3–4 month periods); (d) IFPRI publications are used for teaching and doctoral and masters' students might use IFPRI papers for methodology; (e) capacity development one of weaker aspects, from research to implementation capacity within IFPRI to the organizations that implement policies; (f) district magistrates training to understand nutrition using data and to make changes that are doable and actionable; (g) POSHAN team is looking at how it can build capacity to utilize data that is adaptable depending on donor needs; (h) joint research collaborations (3-4-month periods) to conduct the research and to pass on the strength to the local researchers.

6. IMPACTS OF IFPRI PHND AND A4NH RESEARCH PROGRAM ON DIET QUALITY AND HEALTH OF THE POOR

6.1 Comments in Interviews on Impacts of IFPRI PHND and A4NH Projects Related to Diet Quality and Health of the Poor

The research has not included a focus on the double burden, as was proposed for the GRP24 (Ruel and Haddad 2003), because IFPRI was unable to obtain sufficient support from donors and South Asian and African governments for research on overnutrition and urban nutrition issues (Section 3.2). Therefore, there has not been the hoped-for research impact in providing new evidence on these growing issues. However, there has been intensified investigation of the still-very-important problems of undernutrition, particularly in rural areas. Unfortunately, there have not been any studies that provide quantitative estimates of the impacts of this work, so we have to rely on narratives about policy influence and outcomes from the stakeholder interviews and data on use of research outputs (which are impressive).

Common themes in the interviews pertaining to the impacts of PHND and A4NH projects related to diet quality and health included:

- (1) The extent of impacts depends in part on the perceived quality of the research (discussed in Section 3).
- (2) The proximate impacts on policies depend in part on the continuity of the involvement of policy and policy-related stakeholders at the various stages of the project, including initial formulation, implementation, and dissemination. Given turnover in government personnel, the stable ongoing stakeholders may not be in governments, but instead may be what Purnima Menon refers to as “boundary stakeholders.”
- (3) Some stakeholders were not aware of IFPRI PHND/A4NH projects as such, but were aware of and use the evaluation findings, for example the Ethiopia Productive Safety Net Program (PSNP) interacted closely with IFPRI researchers on PSNP evaluation (e.g., John Hoddinott, Alemayhu Seyoum Taffesse, Kalle Hirvonen). The critical analysis conducted by Hoddinott and colleagues and the lessons learned from the Alive & Thrive program led to the integration of nutrition and SBCC elements into the fourth phase of the PSNP. One of the international partners in Ethiopia, for example, reported that IFPRI has been a solid partner and that PSNP/World Bank relies significantly on the research and surveys that are conducted by IFPRI, and that the evaluation component of each PSNP iteration has been critical, since these provided evidence as to whether the program has impact on beneficiaries and informed the re-designing/designing of the next phase of PSNP (e.g., shifting from providing support towards building systems in addition to the ongoing cash/food transfer, and also working on information management systems and disaster risk management for the country).

- (4) Changing the conversation about evaluation, particularly in Ethiopia, was seen by many as an important impact. The shift from a focus on monitoring with little focus on systematic comparisons to attempt to generate counterfactuals is significant. Almost every project now has an evaluation component and every key ministry has an evaluation unit. Again, while this refers to the broader IFPRI work, an important component of the evaluation has been linked to PHND and A4NH studies related to diet quality and health.
- (5) Some research results, if not disseminated well, may cause alarm (e.g., results of a study on aflatoxin in milk in Ethiopia for which there were issues in the dissemination that led some people to stop drinking milk, possibly because of misunderstanding and alarm). In a different example, at least two stakeholders in India were disturbed because they perceived that the Global Hunger Index report made inappropriate comparisons pertaining to India's relative position regarding the distribution of nutritional status and changes in nutritional status. It was perceived, in particular, that the aggregate approach adopted by the Global Hunger Index report, led to poor representation or misrepresentation of the nuances in the Indian context and of India's relative position.
- (6) More detailed impacts and insights emphasized by IFPRI researchers included: *In ETHIOPIA:* (a) The importance of IFPRI's role in making PSNP more nutrition sensitive, particularly within a context where the Ministry of Agriculture felt that nutrition was the mandate of the Ministry of Health. IFPRI collected anthropometric data for the PSNP-III evaluation and John Hoddinott and Harold Alderman presented the findings at a workshop organized by ESSP at ILRI (March-April 2015). Alderman presented his paper on the potential of nutrition-sensitive safety nets and Hoddinott and the PHN team presented their analysis that showed that PSNP had no direct impacts on nutritional outcomes. These presentations were perceived to provide strong evidence that nutrition needed to be incorporated into PSNP-IV. After these presentations, a process of negotiation followed through the donors working group; (b) The evaluation also found an issue in getting funds to the beneficiaries, which the evaluation team was able to bring to the attention of the government; (c) Alive & Thrive presented evidence on how SBCC could make a difference which was used to convince PSNP stakeholders that it was worth investing in these activities (including during the mid-term review process); (d) The evaluation of the Ethiopian Agricultural Growth Program II (AGP-II) incorporated a module on infant and young child feeding into the new baseline (apparently based on prior IFPRI evaluations); (e) The evaluation of the UNICEF social cash transfer program in Tigray (ended in 2013), which was considered the best UNICEF publication for the year, and which influenced the design of the next social cash transfer program (in Amhara); (f) At a global level, the *Lancet* papers are considered as the base for almost every policy discussion in Ethiopia; (g) While the *Stories of Change* project had interesting findings, not sure how much of these findings were used; and (h) Data collection capacity has increased, for example the PNSP-IV evaluation was led by the CSA with collection transitioning from paper to CAPI.

In INDIA: (a) The findings on the maternal nutritional trial were presented to the Government of India (maternal nutritional working group at the ministry level) and A&T helped to develop a package of maternal nutritional interventions for the Ministry of Health (antenatal care is provided by the MOH); (b) TANDI, led by IFPRI, was early work that led to the proliferation of

agriculture and nutrition activities in India and globally; (c) The *Stories of Change* project has had significant traction at the state level. The analysis in Chattisgarh is based on interactions with the state government (which led to a demand for evidence, with IFPRI requested to undertake evaluations of the programs in the state). The SoC analysis in Odisha led to the government requesting further policy engagement. The national analysis in India is complete, as well as an analysis of the 10 states that account for 80 percent of the burden of stunting in India; and (d) POSHAN has submitted four journal manuscripts and also has developed policy notes (for six states using national survey data) and descriptive district profiles. District-level data has allowed for an assessment of the status of nutrition at a disaggregated level. The descriptive analysis moved quickly and provided insights on the patterns and trends.

- (7) More detailed perceived impacts as emphasized by particular stakeholders: *In ETHIOPIA*: (a) Alive & Thrive has driven IYCF thinking; (b) SBCC materials are widely utilized and help bring facts and research results in very easy language to partners and experts; (c) IFPRI PHND and A4NH problem identification methods at the community level help guide analysis; (d) Training materials are very appreciated and are used nationally in school health and nutrition and sustainable diet preparation materials; (e) Findings from Transform Nutrition have influenced work on nutrition-sensitive agriculture. Information generated from the project has been utilized in multisectoral coordination and nutrition-sensitive agriculture and WASH as well as nutrition-specific projects; (f) The Agri-Nutrition sub-group platform is active; developing new strategies within the food and nutrition policy, and the new strategies are now in the process of being endorsed. This was developed by Save the Children, but the materials utilized came from IFPRI. They have relied on the findings of Transform Nutrition for outcomes issues and Alive & Thrive for some technical materials; (g) Driving thinking within the context of nutrition-sensitive agriculture. Research products and publications related to nutrition-sensitive agriculture in the 2013 *Lancet* article have been utilized. The *Lancet* series was critical in bringing together the important elements of identifying the appropriate interventions and supporting the development of indicators. It provides facts that are easily understood and invigorated the global nutrition agenda; (h) Technical assistance from IFPRI has been critical for moving forward with policy and strategy development; (i) International organizations use the nutritional research publications, including market-related work around nutrition, assessments at the regional level and local studies on the nutrition situation; (j) IFPRI findings provide the directions in which to go and evolving ideas around how agriculture can translate into better nutrition; (k) Many resources generated and used in IFPRI research and programming (e.g., BCC tools) are now being used in other contexts (e.g., health extension program); (l) Experience of engaging partners-- these were new ideas that are now being picked up by program implementers; and (m) IFPRI research is very important in influencing policymakers. Able to use the research to show government/country leaders that certain issues are affecting the country (e.g., human capital, social-economic issues etc.).

In INDIA: (a) Niti Aayog's monitoring of SDG indicators related to nutrition and health refers to work of IFPRI; (b) IFPRI's research and papers are useful to stakeholders. The policy briefs are taken seriously and with respect. Work is quoted very widely; (c) International organizations working in India depend significantly on the studies that are published by IFPRI (but not necessarily related to agriculture-nutrition); (d) District profiling activities of

POSHAN, which FSSAI uses to send to the states, are an excellent resource; (e) The nutrition resource platform by WCD (Women and Child Development) is based substantially on IFPRI material related to IYCF, maternal and child health; (f) IFPRI is known for monitoring and evaluation and there are discussions on the potential to use IFPRI for the ME agenda for fortification; (g) POSHAN viewed by donors as a successful project with data analytics and evidence that are very insightful and focused on the nutrition priorities. POSHAN also contributed to the IAS academy course (LBSANA) that was held in Mussoorie in Himachal Pradesh; (h) Alive & Thrive work conducted by IFPRI in Bangladesh is being used to scale-up maternal and IYCF interventions within the existing governmental model and IFPRI is doing that evaluation; (i) IFPRI played an important role in bringing the disconnect between economic growth and alleviation of undernutrition to the public discussion. IFPRI contributed to first major conference on nutrition in 2011: Indian poverty has declined but by international comparison, India was not doing well with malnutrition and hunger higher than in some African countries. This led to a debate on the definitions of the different outcome indicators. Then Prime Minister Manmohan Singh set up a group/task force on malnutrition. IFPRI came out with some studies with high figures on malnutrition that were presented during the conference in Delhi. Singh and Planning Commission accepted the findings and resolved to work on the issue. There was policy mobilization after the conference. IFPRI formed a group, a combination of medical/nutrition and agricultural experts to work on how agriculture can contribute towards nutrition—cropping pattern—for nutrition but also the economics of that cropping pattern; and (j) Strongly presented minority view that IFPRI is ineffective: IFPRI works hard, presents a white paper, but policymakers do not listen. Partnerships needed with government to produce white papers. The Indian government will never ask directly but there is a link through local institutions. IFPRI has not gone beyond the experimental, it is not into implementation stage. The other issue in India is that IFPRI is working only in a few states. Furthermore, in India, nutrition has been consistently targeted in silos and agriculture does not talk to nutrition. Agriculture has been focused on production, consumption, productivity, markets and income. There is no advocacy and discussions about household diets. The nutrition focus has been primarily on maternal and child health and is predominantly donor-driven. There are however well-demonstrated small projects with high success rates, e.g. micronutrient fortification projects, wheat fortification, ultra-rice, milk and oil fortification in one state but organizational politics kills anything going to scale in India. Subnational-level adaptation and simplification of messages does not seem to happen or work in India. Research communications from IFPRI might come across as preachy, which turns off the system. Most IFPRI dissemination is to those already converted, the messages need to get to the government. There is need for publications/documents that speak to government stakeholders (that they could use).

6.2 Quantitative Indicators of Impact Globally

Ultimately, we would like to know the impacts of the various projects being reviewed on outcomes of interest, such as anthropometric indicators of nutritional status and health indicators. Unfortunately, the time and monetary resources for this review are much smaller than those necessary for the usual impact evaluation of such outcomes for a single program, to say nothing of multiple programs. Therefore, we are limited to investigating impacts on what might be considered

intermediate outcomes, such as citations and Altmetrics, which we think nevertheless is informative because they reflect how much the broader community is paying attention to and being affected by the research.

Citations (ISI Web of Science): Web of Science is an online scientific [citation indexing](#) service originally produced by the [Institute for Scientific Information](#) (ISI), later maintained by [Clarivate Analytics](#) (previously the Intellectual Property and Science business of [Thomson Reuters](#)), that provides a comprehensive citation search. It gives access to multiple databases that reference cross-disciplinary research, which allows for in-depth exploration of specialized subfields within [scientific disciplines](#). These metrics are based solely on articles in the journals indexed by Web of Science and do not include citations of books, chapters, patents, reports, etc. Thus, they capture primarily influence in the scientific community and not in the policy community, though there may be some important indirect effects on policies through the scientific community.

According to compilations by the IFPRI CPA Division, as of April 9, 2018, there had been 2,689 citations of 182 GRP24 and A4NH titles, with means of 14.8 citations per title overall and 2.0 citations per title per year since publication (Table 4, find all tables in this subsection at end of Section 6.1). The distributions are skewed to the right, with 43 titles having zero citations, maximums of 315 citations overall and 50.3 citations per year since publication, and medians of 2.0 citations overall and 0.5 citations per year since publication. Table 5 gives in order the publications with the highest number of citations (including the 39 items with at least 10 citations). The top part of this distribution indicates high numbers of citations, with over 50 for the top 11, over 100 for the top seven, and over 300 for the top three. Five of the top ten are in nutritional journals (three in the *Journal of Nutrition*, and one each in *Food and Nutrition Bulletin* and in *Public Health Nutrition*), though the top is in an economics journals (*Oxford Economics Papers*), the third is in a very high impact general health journal (*Lancet*), and the fourth in a global health journal (*Globalization and Health*). The authors vary a fair amount with 19 authors/co-authors among the top ten, though there is some concentration with Marie Ruel author or co-author of two of the top three and four of the top ten, Corinna Hawkes of three of the top ten, Harold Alderman of two of the top three, and Howarth Bouis of two of the top ten. The year of publication of the ten most highly cited articles varied over more than a decade, between 2002 and 2013.

Of course, citations tend to increase with time since publication, though generally eventually at a declining rate. Therefore, the citations per year since publication are of interest. Table 6 gives in order the publications with the highest number of citations per year since publication (including the 27 items with at least 3.0 citations per year since publication). The top ten in terms of citations per year include seven of the top ten in terms of total citations, but with some shuffling in the order. Accordingly, the journals and the authors are mostly the same, with numbers 7–9 in terms of citations per year since publication replacing items 12–14 by these criteria. The number of citations per year are fairly high for the publications at the top of Table 6, with the first nine having more than ten citations per year, the first four having more than 20 citations per year, and the first one (Ruel and Alderman's 2013 *Lancet* article) standing out with over 50 citations per year.

Finally, we note that of the 43 items with zero citations, 33 were published in 2017 or 2018, so not all that much time had passed between publication and the April 2018 citation analysis. Among the ten published before 2017 with no citations, one was an article and nine were abstracts.

