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Public-Private Partnerships and the Reduction of Undernutrition in Developing Countries

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ABSTRACT

This paper brings structure to the discussion of private-sector engagement in nutrition by clarifying different models of engagement, reviews the evidence base on public-private partnerships (PPPs) for the reduction of undernutrition, and outlines some potential ways forward. We find that there are few independent, rigorous assessments of the impact of commercial-sector engagement in nutrition. Considerable caution is thus warranted when assessing PPPs in nutrition. Looking forward, future progress requires that the private sector recognize that past and current actions by some firms have created an environment of mistrust. It requires that the public sector accept that sustainable PPPs are those which permit private firms to