Altmetrics: Altmetrics are a weighted count of the amount of attention in a range of online and other platforms for research outputs, with the highest weights for news stories, blogs, Wikipedia, and policy documents and the lowest weights for Facebook, YouTube, Reddit/Pinterest, Q&A (Altmetric Support 2018a, 2018b). The IFPRI CPA Division provided Altmetrics for 171 “Research Outputs” and 82 “External Publications” for GRP24 and A4NH titles (Table 7). Table 8 gives the 29 Research Output titles with Altmetric scores of at least 2 and Table 9 gives the 55 External Publications with Altmetric scores of at least 2. Several observations are noteworthy. First, the *Global Nutrition Report 2015* has an Altmetric score (469) an order of magnitude greater than any other item in either Table 8 or Table 9.⁴ Second, for the rest of the items in these tables, the external publications tend to have a higher distribution of Altmetric scores than the Research Outputs, accounting for the next six highest scores and all but one of the next five scores. Relatedly, for the External Publications the mean and median respectively are 8.6 and 3.0, as compared with 4.1 and 0.0 for the Research Outputs. And for the External Publications, 12 percent have scores of zero, compared with 64 percent for the Research Outputs. Third, while some of the items with high Altmetric scores also had high downloads or citations (e.g., the *Global Nutrition Report 2015* had high downloads though not citations), many of the items high in terms of Altmetrics scores were not nearly as high with respect to downloads or citations. Thus, the Altmetrics indeed seem to reflect in substantial part reaching a different audience than do the downloads and citations. Fourth, 122 items have Altmetric scores of zero, primarily conference briefs, discussion papers and reports for which there may have been less or no efforts to promote these items on social media (though we do not have direct information on the promotion efforts).

Downloads: According to compilations by the IFPRI CPA Division, as of April 9, 2018, there had been 389,559 downloads of 928 GRP24 and A4NH titles, for an average of 420 per title and a median of 147 (Table 10, column 1). The distribution of downloads is skewed to the right, as reflected in the top 25 in terms in downloads in Table 11 and the mean being much greater than the median. Overall, there have been a large number of downloads, distributed among a number of items—with 16 items having 1,000 or more downloads, 90 items having 500 or more downloads, and 570 items having 100 or more downloads. There seems to be a quite large audience for these downloads.

It also is informative to consider three broad categories of items because, in terms of this report, their purposes differ: (1) Global Nutrition Report-related items, (2) Country and Regional Nutrition Profiles, and (3) Others.

The 30 Global Nutrition Report-related items accounted for 193,745 downloads (50 percent of the total), with a mean of 6,459 downloads and a median of 502 downloads (Table 10, column 2). These items are strongly skewed to the right, with 120,066 downloads (31 percent of the overall total) for the *Global Nutrition Report 2016* alone and 175,638 (45 percent of the overall total) for the Global Nutrition Reports for 2014, 2015, and 2016, the summary for 2016, and the complementary “Think Again” poster for 2015 combined (Table 8). The Country and Regional Nutrition Profiles items accounted for 106,649 downloads (27 percent of the overall total), with a mean of 234 downloads and a median of 121 downloads (Table 10, column 3). The distribution of downloads of these items is moderately skewed to the right, though not so strongly as the Global Nutrition Reports. The Others

⁴ The list of Altmetrics provided to us by IFPRI/A4NH did not include the *Global Nutrition Report 2016*, which we expect ranked relatively high in terms of Altmetrics based on its prominence in terms of downloads.

category, including primary research studies, accounted for 89,144 downloads (23 percent of the overall total), with a mean of 201 downloads and a median of 146 downloads (Table 10, column 4). The distribution of downloads of these items is somewhat skewed to the right, though not so much as the other two categories. Thus, the Global Nutrition Report group of titles—and particularly the Global Nutrition Reports for 2014, 2015 and 2016, the summary for 2016, and the complementary “Think Again” poster for 2015—had very large numbers of downloads, but the other two categories also had considerable downloads, so by the indicator of downloads these 928 GRP24 and A4NH titles on average have been quite successful.

Table 4. Summary of ISI Web of Science Citations

	Citations	Citations per year
Total citations	2689	
Total items	182	
Total positive	120	
Mean	14.8	2.0
Median	2.0	0.5
Range	0 – 315	0 – 50.3

Table 5. Citation Counts in Order for 39 Publications with at least 10 Citations

Title	Authors	Journal	Year	Vol	Issue	Pages		Citations	Cit/Year
1 Long term consequences of early childhood malnutrition	Alderman, H; Hoddinott, J; Kinsey, B	OXFORD ECONOMIC PAPERS-NEW SERIES	2006	58	3	450	474	315	24.2
2 Dietary diversity is associated with child nutritional status: Evidence from 11 Demographic and Health Surveys	Arimond, M; Ruel, MT	JOURNAL OF NUTRITION	2004	134	10	2579	2585	310	20.7
3 Nutrition-sensitive interventions and programmes: how can they help to accelerate progress in improving maternal and child nutrition?	Ruel, Marie T.; Alderman, Harold	LANCET	2013	382	9891	536	551	302	50.3
4 Uneven dietary development: linking the policies and processes of globalization with the nutrition transition, obesity and diet-related chronic diseases	Hawkes, Corinna	GLOBALIZATION AND HEALTH	2006	2				207	15.9
5 Operationalizing dietary diversity: A review of measurement issues and research priorities	Ruel, MT	JOURNAL OF NUTRITION	2003	133	11	3911S	3926S	188	11.8
6 Biofortification: A new tool to reduce micronutrient malnutrition	Bouis, Howarth E.; Hotz, Christine; McClafferty, Bonnie; Meenakshi, J. V.; Pfeiffer, Wolfgang H.	FOOD AND NUTRITION BULLETIN	2011	32	1	S31	S40	165	20.6
7 Child feeding practices are associated with child nutritional status in Latin America: Innovative uses of the Demographic and Health Surveys	Ruel, MT; Menon, P	JOURNAL OF NUTRITION	2002	132	6	1180	1187	109	6.4
8 The role of foreign direct investment in the nutrition transition	Hawkes, C	PUBLIC HEALTH NUTRITION	2005	8	4	357	365	94	6.7
9 Regulating food marketing to young people worldwide: Trends and policy drivers	Hawkes, Corinna	AMERICAN JOURNAL OF PUBLIC HEALTH	2007	97	11	1962	1973	93	7.8
10 Biofortification: Progress toward a more nourishing future	Saltzman, Amy; Biro, Ekin; Bouis, Howarth E.; Boy, Erick; De Moura, Fabiana F.; Islam, Yassir; Pfeiffer, Wolfgang H.	GLOBAL FOOD SECURITY-AGRICULTURE POLICY ECONOMICS AND ENVIRONMENT	2013	2	1	9	17	63	10.5
11 Economics of brucellosis impact and control in low-income countries	McDermott, J.; Grace, D.; Zinsstag, J.	REVUE SCIENTIFIQUE ET TECHNIQUE-OFFICE INTERNATIONAL DES EPIZOOTIES	2013	32	1	249	261	60	10.0
12 Reducing Child Undernutrition: Past Drivers and Priorities for the Post-MDG Era	Smith, Lisa C.; Haddad, Lawrence	WORLD DEVELOPMENT	2015	68		180	204	45	11.3
13 Household Food Insecurity Is Associated with Higher Child Undernutrition in Bangladesh, Ethiopia, and Vietnam, but the Effect Is Not Mediated by Child Dietary Diversity	Ali, Disha; Saha, Kuntal K.; Nguyen, Phuong H.; Diressie, Michael T.; Ruel, Marie T.; Menon, Purnima; Rawat, Rahul	JOURNAL OF NUTRITION	2013	143	12	2015	2021	37	6.2
14 Bioavailability of iron, zinc, and provitamin A carotenoids in biofortified staple crops	La Frano, Michael R.; de Moura, Fabiana F.; Boy, Erick; Loennerdal, Bo; Burri, Betty J.	NUTRITION REVIEWS	2014	72	5	289	307	37	7.4
15 Comparison of physical activity between children with autism spectrum disorders and typically developing children	Bandini, Linda G.; Gleason, James; Curtin, Carol; Lividini, Keith; Anderson, Sarah E.; Cermak, Sharon A.; Maslin, Melissa; Must, Aviva	AUTISM	2013	17	1	44	54	34	5.7
16 Bioaccessibility of Carotenoids from Transgenic Provitamin A Biofortified Sorghum	Lipkie, Tristan E.; De Moura, Fabiana F.; Zhao, Zuo-Yu; Albertsen, Marc C.; Che, Ping; Glassman, Kimberly; Ferruzzi, Mario G.	JOURNAL OF AGRICULTURAL AND FOOD CHEMISTRY	2013	61	24	5764	5771	24	4.0
17 Micronutrient deficiency and the prevalence of mothers' overweight/obesity in Egypt	Asfaw, Abay	ECONOMICS & HUMAN BIOLOGY	2007	5	3	471	483	22	1.8
18 Phytic Acid Concentration Influences Iron Bioavailability from Biofortified Beans in Rwandese Women with Low Iron Status	Petry, Nicolai; Egli, Ines; Gahutu, Jean B.; Tugirimana, Pierrot L.; Boy, Erick; Hurrell, Richard	JOURNAL OF NUTRITION	2014	144	11	1681	1687	21	4.2
19 Comparison of sedentary behaviors between children with autism spectrum disorders and typically developing children	Must, Aviva; Phillips, Sarah M.; Curtin, Carol; Anderson, Sarah E.; Maslin, Melissa; Lividini, Keith; Bandini, Linda G.	AUTISM	2014	18	4	376	384	19	3.8
20 Carotenoid Retention of Biofortified Provitamin A Maize (Zea mays L.) after Zambian Traditional Methods of Milling, Cooking and Storage	Mugode, Luke; Ha, Barbara; Kaunda, Augustine; Sikombe, Thelma; Phiri, Sidney; Mutale, Raphael; Davis, Christopher; Tanumihardjo, Sherry; De Moura, Fabiana F.	JOURNAL OF AGRICULTURAL AND FOOD CHEMISTRY	2014	62	27	6317	6325	19	3.8

Table 5 (continuation)

Title	Authors	Journal	Year	Vol	Issue	Pages	Citations	Cit/Year	
21 Scaling Up Impact on Nutrition: What Will It Take?	Gillespie, Stuart; Menon, Purnima; Kennedy, Andrew L.	ADVANCES IN NUTRITION	2015	6	4	440	451	18	4.5
22 Effect of phytate reduction of sorghum, through genetic modification, on iron and zinc availability as assessed by an in vitro dialysability bioaccessibility assay, Caco-2 cell uptake assay, and suckling rat pup	Kruger, Johanita; Taylor, John R. N.; Du, Xiaogu; De Moura, Fabiana F.; Loennerdal, Bo; Oelofse, Andre	FOOD CHEMISTRY	2013	141	2	1019	1025	18	3.0
23 Agro-food industry growth and obesity in China: what role for regulating food advertising and promotion and nutrition labelling?	Hawkes, C.	OBESEITY REVIEWS	2008	9		151	161	18	1.6
24 Towards overcoming the food consumption information gap: Strengthening household consumption and expenditures surveys for food and nutrition policymaking	Fiedler, John L.	GLOBAL FOOD SECURITY-AGRICULTURE POLICY ECONOMICS AND ENVIRONMENT	2013	2	1	56	63	17	2.8
25 Cost-effectiveness of the community-based management of severe acute malnutrition by community health workers in southern Bangladesh	Puett, Chloe; Sadler, Kate; Alderman, Harold; Coates, Jennifer; Fiedler, John L.; Myatt, Mark	HEALTH POLICY AND PLANNING	2013	28	4	386	399	17	2.8
26 The Impact of a Food Assistance Program on Nutritional Status, Disease Progression, and Food Security Among People Living With HIV in Uganda	Rawat, Rahul; Faust, Elizabeth; Maluccio, John A.; Kadiyala, Suneetha	JAIDS-JOURNAL OF ACQUIRED IMMUNE DEFICIENCY SYNDROMES	2014	66	1	E15	E22	15	3.0
27 Improving nutrition through biofortification: A review of evidence from HarvestPlus, 2003 through 2016	Bouis, Howarth E.; Saltzman, Amy	GLOBAL FOOD SECURITY-AGRICULTURE POLICY ECONOMICS AND ENVIRONMENT	2017	12		49	58	13	6.5
28 Program Impact Pathway Analysis of a Social Franchise Model Shows Potential to Improve Infant and Young Child Feeding Practices in Vietnam	Nguyen, Phuong H.; Menon, Purnima; Keithly, Sarah C.; Kim, Sunny S.; Hajeerbhoy, Nemat; Tran, Lan M.; Ruel, Marie T.; Rawat, Rahul	JOURNAL OF NUTRITION	2014	144	10	1627	1636	13	2.6
29 Parent Support Improves Weight Loss in Adolescents and Young Adults with Down Syndrome	Curtin, Carol; Bandini, Linda G.; Must, Aviva; Gleason, James; Lividini, Keith; Phillips, Sarah; Eliasziw, Misha; Maslin, Melissa; Fleming, Richard K.	JOURNAL OF PEDIATRICS	2013	163	5	1402	+	13	2.2
30 Relative costs of 24-hour recall and Household Consumption and Expenditures Surveys for nutrition analysis	Fiedler, John L.; Martin-Prevel, Yves; Moursi, Mourad	FOOD AND NUTRITION BULLETIN	2013	34	3	318	330	12	2.0
31 CHANGING FOOD PATTERNS IN WEST-AFRICA - IMPLICATIONS FOR POLICY RESEARCH	DELGADO, CL; MILLER, CPJ	FOOD POLICY	1985	10	1	55	62	11	0.3
32 Agricultural research for nutrition outcomes - rethinking the agenda	McDermott, John; Johnson, Nancy; Kadiyala, Suneetha; Kennedy, Gina; Wyatt, Amanda J.	FOOD SECURITY	2015	7	3	593	607	11	2.8
33 Maternal Education Mitigates the Negative Effects of Higher Income on the Double Burden of Child Stunting and Maternal Overweight in Rural Mexico	Leroy, Jef L.; Habicht, Jean-Pierre; Gonzalez de Cossio, Teresa; Ruel, Marie T.	JOURNAL OF NUTRITION	2014	144	5	765	770	11	2.2
34 The Proportion of Anemia Associated with Iron Deficiency in Low, Medium, and High Human Development Index Countries: A Systematic Analysis of National Surveys	Petry, Nicolai; Olofin, Ibrinke; Hurrell, Richard E.; Boy, Erick; Wirth, James P.; Moursi, Mourad; Angel, Moira Donahue; Rohner, Fabian	NUTRIENTS	2016	8	11			11	3.7
35 Maternal mental health is associated with child undernutrition and illness in Bangladesh, Vietnam and Ethiopia	Nguyen, Phuong H.; Saha, Kuntal K.; Ali, Disha; Menon, Purnima; Manohar, Swetha; Lan Tran Mai; Rawat, Rahul; Ruel, Marie T.	PUBLIC HEALTH NUTRITION	2014	17	6	1318	1327	11	2.2
36 Why Worry About the Politics of Childhood Undernutrition?	Nisbett, Nicholas; Gillespie, Stuart; Haddad, Lawrence; Harris, Jody	WORLD DEVELOPMENT	2014	64		420	433	11	2.2
37 Sensitivity to reward is associated with snack and sugar-sweetened beverage consumption in adolescents	De Cock, Nathalie; Van Lippevelde, Wendy; Vervoort, Leentje; Vangeel, Jolien; Maes, Lea; Eggermont, Steven; Braet, Caroline; Lachat, Carl; Huybregts, Lieven; Goossens, Lien; Beullens, Kathleen; Kolsteren, Patrick; Van Camp, John	EUROPEAN JOURNAL OF NUTRITION	2016	55	4	1623	1632	10	3.3
38 Anemia and Micronutrient Status of Women of Childbearing Age and Children 6-59 Months in the Democratic Republic of the Congo	Harvey-Leeson, Sarah; Karakochnik, Crystal D.; Hawes, Meaghan; Tugirimana, Pierrot L.; Bahizire, Esto; Akilimali, Pierre Z.; Michaux, Kristina D.; Lynd, Larry D.; Whitfield, Kyla C.; Moursi, Mourad; Boy, Erick; Foley, Jennifer; McLean, Judy; Houghton, Lisa A.; Gibson, Rosalind S.; Green, Tim J.	NUTRIENTS	2016	8	2			10	3.3
39 Micronutrient Intakes among Women of Reproductive Age in Vietnam	Nguyen, Phuong H.; Hieu Nguyen; Gonzalez-Casanova, Ines; Copeland, Erika; Strizich, Garrett; Lowe, Alyssa; Pham, Hoa; Truong, Truong V.; Nguyen, Son; Martorell, Reynaldo; Ramakrishnan, Usha	PLOS ONE	2014	9	2			10	2.0

Table 6. Citations per Year since Publication in Order for 27 Publications with at Least Three Citations per Year

Title	Authors	Journal	Year	Vol	Issue	Pages		Citations	Cit/Year
1 Nutrition-sensitive interventions and programmes: how can they help to accelerate progress in improving maternal and child nutrition?	Ruel, Marie T.; Alderman, Harold	LANCET	2013	382	9891	536	551	302	50.33
2 Long term consequences of early childhood malnutrition	Alderman, H; Hoddinott, J; Kinsey, B	OXFORD ECONOMIC PAPERS-NEW SERIES	2006	58	3	450	474	315	24.23
3 Dietary diversity is associated with child nutritional status: Evidence from 11 Demographic and Health Surveys	Arimond, M; Ruel, MT	JOURNAL OF NUTRITION	2004	134	10	2579	2585	310	20.67
4 Biofortification: A new tool to reduce micronutrient malnutrition	Bouis, Howarth E.; Hotz, Christine; McClafferty, Bonnie; Meenakshi, J. V.; Pfeiffer, Wolfgang H.	FOOD AND NUTRITION BULLETIN	2011	32	1	531	540	165	20.63
5 Uneven dietary development: linking the policies and processes of globalization with the nutrition transition, obesity and diet-related chronic diseases	Hawkes, Corinna	GLOBALIZATION AND HEALTH	2006	2				207	15.92
6 Operationalizing dietary diversity: A review of measurement issues and research priorities	Ruel, MT	JOURNAL OF NUTRITION	2003	133	11	3911S	3926S	188	11.75
7 Reducing Child Undernutrition: Past Drivers and Priorities for the Post-MDG Era	Smith, Lisa C.; Haddad, Lawrence	WORLD DEVELOPMENT	2015	68		180	204	45	11.25
8 Biofortification: Progress toward a more nourishing future	Saltzman, Amy; Biriol, Ekin; Bouis, Howarth E.; Boy, Erick; De Moura, Fabiana F.; Islam, Yassir; Pfeiffer, Wolfgang H.	GLOBAL FOOD SECURITY-AGRICULTURE POLICY ECONOMICS AND ENVIRONMENT	2013	2	1	9	17	63	10.5
9 Economics of brucellosis impact and control in low-income countries	McDermott, J.; Grace, D.; Zinsstag, J.	REVUE SCIENTIFIQUE ET TECHNIQUE-OFFICE	2013	32	1	249	261	60	10
10 Regulating food marketing to young people worldwide: Trends and policy drivers	Hawkes, Corinna	AMERICAN JOURNAL OF PUBLIC HEALTH	2007	97	11	1962	1973	93	7.75
11 Bioavailability of iron, zinc, and provitamin A carotenoids in biofortified staple crops	La Frano, Michael R.; de Moura, Fabiana F.; Boy, Erick; Loennerdal, Bo; Burri, Betty J.	NUTRITION REVIEWS	2014	72	5	289	307	37	7.4
12 The role of foreign direct investment in the nutrition transition	Hawkes, C	PUBLIC HEALTH NUTRITION	2005	8	4	357	365	94	6.71
13 Improving nutrition through biofortification: A review of evidence from HarvestPlus, 2003 through 2016	Bouis, Howarth E.; Saltzman, Amy	GLOBAL FOOD SECURITY-AGRICULTURE POLICY ECONOMICS AND ENVIRONMENT	2017	12		49	58	13	6.5
14 Child feeding practices are associated with child nutritional status in Latin America: Innovative uses of the Demographic and Health Surveys	Ruel, MT; Menon, P	JOURNAL OF NUTRITION	2002	132	6	1180	1187	109	6.41

Table 6 (continuation)

	Title	Authors	Journal	Year	Vol	Issue	Pages		Citations	Cit/Year
15	Household Food Insecurity Is Associated with Higher Child Undernutrition in Bangladesh, Ethiopia, and Vietnam, but the Effect Is Not Mediated by Child Dietary Diversity	Ali, Disha; Saha, Kuntal K.; Nguyen, Phuong H.; Diressie, Michael T.; Ruel, Marie T.; Menon, Purnima; Rawat, Rahul	JOURNAL OF NUTRITION	2013	143	12	2015	2021	37	6.17
16	Comparison of physical activity between children with autism spectrum disorders and typically developing children	Bandini, Linda G.; Gleason, James; Curtin, Carol; Lividini, Keith; Anderson, Sarah E.; Cermak, Sharon A.; Maslin, Melissa; Must, Aviva	AUTISM	2013	17	1	44	54	34	5.67
17	Scaling Up Impact on Nutrition: What Will It Take?	Gillespie, Stuart; Menon, Purnima; Kennedy, Andrew L.	ADVANCES IN NUTRITION	2015	6	4	440	451	18	4.5
18	Phytic Acid Concentration Influences Iron Bioavailability from Biofortified Beans in Rwandese Women with Low Iron Status	Petry, Nicolai; Egli, Ines; Gahutu, Jean B.; Tugirimana, Pierrot L.; Boy, Erick; Hurrell, Richard	JOURNAL OF NUTRITION	2014	144	11	1681	1687	21	4.2
19	Bioaccessibility of Carotenoids from Transgenic Provitamin A Biofortified Sorghum	Lipkie, Tristan E.; De Moura, Fabiana F.; Zhao, Zuo-Yu; Albertsen, Marc C.; Che, Ping; Glassman, Kimberly; Ferruzzi, Mario G.	JOURNAL OF AGRICULTURAL AND FOOD CHEMISTRY	2013	61	24	5764	5771	24	4
20	Comparison of sedentary behaviors between children with autism spectrum disorders and typically developing children	Must, Aviva; Phillips, Sarah M.; Curtin, Carol; Anderson, Sarah E.; Maslin, Melissa; Lividini, Keith; Bandini, Linda G.	AUTISM	2014	18	4	376	384	19	3.8
21	Carotenoid Retention of Biofortified Provitamin A Maize (<i>Zea mays</i> L.) after Zambian Traditional Methods of Milling, Cooking and Storage	Mugode, Luke; Ha, Barbara; Kaunda, Augustine; Sikombe, Thelma; Phiri, Sidney; Mutale, Raphael; Davis, Christopher; Tanumihardjo, Sherry; De Moura, Fabiana F.	JOURNAL OF AGRICULTURAL AND FOOD CHEMISTRY	2014	62	27	6317	6325	19	3.8
22	The Proportion of Anemia Associated with Iron Deficiency in Low, Medium, and High Human Development Index Countries: A Systematic Analysis of National Surveys	Petry, Nicolai; Olofin, Ibranke; Hurrell, Richard E.; Boy, Erick; Wirth, James P.; Moursi, Mourad; Angel, Moira Donahue; Rohner, Fabian	NUTRIENTS	2016	8	11			11	3.67
23	Sensitivity to reward is associated with snack and sugar-sweetened beverage consumption in adolescents	De Cock, Nathalie; Van Lippevelde, Wendy; Vervoort, Leentje; Vangeel, Jolien; Maes, Lea; Eggermont, Steven; Braet, Caroline; Lachat, Carl; Huybregts, Lieven; Goossens, Lien; Beullens, Kathleen; Kolsteren, Patrick; Van Camp, John	EUROPEAN JOURNAL OF NUTRITION	2016	55	4	1623	1632	10	3.33
24	Anemia and Micronutrient Status of Women of Childbearing Age and Children 6-59 Months in the Democratic Republic of the Congo	Harvey-Leeson, Sarah; Karakochuk, Crystal D.; Hawes, Meaghan; Tugirimana, Pierrot L.; Bahizire, Esto; Akilimali, Pierre Z.; Michaux, Kristina D.; Lynd, Larry D.; Whitfield, Kyly C.; Moursi, Mourad; Boy, Erick; Foley, Jennifer; McLean, Judy; Houghton, Lisa A.; Gibson, Rosalind S.; Green, Tim J.	NUTRIENTS	2016	8	2			10	3.33
25	Effect of phytate reduction of sorghum, through genetic modification, on iron and zinc availability as assessed by an in vitro dialysability bioaccessibility assay, Caco-2 cell uptake assay, and suckling rat pup absorption model	Kruger, Johanita; Taylor, John R. N.; Du, Xiaogu; De Moura, Fabiana F.; Loennerdal, Bo; Oelofse, Andre	FOOD CHEMISTRY	2013	141	2	1019	1025	18	3
26	The Impact of a Food Assistance Program on Nutritional Status, Disease Progression, and Food Security Among People Living With HIV in Uganda	Rawat, Rahul; Faust, Elizabeth; Maluccio, John A.; Kadiyala, Suneetha	JAIDS-JOURNAL OF ACQUIRED IMMUNE DEFICIENCY SYNDROMES	2014	66	1	E15	E22	15	3
27	Stop stunting: improving child feeding, women's nutrition and household sanitation in South Asia	Aguayo, Victor M.; Menon, Purnima	MATERNAL AND CHILD NUTRITION	2016	12		3	11	9	3

Table 7. Altmetrics for GRP24 and A4NH Research Outputs and External Publications

	Research outputs	External publications
Number of items	171	82
Maximum	469	86
Minimum	0	0
Mean	4.1	8.6
Median	0	3
Number of O's	110	10

Table 8. 29 Research Output Titles with Altmetric Scores of at Least 2

Title	Author	Year	Altmetrics
1 Global Nutrition Report 2015: Actions and accountability to advance nutrition and sustainable development	International Food Policy Research Institute (IFPRI)	2015	469
2 Think your country doesn't have a nutrition problem? Think again	International Food Policy Research Institute (IFPRI)	2015	24
3 Measuring women's decisionmaking: Indicator choice and survey design experiments from cash and food transfer evaluations in Ecuador, Uganda, and Yemen	Peterman, Amber; Schwab, Benjamin; Roy, Shalini; Hidrobo, Melissa; Gilligan, Daniel	2015	17
4 An evaluation of the impact of e-verification on counterfeit agricultural inputs and technology adoption in Uganda	Ashour, Maha; Billings, Lucy; Gilligan, Daniel O.; Karachiwalla, Naureen	2015	13
5 The other asian enigma: Explaining the rapid reduction of undernutrition in Bangladesh	Headey, Derek D.; Hoddinott, John F.; Ali, Disha; Tesfaye, Roman; Dereje, Mekdim	2014	12
6 How does women's time in reproductive work and agriculture affect maternal and child nutrition? Evidence from Bangladesh, Cambodia, Ghana, Mozambique, and Nepal	Komatsu, Hitomi; Malapit, Hazel Jean L.; Theis, Sophie	2015	10
7 The rising costs of nutritious foods in Ethiopia	Bachewe, Fantu Nisrane; Hirvonen, Kalle; Minten, Bart; Yimer, Feiruz	2017	10
8 Commitments and accountability: Peru's unique nutrition journey	Yosef, Sivan; Goulden, Jay	2016	9
9 Nourishing millions: Stories of change in nutrition	Gillespie, Stuart, ed.; Hodge, Judith, ed.; Yosef, Sivan, ed.; Pandya-Lorch, Rajul, ed.	2016	9
10 Donor progress: Nutrition for Growth tracking table	International Food Policy Research Institute (IFPRI)	2015	7
11 Achieving a nutrition revolution for Africa: The road to healthier diets and optimal nutrition	Covic, Namukolo, ed.; Hendriks, Sheryl L., ed.	2016	6
12 Bangladesh country brief	Nisbett, Nick; Akhtar, Nazneen; Yosef, Sivan	2016	6
13 Capacity development for resilient food systems: Issues, approaches, and knowledge gaps	Babu, Suresh Chandra; Blom, Sylvia	2014	6
14 Estimating the cost of delivering direct nutrition interventions at scale: National and subnational level insights from India	Menon, Purnima; McDonald, C. M.; Chakrabarti, Suman	2015	6
15 Ethiopia country brief	Warren, Andrea	2016	6
16 Nepal country brief	Cunningham, Kenda; Singh, Akriti; Headey, Derek D.; Pandey Rana, Pooja; Karmacharya, Chandni	2016	6
17 Senegal country brief	Kampman, Haile; Park, Seollee; Rawat, Rahul; Becquey, Elodie; Zongrone, Amanda	2016	6
18 Sénégal résumé-pays	Kampman, Haile; Park, Seollee; Rawat, Rahul; Becquey, Elodie; Zongrone, Amanda	2016	6
19 Women's empowerment and nutrition: An evidence review	van den Bold, Mara; Quisumbing, Agnes R.; Gillespie, Stuart	2013	6
20 Women's land rights as a pathway to poverty reduction: A framework and review of available evidence	Meinzen-Dick, Ruth Suseela; Quisumbing, Agnes R.; Doss, Cheryl R.; Theis, Sophie	2017	6
21 Zambia country brief	Harris, Jody; Drimie, Scott; Roopnaraine, Terry; Park, Seollee; Headey, Derek D.; Covic, Namukolo	2016	6
22 Agriculture, nutrition, and the Green Revolution in Bangladesh	Headey, Derek D.; Hoddinott, John F.	2015	5
23 Agriculture, gendered time use, and nutritional outcomes: A systematic review	Johnston, Deborah; Stevano, Sara; Malapit, Hazel J.; Hull, Elizabeth; Kadiyala, Suneetha	2015	4
24 Nutrition-sensitive agriculture: What have we learned and where do we go from here?	Ruel, Marie T.; Quisumbing, Agnes R.; Balagamwala, Mysbah	2017	4
25 Synopsis, Global nutrition report 2015: Actions and accountability to advance nutrition and sustainable development [in Russian]	International Food Policy Research Institute (IFPRI)	2015	4
26 Understanding the rapid reduction of undernutrition in Nepal, 2001-2011	Headey, Derek D.; Hoddinott, John F.	2014	4
27 Supporting multisectoral action: Capacity and nutrition leadership challenges facing Africa	Jerling, Johann; Pelletier, David; Fanzo, Jessica; Covic, Namukolo	2016	3
28 Animal sourced foods and child stunting	Headey, Derek D.; Hirvonen, Kalle; Hoddinott, John F.	2017	2
29 Women's empowerment in agriculture, production diversity, and nutrition: Evidence from Nepal	Malapit, Hazel Jean L.; Kadiyala, Suneetha; Quisumbing, Agnes R.; Cunningham, Kenda; Tyagi, Parul	2013	2

Table 9. 54 External Publications with Altmetric Scores of at Least 2

Title	Author	Publication Venue	Year	Altmetrics
1 Impacts on breastfeeding practices of at-scale strategies that combine intensive interpersonal counseling, mass media, and community mobilization: Results of cluster-randomized program evaluations in Bangladesh and Viet Nam	Menon, Purnima; Nguyen, Phuong Hong; Saha, Kuntal K.; Khaled, Adiba; Kennedy, Andrew; Tran, Lan Mai; Sanghvi, Tina; Hajeebhoy, Nemat; Baker, Jean; Alayon, Silvia; Afsana, Kaosar; Haque, Raisul; Frongillo, Edward A.; Ruel, Marie T.; Rawat, Rahul	PLoS Med 13(10): e1002159	2016	86
2 Women in agriculture: Four myths	Doss, Cheryl; Meinen-Dick, Ruth Suseela; Quisumbing, Agnes R.; Theis, Sophie	Global Food Security 16(March 2018): 69-74	2018	72
3 An integrated agro-ecosystem and livelihood systems approach for the poor and vulnerable in dry areas	van Ginkel, Maarten; Sayer, Jeff; Sinclair, Fergus; Aw-Hassan, Aden; Bossio, Deborah; Craufurd, Peter; El Mourid, Mohammed; Haddad, Nasri; Hoisington, David; Johnson, Nancy L.; Velarde, Carlos León; Mares, Víctor; Mude, Andrew; Nefzaoui, Ali; Noble, Andrew; Rao, K. P. C.; Serraj, Rachid; Tarawali, Shirley; Vodouhe, Raymond; Ortiz, Rodomiro	Food Security 5(6): 751-767	2013	48
4 Scaling up impact on nutrition: What will it take?	Gillespie, Stuart; Menon, Purnima; Kennedy, Andrew	Advances in Nutrition 6(4): 440-451	2015	44
5 Suboptimal breastfeeding practices are associated with infant illness in Vietnam	Hajeebhoy, Nemat; Nguyen, Phuong H.; Mannava, Priya; Nguyen, Tuan T.; Mai, Lan Tran	International Breastfeeding Journal 9: 12	2014	25
6 How important is parental education for child nutrition?	Alderman, Harold; Headey, Derek D.	World Development 94 (June 2017): 448-464	2017	23
7 Educating and training a workforce for nutrition in a post-2015 world	Fanzo, Jessica; Graziose, Matthew M.; Kraemer, Klaus; Gillespie, Stuart; Johnston, Jessica L.; de Pee, Saskia; Monterrosa, Eva; Badham, Jane; Bloem, Martin W.; Dangour, Alan D.; Deckelbaum, Richard; Dobermann, Achim; Fracassi, Patrizia; Hossain, SM Moazzem; Ingram, John; Jerling, Johann C.; Jones, CJ; Jap, Stefanus Indrayana; Kiess, Lynnda; Marshall, Quinn; Martin, Keith; Narayan, Anuradha; Amuyunzu-Nayamongo, Mary; Pepping, Fre; West, Kieth P.	Advances in Nutrition 6(November 2015): 639 - 647	2015	21
8 How Senegal created an enabling environment for nutrition: A story of change	Kampman, Halie; Zongrone, Amanda; Rawat, Rahul; Becquey, Elodie	Global Food Security 13(June 2017): 54-65	2017	20
9 Pathways from women's group-based programs to nutrition change in South Asia: A conceptual framework and literature review	Kumar, Neha; Scott, Samuel; Menon, Purnima; Kannan, Samyuktha; Cunningham, Kenda; Raghunathan, Kalyani; Quisumbing, Agnes R.	Global Food Security. Article in press. First available online on December 8, 2017.	2018	20
10 Investigating the significance of the data collection period of household consumption and expenditures surveys for food and nutrition policymaking: Analysis of the 2010 Bangladesh household income and expenditure survey	Engle-Stone, Reina; Sununtnasuk, Celeste; Fiedler, John L.	Food Policy 72(October 2017): 72-80	2017	15
11 Large-scale behavior-change initiative for infant and young child feeding advanced language and motor development in a cluster-randomized program evaluation in Bangladesh	Frongillo, Edward A.; Nguyen, Phuong H.; Saha, Kuntal K.; Sanghvi, Tina; Afsana, Kaosar; Haque, Raisul; Baker, Jean; Ruel, Marie T.; Rawat, Rahul; Menon, Purnima	Journal of Nutrition 147(2): 256 - 263	2017	14
12 How can we better capture food away from home? Lessons from India's linking person-level meal and household-level food data	Fiedler, John L.; Yadav, Suryakant	Food Policy 72(October 2017): 81-93	2017	13
13 Maternal mental health is associated with child undernutrition and illness in Bangladesh, Vietnam and Ethiopia	Nguyen, Phuong H.; Saha, Kuntal K.; Ali, Disha; Menon, Purnima; Manohar, Swetha; Tran, Lan Mai; Rawat, Rahul; Ruel, Marie T.	Public Health Nutrition 17(6): 1318-1327	2014	13
14 The impact of a food assistance program on nutritional status, disease progression, and food security among people living with HIV in Uganda	Rahul, Rawat; Faust, Elizabeth; Maluccio, John A.; Kadiyala, Suneetha	Journal of Acquired Immune Deficiency Syndromes 66(1): e15-e22	2014	13
15 Exposure to large-scale social and behavior change communication interventions is associated with improvements in infant and young child feeding practices in Ethiopia	Kim, Sunny S.; Rawat, Rahul; Mwangi, Edna M.; Tesfaye, Roman; Abebe, Yewelsew; Baker, Jean; Frongillo, Edward A.; Ruel, Marie T.; Menon, Purnima	PLoS ONE 11(10): e0164800	2016	11
16 Social franchising and a nationwide mass media campaign increased the prevalence of adequate complementary feeding in Vietnam: A cluster-randomized program evaluation	Rawat, Rahul; Nguyen, Phuong Hong; Tran, Lan Mai; Hajeebhoy, Nemat; Nguyen, Huan Van; Baker, Jean; Frongillo, Edward A.; Ruel, Marie T.; Menon, Purnima	Journal of Nutrition 147(4): 670-679	2017	11
17 Women's empowerment mitigates the negative effects of low production diversity on maternal and child nutrition in Nepal	Malapit, Hazel J.; Kadiyala, Suneetha; Quisumbing, Agnes R.; Cunningham, Kenda; Tyagi, Parul	The Journal of Development Studies. Special Issue: Farm-level Pathways to Improved Nutritional Status. 51(8): 1097 - 1123	2015	11
18 Agricultural research for nutrition outcomes – rethinking the agenda	McDermott, John; Johnson, Nancy L.; Kadiyala, Suneetha; Kennedy, Gina; Wyatt, Amanda J.	Food Security 7(3): 593-607	2015	10
19 Urbanization, food security and nutrition	Ruel, Marie T.; Garrett, James L.; Yosef, Sivan; Olivier, Meghan	In Nutrition and Health in a Developing World, eds. Saskia de Pee, Douglas Taren, Martin W. Bloem. Part VII, pp. 705-735.	2017	9
20 An exploratory study of dairying intensification, women's decision making, and time use and implications for child nutrition in Kenya	Njuki, Jemimah; Wyatt, Amanda J.; Baltenweck, Isabelle; Yount, Kathryn; Null, Clair; Ramakrishnan, Usha; Girard, Aimee Webb; Sreenath, Shreyas	The European Journal of Development Research 28(4): 722 - 740	2016	8
21 Factors influencing maternal nutrition practices in a large scale maternal, newborn and child health program in Bangladesh	Nguyen, Phuong Hong; Sanghvi, Tina; Kim, Sunny S.; Tran, Lan Mai; Afsana, Kaosar; Mahmud, Zeba; Aktar, Bachera; Menon, Purnima	PLoS ONE 12(7): e0179873	2017	8
22 Monitoring population diet quality and nutrition status with household consumption and expenditure surveys: Suggestions for a Bangladesh baseline	Fiedler, John L.; Lividini, Keith	Food Security 9 (1): 63-88	2017	8
23 Progress in improving provincial plans for nutrition through targeted technical assistance and local advocacy in Vietnam	Harris, Jody; Nguyen, Phuong Hong; To, Quyen; Frongillo, Edward A.; Menon, Purnima	Health Policy and Planning 31(10): 1333 - 1341	2016	8
24 Stories of change in nutrition: An overview	Gillespie, Stuart; van den Bold, Mara	Global Food Security 13(June 2017): 1-11	2017	8
25 Supply- and demand-side factors influencing utilization of infant and young child feeding counselling services in Viet Nam	Nguyen, Phuong Hong; Kim, Sunny S.; Nguyen, Tuan T.; Tran, Lan M.; Hajeebhoy, Nemat; Frongillo, Edward A.; Ruel, Marie T.; Rawat, Rahul; Menon, Purnima	PLoS One 11(3): e0151358	2016	8
26 Association between economic growth and early childhood nutrition	Alderman, Harold; Haddad, Lawrence James; Headey, Derek D.; Smith, Lisa C.	Lancet Global Health 2(9): e500	2014	7

Table 9 (continuation)

Title	Author	Publication Venue	Year	Altmetrics
27 Microcredit and willingness to pay for environmental quality: Evidence from a randomized-controlled trial of finance for sanitation in rural Cambodia	BenYishay, Ariel; Fraker, Andrew; Guiteras, Raymond; Palloni, Giordano; Shah, Neil Buddy; Shirrell, Sturat; Wang, Paul	Journal of Environmental Economics and Management 86(November 2017): 121-140	2017	7
28 The roles of livestock in developing countries	Herrero, M.; Grace, D.; Njuki, J.; Johnson, Nancy L.; Enahoro, D.; Silvestri, S.; Rufino, M. C.	Animal 7(Supplement s1): 3-18	2013	7
29 Unconditional cash transfers do not prevent children's undernutrition in the Moderate Acute Malnutrition Out (MAM'Out) cluster-randomized controlled trial in rural Burkina Faso	Houngbe, Freddy; Tonguet-Papucci, Audrey; Altare, Chiara; Ait-Aissa, Myriam; Huneau, Jean-François; Huybregts, Lieven; Kolsteren, Patrick	Journal of Nutrition 147(7): 1410-1417	2017	7
30 Food and health: Can economics contribute to improved outcomes?	Unnevehr, Laurian J.	American Journal of Agricultural Economics 95(2): 220-227	2013	6
31 Nutritional status and physical fitness of tribal adolescents in Ahmednagar district of Maharashtra	Savanur, Mitravinda Satyabodh; Sathye, Anagha; Udawant, Anil; Udipi, Shobha Anand; Ghugre, Padmini; Haas, Jere; Boy, Erick; Bhatnagar, Archana;	Ecology of Food and Nutrition 56(6): 552-566	2017	6
32 Public-private partnerships and undernutrition: Examples and future prospects	Hoddinott, John F.; Gillespie, Stuart; Yosef, Sivan	In Hidden Hunger. Malnutrition and the First 1,000 Days of Life: Causes, Consequences and Solutions. Biesalski HK; Black RE (eds). World Rev Nutr Diet. Basel, Karger, 2016, vol 115, pp 233-238	2016	6
33 Understanding the rapid reduction of undernutrition in Nepal, 2001–2011	Headey, Derek D.; Hoddinott, John F.	PLoS ONE 10(12): e0145738	2015	6
34 Maternal willingness to pay for infant and young child nutrition counseling services in Vietnam	Nguyen, Phuong Hong; Hoang, Mihn V.; Hajeebhoy, Nemat; Tran, Lan Mai; Le, Chung H.; Menon, Purnima; Rawat, Rahul	Global Health Action 8: 28001	2015	5
35 Process evaluation improves delivery of a nutrition-sensitive agriculture programme in Burkina Faso	Nielsen, Jennifer; Olney, Deanna K.; Ouédraogo, Marcellin; Pedehombga, Abdoulaye; Rouamba, Hippolyte; Yago-Wienne, Fanny	Maternal and Child Nutrition. First published on December 26, 2017	2018	5
36 Sensitivity to reward is associated with snack and sugar-sweetened beverage consumption in adolescents	De Cock, Nathalie; Van Leppevelde, Wendy; Vervoort, Leentje; Vangeel, Jolien; Maes, Lea; Eggermont, Steven; Braet, Caroline; Lachat, Carl; Huybregts, Lieven F.; Goossens, Lien; Beullens, Kathleen; Kolsteren, Patrick; Van Camp, John	European Journal of Nutrition 55(4): 1623-1632	2016	5
37 Gaps between breastfeeding awareness and practices in Vietnamese mothers result from inadequate support in health facilities and social norms	Tuan, Nguyen T.; Nguyen, Phuong H.; Hajeebhoy, Nemat; Frongillo, Edward A.	Journal of Nutrition 144(11): 1811-1817	2014	4
38 The impact of integrated prevention and treatment on child malnutrition and health: The PROMIS project, a randomized control trial in Burkina Faso and Mali	Huybregts, Lieven; Becquey, Elodie; Zongrone, Amanda A.; Le Port, Agnès; Khassanova, Regina; Coulibaly, Lazare; Leroy, Jef L.; Rawat, Rahul; Ruel, Marie T.	BMC Public Health 17 (1): 237	2017	4
39 Evaluation of nutrition-sensitive programs	Olney, Deanna K.; Leroy, Jef L.; Ruel, Marie T.	In Nutrition and Health in a Developing World, eds. Saskia de Pee, Douglas Taren, Martin W. Bloem. Part VI, pp. 603-624.	2017	3
40 Feeding practices and growth among young children during two seasons in rural Ethiopia	Wondafraash, Mekitie; Huybregts, Lieven; Lachat, Carl; Bouckaert, Kimberly P.; Kolsteren, Patrick	BMC Journal 3(39)	2017	3
41 Food consumption pattern and dietary diversity in Nepal: Implications for nutrition security	Kumar, Anjani; Kumar, Praduman; Joshi, Pramod Kumar	Indian Journal of Human Development 10(3): 1-17	2017	3
42 Maternal and child nutrition in Nepal: Examining drivers of progress from the mid-1990s to 2010s	Cunningham, Kenda; Headey, Derek D.; Singh, Akriti; Karmacharya, Chandni; Rana, Pooja Pandey	Global Food Security 13(June 2017): 30-37	2017	3
43 Participating in a food-assisted maternal and child nutrition and health program in rural Guatemala alters household dietary choices	Jensen, Melissa L.; Frongillo, Edward A.; Leroy, Jef L.; Blake, Christine E.	Journal of Nutrition 146(8): 1593-1600	2016	3
44 The nexus between nutrition and early childhood development	Alderman, Harold; Fernald, Lia	Annual Review of Nutrition 37(7): 7.1-7.30	2017	3
45 Diet transition and supermarket shopping behaviour: Is there a link?	Toiba, Hery; Umberger, Wendy J.; Minot, Nicholas	Bulletin of Indonesian Economic Studies 51(3): 389-403	2015	2
46 Dietary diversity predicts dietary quality regardless of season in 6–12-month-old infants in south-west Ethiopia	Wondafraash, Mekitie; Huybregts, Lieven F.; Lachat, Carl; Bouckaert, Kimberly P.; Kolsteren, Patrick	Public Health Nutrition 19(14): 2485-2494	2016	2
47 From coherence towards commitment: Changes and challenges in Zambia's nutrition policy environment	Harris, Jody; Drimie, Scott; Roopnaraine, Terence; Covic, Namukolo	Global Food Security. 13(June 2017): 49-55	2017	2
48 Improving child nutrition and development through community-based childcare centres in Malawi – The NEEP-IE study: study protocol for a randomised controlled trial	Gelli, Aulo; Margolies, Amy; Santacroce, Marco; Sproule, Kathryn; Theis, Sophie; Roschnik, Natalie; Twalibu, Aisha; Chidallengwa, George; Cooper, Amrik; Moorhead, Tyler; Gladstone, Melissa; Kariger, Patricia; Kutundu, Mangani	Trials 18 (284)	2017	2
49 Improving diets and nutrition through an integrated poultry value chain and nutrition intervention (SELEVER) in Burkina Faso: Study protocol for a randomized trial	Gelli, Aulo; Becquey, Elodie; Ganaba, Rasmene; Headey, Derek D.; Hidrobo, Melissa; Huybregts, Lieven; Verhoef, Hans; Kenfack, Romain; Zongouri, Sita; Guedenet, Hannah;	Trials (2017) 18:412	2017	2
50 Maternal education mitigates the negative effects of higher income on the double burden of child stunting and maternal overweight in rural Mexico	Leroy, Jef L.; Habicht, Jean-Pierre; de Cossio, Teresa González; Ruel, Marie T.	Journal of Nutrition 144(5): 765-770	2014	2
51 Micronutrient intakes among women of reproductive age in Vietnam	Nguyen, Phuong Hong; Nguyen, Hieu; Gonzalez-Casanova, Ines; Copeland, Erika; Strizich, Garrett; Lowe, Alyssa; Pham, Hoa; Truong, Truong V.; Nguyen, Son; Martorell, Reynaldo; Ramakrishnan, Usha	PLoS ONE 9(2): e89504	2014	2
52 Reducing stunting in India: what investments are needed?	Avula, Rasmi; Raykar, Neha; Menon, Purnima; Laxminarayan, Ramanan	Maternal & Child Nutrition 12(Suppl. 1), pp. 249–252	2016	2
53 The association of a large-scale television campaign with exclusive breastfeeding prevalence in Vietnam	Nguyen, Tuan T.; Alayon, Silvia; Jimerson, Ann; Naugle, Danielle; Nguyen, Phuong H.; Hajeebhoy, Nemat; Baker, Jean; Baume, Carol; Frongillo, Edward A.	American Journal of Public Health 107 (2): 312-318	2017	2
54 Using theories of change in the CGIAR Research Program on Agriculture for Nutrition and Health	Mayne, John; Johnson, Nancy	Evaluation 21(4): 407-428	2015	2

Table 10. Summary of Downloads of 928 GRP24 and A4NH Titles: Overall, Global Nutrition Reports, Country and Regional Profiles, and Others

	Total	Global Nutrition Report	Country & Regional Profiles	Other
Number of items	928	30	455	443
% of total items	100%	3%	49%	48%
Total downloads	389,559	193,756	106,659	89,144
% of total downloads	100%	50%	27%	23%
Mean downloads/item	420	6,459	234	201
Median downloads/item	147	502	121	146

Table 11. Top 25 Items in Terms of Downloads

Title	Downloads
Global Nutrition Report 2016: From Promise to Impact: Ending Malnutrition by 2030	120,066
Global Nutrition Report 2015: Actions and accountability to advance nutrition and sustainable development	28,907
Global Nutrition Report 2016: From Promise to Impact: Ending Malnutrition by 2030: Summary	16,302
Global nutrition report 2014: Actions and accountability to accelerate the world's progress on nutrition	5,941
Think your country doesn't have a nutrition problem? Think again	4,422
Synopsis, Global nutrition report 2015: Actions and accountability to advance nutrition and sustainable development	3,832
2015 Nutrition profile: Global	2,601
Informe de la nutrición mundial 2016: De la promesa al impacto: Terminar con la malnutrición de aquí a 2030: Resumen	2,455
Rapport sur la nutrition mondiale 2016: Des promesses aux impacts: Éliminer la malnutrition d'ici 2030: Résumé	2,388
2015 Nutrition country profile: India	2,183
Nourishing millions: Stories of change in nutrition	2,045
Relatório sobre a nutrição mundial 2016: Da promessa ao impacto: Erradicando a malnutrição até 2030: Sumário	1,358
Global Nutrition Report 2016: From Promise to Impact: Ending Malnutrition by 2030: Summary [in Chinese]	1,352
A4NH 2016 annual report	1,299
2015 Nutrition country profile: Kenya	1,053
Resilience for food and nutrition security	1,009
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The new challenge: End all forms of malnutrition by 2030	985
Country progress: 2016 Nutrition for Growth tracking table	982
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2015 Nutrition country profile: Nigeria	967
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Technical note 1: Nutrition country profile indicators: Definitions and sources	920
2015 Nutrition country profile: United States of America	884

7. SUMMARY AND CONCLUSIONS

The IFPRI PNHD and A4NH programs had a number of accomplishments in the 2003–2016 period under review. Important research has been completed that has had impact on both domestic partners and stakeholders as well as the international policy and research communities. But there are some weaknesses as well. Here, we summarize the strengths, weaknesses, and some recommendations based on the interviews that we conducted and our own judgements. As noted above, we cannot always be clear about when the interviewees were discussing the IFPRI PNHD and A4NH programs narrowly defined or IFPRI more broadly.

7.1 Strengths

- (1) Sharing of research, knowledge and data through available platforms has been an important contribution of these programs.
- (2) The programs established reputations among many partners and stakeholders of providing state-of-the-art methodology and research to answer the questions under investigation and evidence that is very relevant to current national and global policy considerations.
- (3) They also established reputations for vision-sharing and being on the forefront of related issues globally, thus bringing new issues as well as approaches to domestic partners and stakeholders.
- (4) The programs' lead researchers generally were held in high esteem.
- (5) At both the research and policy levels, wide ranges of relevant stakeholders and partners were involved.
- (6) Capacity building, particularly learning-by-doing, was considerable.
- (7) The Global Nutrition Report and a number of the IFPRI PNHD and A4NH programs' research studies attracted considerable attention and had wide impact not only in the particular countries on which the programs focused but also in the global research and policy communities.
- (8) The programs' research outputs were widely read, had considerable influence in national and in some cases local policy debates, and served as models for studies by others.
- (9) In some cases, direct involvement of governmental stakeholders at various stages of the research (design, implementation, interpretation) seemed considerable. A particularly successful example is Ethiopia's PSNP program evaluation. The set-up was such that it allowed IFPRI PHND to influence design, learning, and adaptation. Researchers were able to identify problems and give the program an opportunity to adjust. For example, early implementation problems involved delayed beneficiary payments, an issue that was identified and communicated to program implementers.

This was a major input that allowed the program to set up a payroll system and hire an accountant. Targeting was unsatisfactory in the lowlands and while problems continue, there have been significant efforts to improve it. Program design has been modified to make it more nutrition-sensitive in response to the research investments by IFPRI and significant and consistent advocacy efforts by IFPRI researchers. The Ethiopia PSNP has been renewed over the years, and the IFPRI evaluation—an independent evaluation, agreed upon by donors and stakeholders—has been instrumental in showing that PSNP worked. By design, IFPRI PHND did not wait for the end-line but provided interim evaluations that afforded an opportunity to learn and adapt the program.

- (10) The research team seems to have been well managed, particularly given the variety of home locations of the lead researchers, some of whom worked primarily long distance, and trips to the study countries.
- (11) The original program proposals (Ruel and Haddad 2003; IFPRI 2011) had coherent systematic schemes to shift the future focus toward greater emphasis on some important broader questions related to changing nutritional burdens due to expanding overweight/obesity in urban as well as rural areas.

7.2 Weaknesses

- (1) Some partners and stakeholders felt that the programs focused too much on research and not enough on training and developing implementation capacities. Of course, the programs basically are research programs, but that apparently was not well understood or appreciated by some stakeholders.
- (2) Some stakeholders wanted the programs to include more dissemination and advocacy at various levels of government and with other organizations.
- (3) The original aspirations for these programs have not been fully achieved. In part, that is reflective of the ambitious nature of these proposals (Ruel and Haddad 2003; IFPRI 2011). But an important factor has been the failure to persuade CGIAR, the donor community, and South Asian and African governments of the importance of supporting research on overnutrition and urban nutritional issues. These are major issues that should not be ignored—while undernutrition and rural nutritional issues remain major problems that should continue to be included in the research strategy, overnutrition and urbanization are increasing rapidly in both Asia and Africa.
- (4) The programs' staffs seem very small relative to the programs' objectives, to say nothing of the extension of the work that some stakeholders would like to see. Of course, this may be another manifestation of failure to identify sufficient donor support for the overall programs.
- (5) The increasing focus on “boundary stakeholders” in India probably was a sensible accommodation to the realities of the size and complexities of the Indian government with its churning of personnel. Yet this focus may have reinforced and perpetuated the limited policy impact.

- (6) In India, the Global Hunger Index report apparently encountered considerable criticism around methodology and scale of measurement. The effort by program staff to engage in the conversation and respond appears to have been commendable. Nevertheless, the episode left some persistent scars and appears to have had negative spillover effects on other program activities.
- (7) Some stakeholders reported the need for renewed focus on important topics including food loss, food safety, sustainability, regional food insecurity, improving local diets, and water systems as part of an integrated approach to the topics on which the programs focused.
- (8) Research results have not always been communicated in an effective manner to policymakers. Some stakeholders perceived very little policy impact, perhaps in part because of limited engagement with the Indian government.
- (9) External stakeholders are often confused about the different components/programs of IFPRI and their mandates. Among those who are not part of CGIAR, there is limited understanding of what project belongs to what program and how they relate (or not) to each other. While this may not be important for the basic objectives of IFPRI or the programs being evaluated, this confusion does make the evaluation more challenging.
- (10) Some very useful publications, for example, in *Lancet*, are not always available. This may be more a question of internet access than of whether the articles are open access.
- (11) Sometimes internal and/or external coordination was inadequate, with the result that two different projects were proceeding without adequate communication between them and causing some confusion among partners and stakeholders.
- (12) Integration of nutrition and agricultural production in research projects was limited.
- (13) Some potentially useful methodological approaches were not used at all or used very little. For example, the studies do not employ structural economic models, which have the advantage—at the cost of specific specification assumptions—of permitting counterfactual simulations of policy changes or market changes not observed in the data. The studies also generally do not consider market-wide or economy wide effects, even though some of the programs investigated would seem to have such effects (for example, Ethiopia’s PSNP program).
- (14) The studies generally are not clear on the efficiency versus the distributional impacts of projects or to what extent there are project spillovers or other factors that lead to differentials between social and private returns to investments.

7.3 Recommendations

- (1) Given the importance of changing nutritional problems globally, as argued in the proposals (Ruel and Haddad 2003; IFPRI 2011), the key actors in these programs and in the CGIAR system more broadly should revisit whether there are ways of pursuing

research on these issues. Have the traditional donors evolved in their understanding of these issues so that they might be more amenable to supporting this research now? Are there other funding possibilities that might be explored? For example, in the past IFPRI PHN researchers obtained some funding from the US National Institute of Child Health and Development, which would seem to be interested in these topics. Also, could there be more IFPRI/CGIAR support for researchers engaged in such fund-raising efforts?

- (2) Further consideration should be given to the balance between research and other activities. Might it be possible and desirable to increase research designed to enhance knowledge on how to improve and scale up implementation of promising small-scale programs?
- (3) Consideration should be given to using a wider range of methodological tools, for example, structural economic models, which have the advantage of permitting counterfactual simulations of policy changes or market changes not observed in the data. Also, it would be desirable for some programs to investigate market-wide and general-equilibrium effects and for most programs to address directly efficiency versus distributional considerations and possible discrepancies between social and private rates of return. Finally, it would be desirable to consider engaging more broadly with other disciplines beyond nutrition and economics in the research program—for example, consumer psychology, marketing, or child development psychology.
- (4) For big, populous complex countries—particularly India, but perhaps others—more consideration should be given to developing relations and undertaking studies not only at the national level but also at some more disaggregated level (perhaps states or districts). We understand that considerable progress has been made on this point and the next two points in India since 2016, the end of the period for the present review.
- (5) In India in particular, the practice of engaging stakeholders extensively, including brainstorming about what research topics most merit exploration, should be increased. For agriculture-nutrition concerns, this generally should involve the Ministries of Agriculture and Health.
- (6) Research outputs should be “decoded” into simple, easily digestible policy briefs to influence decisionmakers and contextualized to the country to make them more easily understandable.
- (7) Introduction of more online learning modules should be considered as there is high turnover of professionals among partners, who often leave their positions after being trained.
- (8) The focus on small grants for researchers and student internships should be increased, especially in areas where skills are needed with more support for short-term training, biostatistics, and preparing policy briefs from relevant research findings.
- (9) A better communication strategy should be developed to communicate what programs are and what they do, including website improvements and distribution of easy-to-understand briefs.

- (10) More emphasis should be placed on formative research and on learning from less successful experiences (for example, orange-fleshed sweet potato in Ethiopia) as well as successful ones.
- (11) IFPRI headquarters organizes webinars for IFPRI staff that would also be useful for local people if they could access them, for example in the form of a seminar/webinar recording.

A strength of PHN researchers is that academic interest drives the thinking and projects. Based on interests, it will be important moving forward (if IFPRI/A4NH chooses) to find a way to link the right researchers to each other so that the objectives of linking agriculture to nutrition can be better met.

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ANNEX A. RESEARCH OBJECTIVES FOR GRP24 AND A4NH

This annex presents, in somewhat abridged and paraphrased form, the research objectives for GRP24 and A4NH. Most of the material is quoted directly, but to enhance readability we do not indicate changes, deletions, or abridgments.

Ruel, M. T., and L. Haddad. 2003. *Diet Quality and Diet Changes: Global and Regional Research Program (GRP24) Proposal*. Washington, DC: IFPRI, unpublished.

Policy Objectives and Research Questions

The research program has four overall policy objectives, which are summarized below with related research questions.

Objective 1: Build a global and regional understanding of current patterns and changes in diets and dietary quality and evaluate their health, economic, and social consequences.

This will involve addressing the following research questions:

- What is the **rate, range, and distribution** of problems of dietary quality *across* and *within* countries, communities, households and individuals?
- What are the **trends** in dietary quality *across* and *within* countries, communities, and households? Do they differ between regions, countries, urban/rural areas, socioeconomic groups, and through the lifecycle? Are groups with dietary deficiencies suffering increasing deficiency in the same diet components? Are they becoming less deficient in some components (say, energy) but without improving on other nutrients (such as specific micronutrients)? Are diets becoming less “balanced” or disproportionately high in some foods/nutrients (saturated fats) and too low in others (fruits and vegetables)?
- What are the **health, social, and economic consequences** of these trends? How are the patterns of diseases changing (epidemiological transition): what are the current trends in nutritional deficiencies and their related health consequences, what are the trends in obesity and prevalence of chronic diseases risks, how is the global burden of diseases changing? What are the social and economic consequences of these changes in disease patterns?

Objective 2: Identify the key drivers of the patterns of changes in diet quality.

What are the **main drivers** of the trends in diet quality? These can be divided into two groups:

- *Secular trends*, driven perhaps by a diffuse set of policies. Examples of research questions include: how do changes in income affect dietary quality and under- and overnutrition? what is the effect of changes in prices caused by technology, institutional changes, and policy

changes on diet quality? how does urbanization trigger changes in diet and activity patterns?

- *Specific policy regimes.* For instance, how do agriculture policies, farm to market interventions, retail price policy, international trade policy, and governance affect trends in diet quality? (The relevant research questions related to these policies are fleshed out under objective 3).

Objective 3: Identify effective food policy and food-based interventions to redirect these trends and prevent or revert their negative nutrition and health consequences.

Relevant food policies and interventions and related research questions include the following:

- *Agriculture policies:* How can policies (R&D, subsidies) improve the efficient production of animal-sourced foods (livestock, small ruminants, fish) and fruits and vegetables to improve dietary quality?
- *Farm to market interventions:* How can policies lower transaction costs for small farmers to increase poor consumers' access to fruits and vegetables and improve dietary quality?
- *Retail trade policy:* Should/can supermarkets be given incentives to provide affordable healthy choices?
- *International trade policies:* How do price and trade policies for foods such as meat, oils, and sugars affect dietary quality?
- *Governance:* Why do some countries or states seem to have adopted a more aggressively health-conscious approach to diet compared to others at similar levels of income and urbanization?
- *Food-based interventions to increase diet quality:* What is the impact and cost effectiveness of alternative food-based interventions to improve dietary quality and what are the factors that affect their effectiveness? Examples of such interventions include: local-level agriculture interventions to promote increased production; education and behavior change interventions; small-scale food fortification; and bio-fortification.

Objective 4: Develop and validate tools to measure dietary quality and to include dietary quality concerns into poverty measures.

To carry out research on trends, determinants, and consequences of changes in dietary quality, valid and reliable indicators of dietary quality must be developed and validated. Emphasis should be put on developing simple measurement tools that accurately reflect dietary quality in different contexts, at different levels (e.g., household, individual) and for different purposes (e.g., assessment, international comparisons, monitoring of changes, program impact evaluations). Research should also focus on developing food security indicators that are not solely based on energy availability, but that also include the other components of dietary quality (especially micronutrient adequacy).

IFPRI (International Food Policy Research Institute). 2011. *CGIAR Research Program 4: Agriculture for Improved Nutrition & Health*. Washington, DC.

CRP4 Objectives

CRP4’s strategic goal is presented in Box A1. To achieve its strategic goal, the program is organized around four components, listed in Table A1 along with their overall objectives.

Box A1. CRP4’s Strategic Goal

CRP4 is a research and development program that will **work to accelerate progress in improving the nutrition and health of poor people** by exploiting and enhancing the synergies between agriculture, nutrition, and health through four research components: value chains, biofortification, control of agriculture-associated diseases, and integrated ANH development programs and policies.

Table A1. CRP4 Components and Objectives

Component	Objective
1. Value chains for enhanced nutrition and health	Leverage the value chain for select nutrient-rich foods to increase the demand for, access to, and consumption of affordable and nutritious foods for the poor.
2. Biofortification	Develop and test nutrient-dense staple crops through biofortification; make these novel crops available to the poor and undernourished, either as individual staple crops or as part of a food basket.
3. Prevention and control of agriculture-associated diseases	Prevent and control agriculture-associated diseases through research for improved food safety, water quality, agricultural practices, and better control of infectious (zoonotic and emerging) diseases.
4. Agriculture, nutrition, and health — Integrated programs and harmonized policies	Exploit and enhance the synergies between agriculture, nutrition, and health, through operational and policy research that supports (1) more effective integrated community-level programming, and (2) the cultivation and strengthening of an enabling policy and institutional environment to support relevant action.

The CRP research objectives across the different components are as follows:

- Generate knowledge and technologies to improve the nutritional quality and safety of foods along value chains (Components 1, 2, and 3).
- Develop, test, and release a variety of biofortified foods, as well as other nutrient-rich foods that are affordable and accessible to the poor (Components 1 and 2).
- Generate knowledge and technologies for the control of zoonotic, foodborne, waterborne, and occupational diseases (Component 3).

- Develop methods and tools to improve the effectiveness and efficiency of surveillance and monitoring systems and to permit meaningful evaluation of complex multisectoral programs and policies (Components 1–4).
- Produce evidence of nutritional and health burdens and benefits and of the returns to different interventions in different sectors (Components 1–4).
- Assess and document changes in dietary and nutritional patterns and risks of agriculture-associated diseases among poor people in intensifying systems, and identify and test agricultural options to enhance nutrition and health benefits and mitigate risks of agriculture intensification in these populations (Components 1 and 3).

The four research components of CRP4 were selected based on a broad consultation process with representatives from 12 CGIAR centers and with a wide range of partners who participated in the CRP4 planning meeting in July 2010 (see <https://sites.google.com/a/cgxchange.org/mp4/home>). Taking into consideration CGIAR’s comparative advantage, the components were selected by taking into consideration the following key questions: (1) what are the nature, scope, dimension, and causes of the nutrition and health problems that CGIAR needs to address in order to achieve its strategic goal of improving health and nutrition through agriculture; (2) what opportunities exist within the current (and future) research portfolio of CGIAR and its partners to leverage agriculture to improve nutrition and health; and (3) how can CRP4 best use these opportunities to exploit the potentially powerful synergies between agriculture, nutrition, and health and to achieve the common goal of improved nutrition and health. These considerations led the team of partners to select the four broad research components listed in Table A1.

Subcomponent 4.1: Integrated Programs

Rationale

This subcomponent aims to maximize the nutrition and health benefits of agriculture while minimizing the risks of agriculture-associated diseases (AADs), through applied research to improve the design, implementation, and evaluation of community-based integrated ANH programs. It has five specific objectives, each related to specific research questions.

Objective 1: Develop tools and indicators to design, implement, and evaluate agriculture programs that incorporate specific nutrition and health goals and interventions at the community level.

Research Questions

- What tools and methodologies can be developed to incorporate nutrition and health into community-based agricultural programs?
- What are the best tools and methods to rigorously evaluate the implementation, impact, and cost-effectiveness of multisectoral programs such as integrated ANH programs? What process, impact, and cost-effectiveness indicators should be used?
- Are there simple, valid tools that can be adapted for rapid assessment, monitoring, or impact evaluation on key indicators?

Objective 2: Rigorously evaluate the implementation, impact, and cost-effectiveness of integrated ANH programs in different communities, regions, and agroecological systems using experimental or quasi-experimental methods for complex social programs.

Research Questions

- Do existing or new integrated ANH programs have an impact on nutrition and health outcomes? If
- so, how is this impact achieved and at what cost?
- Under what circumstances are impacts greatest? Which types of communities, households, and individuals benefit most? Where are the benefits greatest (in terms of region and agroecosystem)?
- Which packages of interventions achieve the greatest benefits, and under which circumstances? What is the value added of specific interventions (such as behavior change communication)? What is the most effective intensity of exposure to interventions (for example, agriculture extension) in different contexts? Overall, what level of nutrition and health impact can be achieved through different modalities of integrated ANH programs?

Objective 3: Generate evidence and document and disseminate lessons and best practices from research conducted under the previous objective.

Research Questions

- How can implementation monitoring and evaluation results be used for advocacy?
- How should the learning be synthesized to inform practice and policy so as to accelerate progress in improving nutrition and health globally? (Links to Subcomponent 4.2 on Policy.)

Objective 4: Explore and document mechanisms to successfully replicate, adapt, and scale up successful integrated ANH programs, and to ensure their sustainability.

Research Questions

- How can integrated ANH programs be adapted to different contexts and populations in different agroecological zones, and/or scaled up to increase coverage?
- What are the constraints and bottlenecks to replication, adaptation, and scaling-up?
- What capacities and skills need to be developed at the community level and in government (district, provincial, and central level), with what approaches?
- What institutional mechanisms need to be defined and implemented to support integrated programs at the community level?

Objective 5: Develop local capacity to design, implement, evaluate, and successfully scale up integrated ANH programs. This objective links to Objective 4. It seeks to work with other development partners to accomplish two broad aims: (1) to better identify, measure, and monitor capacity constraints, weaknesses, and needs relevant to scaling up ANH programming; and (2) to develop approaches, tools, and methods for strengthening essential capacities for this purpose.

ANNEX B. SUMMARIES OF MOST IMPORTANT PROJECTS, AS SUGGESTED BY RUEL AND GILLESPIE

This Annex presents abstracts, with some limited paraphrasing, of the 12 IFPRI Poverty, Health, and Nutrition Division (PHND) and the Agriculture for Nutrition and Health (A4NH) research programs on *Diet Quality and Health of the Poor* projects for the 2003–2016 period that Stuart Gillespie and Marie Ruel suggested have been most important out of the list of 140 projects that IFPRI/A4NH provided. As discussed at the end of Section 2.3 in the main text, this list may be biased towards more recent projects and towards more successful projects. As also noted there, nevertheless, this set of projects is of interest. The project abstracts are fairly heterogeneous in terms of the information provided, in part because of different requirements of different funders.

	Project name	Acronym	Start date	End date	Donor	Planned Budget	Project leader	Countries or Regions
1	Alive & Thrive	A&T	1/5/2009	11/30/2017	FHI360 & Bill & Melinda Gates Foundation	\$11,683,169	Purnima Menon Marie Ruell	Multiple

IFPRI is part of a consortium of eight institutions led by the Academy for Educational Development (AED) that responded to a call for proposal put out by the Bill & Melinda Gates Foundation (BMGF) to address childhood undernutrition. This five-year, \$80 million project aims to reduce by at least 50% the disability adjusted life years lost (DALYs) due to poor infant and young child feeding practices. The project is expected to reach more than 26 million children 0–24 months of age in Bangladesh, Ethiopia, and Vietnam. IFPRI's role in the project is to lead all monitoring and evaluation activities in the three focus countries as well as to lead the project's third component: fostering global tracking of infant and young child feeding practices, program performance, and policy progress. There have been several phases of this project for IFPRI.

	Project name	Acronym	Start date	End date	Donor	Planned Budget	Project leader	Countries or Regions
2	Partners and Opportunities for Strengthening and Harmonizing Actions for Nutrition in India	POSHAN	5/9/2011	8/31/2017	Bill & Melinda Gates Foundation	4,086,390	Purnima Menon Suneetha Kadiyala	India

Rationale: The persistence of undernutrition in the face of India's impressive economic growth is of enormous concern. Although it is now clear that direct interventions to reduce child undernutrition must be delivered at scale to achieve rapid reductions in undernutrition, in India, less than 55% of mothers and children receive any of the essential health and nutrition interventions they should. Three critical issues hinder progress—the multiplicity of actors and processes; the divergence of opinion on how best to deliver critical interventions; and the lack of coherent and effective policy engagement mechanisms. Within this context, successful policy dialogue, appropriate policy choices, and effective program action will require transformational thinking coupled with the engagement of numerous players. We propose, therefore, to catalyze and convene a series of knowledge generation, knowledge mobilization and learning processes, under the umbrella of an

initiative called POSHAN (meaning “nutrition” in Hindi and standing for Partners and Opportunities for Strengthening and Harmonizing Actions for Nutrition in India).

Goal: To improve and support policy and program decisions and actions to accelerate reductions in maternal and child undernutrition in India, through an inclusive process of evidence synthesis, knowledge generation, and knowledge mobilization.

Objectives and activities: POSHAN has two major objectives: (1) Analyze direct and indirect nutrition-relevant interventions to generate knowledge on optimal approaches to address major bottlenecks to improve maternal and child nutrition outcomes in India; (2) Mobilize evidence-based and actionable knowledge to inform policy formulation and support program planning for nutrition at the national level and in 3–4 key states.

	Project name	Acronym	Start date	End date	Donor	Planned Budget	Project leader	Countries or Regions
3	Transform Nutrition: Tackling the neglected crisis of undernutrition	TN	6/1/2011	8/31/2017	UK Department for International Development (DFID)	\$9,891,220	Stuart Gillespie	South Asia, Sub-Saharan Africa

Undernutrition stifles human and economic development, today and tomorrow. Yet the potential for a dramatic decline in global undernutrition rates is greater now than at any time in history. The 1980s saw an emerging consensus on the causes of undernutrition, while the last two decades have seen the extent and severity of the consequences of undernutrition uncovered. We are now poised to bring this knowledge together to attack the neglected crisis at its roots and to make nutrition a priority area for development. But for this potential to be realized, we need (1) the capacity and knowledge to ensure effective scale up of direct nutrition interventions; (2) the ability to respond to undernutrition through multiple sectors; and (3) governance infrastructure and processes that enable and support concerted action on nutrition.

	Project name	Acronym	Start date	End date	Donor	Planned Budget	Project leader	Countries or Regions
4	Leveraging Agriculture for Nutrition in South Asia	LANSA	4/1/2012	4/30/2018	M. S. Swaminathan Research Foundation	2,068,842	Stuart Gillespie	India, Bangladesh, Afghanistan, Pakistan

Despite rapid economic growth, undernutrition rates in South Asia are the highest in the world. Nearly half of all South Asia’s young children are stunted, and the rate of progress in reducing undernutrition has slowed to a crawl in the past decade. Ensuring nutrition security in the region can only occur through a combination of direct nutrition interventions and indirect interventions such as broad-based agricultural growth. The key linkages between agriculture and nutrition are well known. Given that agriculture remains the primary source of livelihood of half of the region’s population, the sector has the potential to be a strong driver of nutrition. But that potential is not being realized due to a slowing in agriculture growth rates in South Asia. This is of concern because agricultural growth is highly effective in reducing poverty. It is doubly worrying for South Asia, because of apparent disconnects between agriculture and nutrition in the region. These slowdowns and disconnects threaten to worsen as farming in the region becomes more prone to the

uncertainties driven by South Asia’s exposure to environmental stresses and conflict/tension in Afghanistan.

The core question that LANSA will address is: How can South Asian agriculture and related food policies and interventions be designed and implemented to increase their impacts on nutrition, especially the nutritional status of children and adolescent girls? There is now widespread recognition that substantial and enduring progress in reducing malnutrition is more likely when advances are made on all three fronts, i.e., focusing on fundamental, underlying, and immediate determinants. By studying the role of agriculture, including policy and intervention design, while giving full consideration to complementarities with surrounding determinants, we maximize the potential impact of our research on malnutrition reduction. The research under LANSA will map fundamental, underlying and immediate determinants of nutrition, and address several key questions. First, how can agriculture and food policies be more strongly linked to other underlying determinants of nutrition such as women’s status, poverty induced food insecurity, and sanitation? Second, how can we make agricultural growth strategies, broad policies in areas such as food storage and trade, and public-private engagement more likely to reduce undernutrition? Third, how can agricultural interventions be designed to affect diet quality and infection rates directly, while ensuring livelihood security? LANSA’s three research pillars address these three core issues. Our main goal is to ensure that policymakers and practitioners use the high-quality evidence we generate on effective strategies and actions to accelerate nutrition security to make agriculture more pro-nutrition. The program will cover four countries: India, Bangladesh, Pakistan, and Afghanistan. Although Nepal is not a focus country, some comparative research will also be located in Nepal. These countries constitute approximately 95% of DFID’s spending in the region in the coming years. Working in these countries provides ample variation in contexts and will help to focus LANSA resources.

	Project name	Acronym	Start date	End date	Donor	Planned Budget*	Project leader	Countries or Regions
5	Leveraging Agriculture for Nutrition in East Africa	LANEA	11/13/2013	3/31/2015	A4NH	51,076	Stuart Gillespie	Ethiopia, Kenya, Uganda

	Project name	Acronym	Start date	End date	Donor	Planned Budget*	Project leader	Countries or Regions
6	Alive & Thrive (feasibility study of integrating maternal nutrition interventions into an existing maternal, newborn, and child health platform in Bangladesh)	A&T	1/1/2015	12/31/2016	FHI360	677,940	Purnima Menon	Bangladesh

This feasibility study is a component of a Phase 2 of Alive & Thrive activities in Bangladesh. It will focus on maternal nutrition interventions. The objectives of the study are to assess the feasibility of delivery of a set of maternal nutrition interventions—iron-folate, calcium supplements, nutrition behavior change communication, and routine weighing and tracking of weight gain—in the context of an ongoing maternal and newborn-child health (MNCH) program implemented by BRAC. The study will use a randomized evaluation design, where 10 subdistricts are randomized to the MNCH + nutrition interventions and 10 subdistricts are randomized to MNCH only. Data collection will

include two surveys, one year apart, focused primarily on delivery of these nutrition services by frontline workers in the MNCH program and use of services by pregnant women.

	Project name	Acronym	Start date	End date	Donor	Planned Budget	Project leader	Countries or Regions
7	Stories of Change	SoC	6/1/2015	11/30/2016	Children Investment Fund Foundation	393,268	Stuart Gillespie	Global

The Stories of Change (SoC) project will apply tools, methods, and approaches (many of which have been developed in 2012–14) in selected countries to better understand, engage with, influence, and evaluate multisectoral action to reduce undernutrition. A series of country-level “stories of change” will be developed in a structured, systematic, and comparative way to examine the drivers and pathways of change over the last 5–10 years in these case study countries. The ultimate goal of this project is to foster and support experiential learning on how to address the challenge of undernutrition in different contexts. We will produce “stories of change” developed and synthesized across several countries in high-burden regions that can be brought together to develop a “living library” of positive change in different contexts and better understanding by stakeholders of what drives such change and how enabling environments and pro-nutrition policy processes can be cultivated and sustained. Countries being considered include: Ethiopia, Zambia, Tanzania, Malawi, Bangladesh, Nepal, and an Indian state (perhaps Odisha). Work on developing the methods toolkit will begin in November 2014 and the project will continue to August 2016. Policy and practice communities (especially within SUN and CAADP countries) increasingly incorporate new knowledge into discourse, and begin to develop more “pro-nutrition” attitudes, behaviors and practices and b) improved capacity to use evidence and information, and apply tools, methods and approaches to strengthen nutrition relevant policy

	Project name	Acronym	Start date	End date	Donor	Planned Budget	Project leader	Countries or Regions
8	Partners and Opportunities for Strengthening and Harmonizing Actions for Nutrition in India, Phase II	POSHAN-II	10/17/2016	12/31/2020	Bill & Melinda Gates Foundation	5,086,854	Purnima Menon	India

The goal of POSHAN-II will be to support policy and program decisions and actions to accelerate reductions in maternal and child undernutrition in India through an inclusive process of evidence synthesis, knowledge generation, and knowledge mobilization. Our objectives are to: (1) analyze the drivers of change in undernutrition and generate knowledge on optimal state-specific strategies to improve maternal and child nutrition outcomes in India in 4–5 key states; (2) generate financial and operational evidence to support policy and programmatic decisions for nutrition; and (3) facilitate partnerships to generate demand for evidence and mobilize evidence-based and actionable knowledge to inform policy formulation and support program planning for nutrition at the national level and in 4–5 key states. These core objectives will define the work streams, which will be a combination of empirical data analyses, policy process studies, operational experiments to test innovations in delivering nutrition interventions, and engaging diverse stakeholders to build capacity to demand and use evidence and data for nutrition policy decisions.

	Project name	Acronym	Start date	End date	Donor	Planned Budget	Project leader	Countries or Regions
9	Alive & Thrive (additional analysis of data collected in the Bangladesh Maternal Nutrition Feasibility Study)	A&T	5/1/2017	6/30/2017	FHI360	47,869	Purnima Menon	Bangladesh

Alive & Thrive aims to expand the state of the art in how maternal, infant, and young child nutrition interventions are delivered on a large scale using different types of program platforms. Data collected for A&T's Maternal Nutrition Feasibility Study in Bangladesh contains valuable information that can shed light on factors that improve program performance. This type of information is urgently needed especially for maternal nutrition interventions. This scope of work identifies two topics that can be elucidated through additional data analysis: (1) how can diets of pregnant women be improved and their adherence to micronutrient supplements increased through engaging husbands? and (2) what factors related to front-line workers are critical for the delivery of maternal nutrition interventions?

	Project name	Acronym	Start date	End date	Donor	Planned Budget	Project leader	Countries or Regions
10	Alive & Thrive (evaluate a feasibility study of integrating maternal nutrition interventions in existing MNCH services)	A&T	8/1/2017	3/31/2020	FHI360	873,638	Purnima Menon	India

Maternal nutrition has been a long-standing concern of health authorities globally and in India. Despite the availability of proven, affordable interventions and progressive policies and program platforms such as Maternal, Newborn and Child Health (MNCH) services, a streamlined package of proven maternal nutrition services is not reaching the majority of women during pregnancy. This undermines national efforts to improve maternal and newborn survival and reduce morbidity, malnutrition, and disabilities in women and children. Alive & Thrive supports scaling up of nutrition interventions to save lives, prevent illness, and contribute to healthy growth and development through improved maternal nutrition, breastfeeding, and complementary feeding. We also generate new learning about interventions and program implementation. For example, in Bangladesh A&T tested the feasibility of integrating a comprehensive package of maternal nutrition interventions into an existing MNCH service delivery platform in four districts. The program demonstrated impact on increased maternal dietary diversity and intake of energy, protein, iron, folic acid, and calcium in pregnant women. In India, A&T aims to test the feasibility of integrating a package of maternal nutrition interventions that align with the latest global evidence and the national policies and guidelines of the Government of India. These include provision of iron-folic acid and calcium supplements, counseling on consumption of iron-folic acid and calcium, counseling on diet during pregnancy, and monitoring weight during pregnancy

	Project name	Acronym	Start date	End date	Donor	Planned Budget	Project leader	Countries or Regions
11	Transform Nutrition West Africa	TNWA	9/1/2017	8/30/2021	Bill & Melinda Gates Foundation	4,057,472	Stuart Gillespie	West Africa

Transform Nutrition–West Africa (TN-WA) aims to improve and support policy and program decisions and actions to accelerate reductions in maternal and child undernutrition through an

inclusive process of knowledge generation and mobilization, over a period of four years (2017–2021). The project will focus on Nigeria and Burkina Faso to develop an inclusive process of knowledge generation and mobilization, but will leverage and share lessons learned to the wider West Africa region and Africa as a whole. There are two core objectives: (1) to assess and analyze nutrition-relevant data and actions (programs and policies) to generate knowledge on optimal approaches to improving maternal and child nutrition; and (2) to mobilize knowledge to strengthen enabling environments and inform and improve nutrition-relevant policy and programming. Activities are structured by three interacting workstreams: WS1—generating and synthesizing knowledge on trends and drivers, interventions and programs, policies and enabling environments for nutrition); WS2—mobilizing knowledge to strengthen enabling environments and inform and improve nutrition-relevant policy and programming; and WS3—stakeholder engagement and leadership development). Expected long-term outcomes of TN-WA’s work include (1) stronger accountability and tracking of commitments and progress, (2) enhanced understanding of how to improve nutrition, (3) improved program design and implementation decisions, and (4) improved policy decisions. The ultimate impact is effective policy and programmatic action being developed and implemented at scale.

	Project name	Acronym	Start date	End date	Donor	Planned Budget	Project leader	Countries or Regions
12	Advancing Research on Nutrition and Agriculture	ARENA	10/25/2017	11/30/2020	Bill & Melinda Gates Foundation	1,845,278	Derek Headey	South Asia, Sub-Saharan Africa

Phase 1 of ARENA set out to fill key knowledge gaps on the policy dimensions of the linkages between agriculture and nutrition in Africa and South Asia by producing high-quality research studies and developing new data and new methods for examining these linkages. In Phase 2 of ARENA we propose to extend this research, focusing on four key objectives: (1) extending our knowledge of the economywide impacts of sector-specific investments; (2) extending our existing research on farming systems and nutrition; and (3) developing new research on the linkages between socioeconomic transformations and nutrition. ARENA will continue to operate as a research network spanning all four of IFPRI’s thematic divisions, researchers at Tufts University, Cornell University, Lafayette College, Copenhagen University, and Purdue University. We propose a three-year project spanning 2018–2020, at an estimated budget of US\$1,699,915.

ANNEX C. SUMMARIES OF STUDIES WITH THE MOST CITATIONS, HIGHEST ALTMETRICS, AND MOST DOWNLOADS

Because the PHND and A4NH portfolio for 2003–2016 is so large, it would be impossible to summarize all of the studies. However, it is useful to give brief summaries of the most prominent studies in terms of citations per year since publication, Altmetrics, and downloads. The distributions of these indicators for all studies for which such indicators are available are discussed in Section 6.2 of the main text. This Annex briefly summarizes the five top studies by each of these three indicators.

C.1: Top Five Studies in Terms of Citations per Year since Publication

- (1) Ruel, M. T., and H. Alderman. 2013. “Nutrition-Sensitive Interventions and Programmes: How Can They Help to Accelerate Progress in Improving Maternal and Child Nutrition?” *Lancet* 382 (9891): 536-551. This article reviews evidence of nutritional effects of program in four sectors—agriculture, social safety nets, early child development, and schooling, with the following conclusions: (1) The need for investments to boost agricultural production, keep prices low, and increase incomes is undisputable; targeted agricultural programs can complement these investments by supporting livelihoods, enhancing access to diverse diets in poor populations, and fostering women’s empowerment. However, evidence of the nutritional effects of agricultural program is inconclusive—except for vitamin A from biofortification of orange-fleshed sweet potatoes—largely because of poor quality evaluations. (2) Social safety nets currently provide cash or food transfers to a billion poor people and victims of shocks (e.g., natural disasters). Individual studies show some effects on younger children exposed for longer durations, but weaknesses in nutrition goals and actions and poor service quality probably explain the scarcity of overall nutritional benefits. (3) Combined early child development and nutrition interventions show promising additive or synergistic effects on child development—and in some cases nutrition—and could lead to substantial gains in cost, efficiency, and effectiveness, but these programs have yet to be tested at scale. (4) Parental schooling is strongly associated with child nutrition, and the effectiveness of emerging school nutrition education programs needs to be tested. The authors also note that many of the programs reviewed were not originally designed to improve nutrition yet have great potential to do so by improving targeting; using conditions to stimulate participation; strengthening nutritional goals and actions; and optimizing women’s nutrition, time, physical and mental health, and empowerment. Nutrition-sensitive programs can help scale up nutrition-specific interventions and create stimulating environments in which young children can grow and develop to their full potential. This article impressively integrates a large number of studies (118 are included in the references) related to program nutrition sensitivity across the four sectors covered in a concise and effective manner, which is a most useful project. A methodological shortcoming, which may be inevitable in this type of short review, is the failure to articulate clearly what the selection criteria are for being of sufficient quality to be included in the review and relatedly, the qualifications needed given the great estimation challenges regarding measurement and endogeneity in many of the underlying studies.
- (2) Alderman, H., J. Hoddinott, and B. Kinsey. 2006. “Long Term Consequences of Early Childhood Malnutrition.” *Oxford Economic Papers* 58 (3): 450-474. This paper examines the impact of preschool malnutrition, in particular height-for-age, on subsequent human capital formation in

rural Zimbabwe using a maternal fixed effects—instrumental variables (MFE-IV) estimator with a long-term panel data set. Civil war and drought shocks are used to identify differences in preschool nutritional status across siblings. Greater preschool height-for-age is associated with greater young adulthood height and grades of schooling completed. Had the median preschool child in this sample had the stature of a median child in a developed country, by adolescence, she/he would be 3.4 centimeters taller, would have completed an additional 0.85 grades of schooling, and commenced school six months earlier. The methodology used in this paper has a number of strengths: (1) the relatively long panel data permit examining associations of preschool undernutrition with outcomes in adolescence, (2) the maternal fixed effects permit control for fixed unobserved maternal and related family and community characteristics and thus reduce confounding, and (3) the civil war and drought shocks permit controlling for time-varying factors that might affect siblings differentially through Instrumental variables (IV) methods (though with the assumption that these shocks affected children’s human capital outcomes only through preschool height-for-age).

- (3) Arimond, M., and M. T. Ruel. 2004. “Dietary Diversity Is Associated with Child Nutritional Status: Evidence from 11 Demographic and Health Surveys.” *Journal of Nutrition* 134 (10): 2579-2585. Simple indicators for dietary quality for young children are needed both for programs and research. Dietary diversity measures are relatively simple and are associated with nutrient adequacy and nutritional status. However, dietary diversity also tends to increase with income and wealth; thus, associations between dietary diversity and child nutrition may be confounded by socioeconomic (SES) factors. This study uses data from 11 recent Demographic and Health Surveys (DHS) to examine associations between dietary diversity and height-for-age Z-scores (HAZ) for children 6–23 months old, while controlling for household wealth and several other potentially confounding factors. Bivariate associations between dietary diversity and HAZ are observed in 9 of the 11 countries. Dietary diversity is a significant main effect in 7 countries in multivariate models, and interacted significantly with other factors (e.g., child age, breast-feeding status, urban/rural location) in 3 of the 4 remaining countries. Thus, dietary diversity is significantly associated with HAZ, either as a main effect or in an interaction, in 10 of the 11 countries analyzed. The authors conclude that these findings suggest that there are associations between child dietary diversity and nutritional status that are independent of socioeconomic factors, and that dietary diversity may indeed reflect diet quality, but that additional research is required to confirm and clarify relations between various dietary diversity indicators and nutrient intake, adequacy, and density, for children with differing dietary patterns. The methodological strengths include using fairly rich DHS data to investigate these relations in 11 different low- and middle-income countries, using systematic selection criteria for country inclusion, using factor analysis for data reduction of multiple indicators of SES, and testing for the robustness of the estimates to inclusion of confounders. Possible weaknesses include basing the SES indicator in part on production inputs for particular types of production (i.e., agriculture) without comparable production inputs for other types of production (e.g., services), treating dietary diversity as exogenous once observed variables are controlled (prior studies suggest that the usually observed SES factors only partially control for important family and community factors and that estimates that control for broader family and community factors through fixed effects or instrumental variables for key variables such as dietary diversity often differ substantially from those that do not), and disregarding possibly useful information by reducing the dietary diversity to a three category variables.

- (4) 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* 32 (1_suppl): S31-S40. The density of minerals and vitamins in food staples may be increased either through conventional plant breeding or through the use of transgenic techniques, a process known as biofortification. This article reviews the pluses and the limitations of biofortification in the recent HarvestPlus experience. HarvestPlus seeks to develop and distribute varieties of food staples that are high in iron, zinc, and provitamin A through an interdisciplinary, global alliance of scientific institutions and implementing agencies. In broad terms, for biofortification to be successful: (1) the breeding must be successful—high nutrient density must be combined with high yields and high profitability; (2) efficacy must be demonstrated—the micronutrient status of humans must be shown to improve when they are consuming the biofortified varieties as normally eaten—thus, sufficient nutrients must be retained in processing and cooking and these nutrients must be sufficiently bioavailable; and (3) the biofortified crops must be adopted by farmers and consumed by those suffering from micronutrient malnutrition in significant numbers. This review concludes that biofortified crops offer a rural-based intervention that, by design, initially reaches more remote populations, which comprise a majority of the undernourished in many countries, and then penetrates to urban populations as production surpluses are marketed. In this way, biofortification complements fortification and supplementation programs, which work best in centralized urban areas and then reach into rural areas with good infrastructure. Initial investments in agricultural research at central locations can generate high recurrent benefits at low cost as adapted, biofortified varieties become available across countries over time at low recurrent costs. This review systematically summarizes what is known about the potential for biofortification, with the limitation of not discussing in much depth the limitations in the available evidence.
- (5) Hawkes, C. 2006. "Uneven Dietary Development: Linking the Policies and Processes of Globalization with the Nutrition Transition, Obesity and Diet-Related Chronic Diseases." *Globalization and Health* 2 (March): 4. In the "nutritional transition," consumption of foods high in fats and sweeteners is increasing throughout the developing world. The transition, implicated in the rapid rise of obesity and diet-related chronic diseases worldwide, is rooted in the processes of globalization. Globalization affects the nature of agri-food systems, thereby altering the quantity, type, cost and desirability of foods available for consumption. Understanding the links between globalization and the nutrition transition is therefore necessary to help policymakers develop policies, including food policies, for addressing the global burden of chronic disease. While the subject has been much discussed, tracing the specific pathways between globalization and dietary change remains a challenge. To help address this challenge, this paper explores how one of the central mechanisms of globalization, the integration of the global marketplace, is affecting specific diet patterns. Focusing on middle-income countries, it highlights the importance of three major processes of market integration: (1) production and trade of agricultural goods, (2) foreign direct investment in food processing and retailing, and (3) global food advertising and promotion. The paper reveals how specific policies implemented to advance globalization account in part for some recent trends in the global diet. Agricultural production and trade policies have enabled more vegetable oil consumption; policies on foreign direct investment have facilitated higher consumption of highly processed foods, as has global food marketing. These dietary outcomes also reflect the socioeconomic and cultural context in which these policies are operating. An important finding is that the dynamic, competitive forces unleashed by global market integration facilitate not only convergence in consumption habits (as is commonly assumed in

the "Coca-Colonization" hypothesis), but also adaptation to products targeted at different niche markets. This convergence-divergence duality raises the policy concern that globalization exacerbates uneven dietary development between rich and poor. As high-income groups in developing countries accrue the benefits of a more dynamic marketplace, lower-income groups may well experience convergence towards poor-quality obesogenic diets, as observed in western countries. Global economic policies concerning agriculture, trade, investment and marketing affect what the world eats. They are therefore also global food and health policies. Health policymakers should pay greater attention to these policies in order to address some of the structural causes of obesity and diet-related chronic diseases worldwide, especially among the groups of low socioeconomic status. This study summarizes a broad literature and provides some more extensive basic information on a few cases studies relevant to the theme. A limitation is how the reader can understand the extent of generalizability of these case studies.

C2: Top Five Studies in Terms of Altmetrics⁵

- (1) IFPRI (International Food Policy Research Institute). 2015. [Global Nutrition Report 2015: Actions and Accountability to Advance Nutrition and Sustainable Development](#). Washington, DC. This report argues that, as we move into the post-2015 era of the Sustainable Development Goals (SDGs), the world faces many seemingly intractable problems. Malnutrition should not be one of them. Countries that are determined to make rapid advances in malnutrition reduction can do so. If governments want to achieve the SDG target of ending all forms of malnutrition by 2030, they have clear pathways to follow. There are many levers to pull, and this report provides many examples of countries that have done so. Tackling malnutrition effectively is also key to meeting many other SDG targets. Good nutrition signals the realization of people's rights to food and health. It reflects a narrowing of the inequalities in our world. Without good nutrition, human beings cannot achieve their full potential. When people's nutrition status improves, it helps break the intergenerational cycle of poverty, generates broad-based economic growth, and leads to a host of benefits for individuals, families, communities, and countries. Good nutrition provides both a foundation for human development and the scaffolding needed to ensure it reaches its full potential. Good nutrition, in short, is an essential driver of sustainable development.
- (2) Menon, P., P. H. Nguyen, K. K. Saha, A. Khaled, A. Kennedy, L. M. Tran, T. Sanghvi, et al. 2016. "Impacts on Breastfeeding Practices of At-Scale Strategies That Combine Intensive Interpersonal Counseling, Mass Media, and Community Mobilization: Results of Cluster-Randomized Program Evaluations in Bangladesh and Viet Nam." *PLOS Medicine* 13 (10): e1002159. Despite breastfeeding recommendations, the number of women practicing exclusive breastfeeding (EBF) remains low, and few interventions have demonstrated implementation and impact at scale. Alive & Thrive was implemented over a period of six years (2009–2014) and aimed to improve breastfeeding practices through intensified interpersonal counseling (IPC), mass media (MM), and community mobilization (CM) intervention components delivered at scale in the context of policy advocacy (PA) in Bangladesh and Viet Nam. In Bangladesh, IPC was delivered through a large nongovernmental health program; in Viet Nam, it was integrated into government health facilities. This study evaluated the population-level impact of intensified IPC, MM, CM, and PA

⁵ The list of Altmetrics provided to us by IFPRI/A4NH did not include *The Global Nutrition Report 2016*, which we expect ranked relatively high in terms of Altmetrics based on its prominence in terms of downloads.

(intensive) compared to standard nutrition counseling and less intensive MM, CM, and PA (non-intensive) on breastfeeding practices in these two countries. A cluster-randomized evaluation design was employed in each country. For the evaluation sample, 20 subdistricts in Bangladesh and 40 communes in Viet Nam were randomized to either the intensive or the non-intensive group. Cross-sectional surveys (n ~ 500 children 0–5.9 mo old per group per country) were implemented at baseline (June 7–August 29, 2010, in Viet Nam; April 28–June 26, 2010, in Bangladesh) and endline (June 16–August 30, 2014, in Viet Nam; April 20–June 23, 2014, in Bangladesh). Difference-in-differences estimates (DDEs) of impact were calculated, adjusting for clustering. In Bangladesh, improvements were significantly greater in the intensive compared to the non-intensive group for the proportion of women who reported practicing EBF in the previous 24 hours (DDE 36.2 percentage points [pp], 95% CI 21.0–51.5, $p < 0.001$; prevalence in intensive group rose from 48.5% to 87.6%) and engaging in early initiation of breastfeeding (EIBF) (16.7 pp, 95% CI 2.8–30.6, $p = 0.021$; 63.7% to 94.2%). In Viet Nam, EBF increases were greater in the intensive group (27.9 pp, 95% CI 17.7–38.1, $p < 0.001$; 18.9% to 57.8%); EIBF declined (60.0% to 53.2%) in the intensive group, but less than in the non-intensive group (57.4% to 40.6%; DDE 10.0 pp, 95% CI –1.3 to 21.4, $p = 0.072$). The authors conclude that at-scale interventions combining intensive IPC with MM, CM, and PA had greater positive impacts on breastfeeding practices in Bangladesh and Viet Nam than standard counseling with less intensive MM, CM, and PA. To their knowledge, this is the first study to document implementation and impacts of breastfeeding promotion at scale using rigorous evaluation designs. Strategies to design and deliver similar programs could improve breastfeeding practices in other contexts. This study is very strong methodologically, with a systematic approach using power calculations to determine sample sizes, randomization, pre- and posttreatment data, monitoring evaluation during treatment, strong integration with relevant local institutions but separation between implementers and evaluators, and use of appropriate multivariate estimation methods using differences-in-differences with control for clustering to obtain intent-to-treat estimates. One limitation is that the impact estimates may underestimate the full potential of such multipronged interventions because the evaluation lacked a “pure control” area with no MM or national/provincial PA.

- (3) Doss, C., R. Meinzen-Dick, A. Quisumbing, and S. Theis. 2018. “Women in Agriculture: Four Myths.” *Global Food Security* 16: 69-74. Sustainable Development Goal 5 (SDG) on gender equality and women’s rights and at least 11 of the 17 SDGs require indicators related to gender dynamics. Despite the need for reliable indicators, stylized facts on women, agriculture, and the environment persist. This paper analyzes four gender myths: (1) 70% of the world’s poor are women; (2) women produce 60–80% of the world’s food; (3) women own 1% of the world’s land; and (4) women are better stewards of the environment. The paper is effectively a review paper, organized around the four myths. The methodological approach is very systematic. After reviewing the relevant conceptual and empirical literature and what data would be required to better assess the actual situation, the paper presents the kernel of truth underlying each myth, questions its underlying assumptions and implications, and examines how it hinders us from developing effective food security policies.
- (4) van Ginkel, M., J. Sayer, F. Sinclair, A. Aw-Hassan, D. Bossio, P. Craufurd, M. El Mourid, et al. 2013. “An Integrated Agro-ecosystem and Livelihood Systems Approach for the Poor and Vulnerable in Dry Areas.” *Food Security* 5 (6): 751-767. Over 400 million people in the developing world depend on dryland agriculture for their livelihoods. Dryland agriculture involves a complex combination of productive components: staple crops, vegetables, livestock, trees, and fish

interacting principally with rangeland, cultivated areas, and watercourses. Managing risk and enhancing productivity through diversification and sustainable intensification is critical to securing and improving rural livelihoods. The main biophysical constraints are natural resource limitations and degradation, particularly water scarcity and encroaching desertification. Social and economic limitations, such as poor access to markets and inputs, weak governance and lack of information about alternative production technologies also limit farmers' options. Past efforts to address these constraints by focusing on individual components have either not been successful or are now facing declining impacts, indicating the need for new integrated approaches to research for development of dryland systems. This article outlines the characteristics of such an approach, integrating agro-ecosystem and livelihoods approaches, and presents a range of empirical examples of its application in dryland contexts. The authors draw attention to new insights about the design of research required to accelerate impact by integrating across disciplines and scales. For the purpose of this article, the methodology is appropriate—a systematic review of what is known in the area and what the gaps are in the literature. The paper argues that an integrated approach to improving livelihoods and the agro-ecosystems upon which they depend can overcome many of these shortcomings and deliver interventions that are widely appropriate, applicable, and adoptable across the world's drylands. The innovations in approach proposed are to combine vertical and horizontal integration and to acknowledge and address fine-scale variation in the contextual factors that govern adoption of interventions. In the present context, vertical integration implies a nested scale approach (field, farm, landscape, and region), where large scaling domains are identified across which contextual variation in drivers of adoption are understood, mapped, and addressed by facilitating local adaptation. Horizontal integration relates to working across disciplines and sectors (agriculture, forestry, markets, environment, water, and energy). The enabling policy and institutional requirements for innovation are addressed across scales. The authors present a framework for this integrated approach, and then demonstrate its utility through four case studies where the approach has been applied, which is an informative research strategy for their purposes. From this, they draw lessons for practitioners of research for development, particularly those working in the drylands.

- (5) Gillespie, S., P. Menon, and A. L. Kennedy. 2015. "Scaling Up Impact on Nutrition: What Will It Take?" *Advances in Nutrition* 6 (4): 440-451. Despite consensus on actions to improve nutrition globally, less is known about how to operationalize the right mix of actions—nutrition-specific and nutrition-sensitive equitably, at scale, in different contexts. This review draws on a large scaling-up literature search and four case studies of large-scale nutrition programs with proven impact to synthesize critical elements for impact at scale. Nine elements emerged as central: (1) having a clear vision or goal for impact; (2) intervention characteristics; (3) an enabling organizational context for scaling up; (4) establishing drivers such as catalysts, champions, systemwide ownership, and incentives; (5) choosing contextually relevant strategies and pathways for scaling up; (6) building operational and strategic capacities; (7) ensuring adequacy, stability, and flexibility of financing; (8) ensuring adequate governance structures and systems; and (9) embedding mechanisms for monitoring, learning, and accountability. Translating current political commitment to large-scale impact on nutrition will require robust attention to these elements.

C3: Top Five Items in Terms of Downloads

All five of these are related to the Global Nutrition Reports, with the reports themselves for 2014, 2015 and 2016 and complementary material in items 3) and 5).

- (1) IFPRI (International Food Policy Research Institute). 2016. [Global Nutrition Report 2016: From Promise to Impact: Ending Malnutrition by 2030](#). Washington, DC. The Global Nutrition Report (GNR) is the only independent and comprehensive annual review of the state of the world's nutrition. The 2016 report focuses on the theme of making—and measuring—global commitments to nutrition, and what it will take to end malnutrition in all its forms by 2030. This edition of the report presents a comprehensive analysis of the multiple burdens of malnutrition, from stunting and wasting to obesity and related noncommunicable diseases. Findings reveal a global lack of progress against malnutrition—which now afflicts one in three people worldwide. Beyond health burdens, the report offers new data on the cost of malnutrition to societies and individuals, explores examples of progress, and offers ways to engage stakeholders to help end malnutrition across a variety of sectors—from education and agriculture to sanitation and hygiene. The 2016 *Global Nutrition Report* points to ways to reverse this trend and end all forms of malnutrition by 2030.
- (2) IFPRI (International Food Policy Research Institute). 2015. [Global Nutrition Report 2015: Actions and Accountability to Advance Nutrition and Sustainable Development](#). Washington, DC. As we move into the post-2015 era of the Sustainable Development Goals (SDGs), the world faces many seemingly intractable problems. Malnutrition should not be one of them. Countries that are determined to make rapid advances in malnutrition reduction can do so. If governments want to achieve the SDG target of ending all forms of malnutrition by 2030, they have clear pathways to follow. There are many levers to pull, and this report provides many examples of countries that have done so. Tackling malnutrition effectively is also key to meeting many other SDG targets. Good nutrition signals the realization of people's rights to food and health. It reflects a narrowing of the inequalities in our world. Without good nutrition, human beings cannot achieve their full potential. When people's nutrition status improves, it helps break the intergenerational cycle of poverty, generates broad-based economic growth, and leads to a host of benefits for individuals, families, communities, and countries. Good nutrition provides both a foundation for human development and the scaffolding needed to ensure it reaches its full potential. Good nutrition, in short, is an essential driver of sustainable development.
- (3) IFPRI (International Food Policy Research, Institute). 2016. [Global Nutrition Report 2016: From Promise to Impact: Ending Malnutrition by 2030: Summary](#). Washington, DC.
- (4) IFPRI (International Food Policy Research Institute). 2014. [Global Nutrition Report 2014: Actions and Accountability to Accelerate the World's Progress on Nutrition](#). Washington, DC. At the 2013 Nutrition for Growth Summit in London, 96 signatories (governments, civil society organizations, donors, United Nations agencies, and businesses) agreed to support the creation of an annual report on global nutrition that would be authored by an independent expert group, in partnership with a large number of contributors. The first edition of this report, the *Global Nutrition Report 2014*, puts a spotlight on worldwide progress by the 193 member-countries of the United Nations in improving their nutrition status, identifies bottlenecks to change, highlights opportunities for action, and contributes to strengthened nutrition accountability on country and global levels.

- (5) IFPRI (International Food Policy Research Institute). 2015. [Think Your Country Doesn't Have a Nutrition Problem? Think Again](#). Global Nutrition Report 2015, Supplementary Online Material. Washington, DC.

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* **Series Name Change Announcement: The Impact Assessment Discussion Paper (IADP) series has been renamed “Independent Impact Assessment Report” beginning with report #36, and the numbering for this series will continue from the IADP series.**

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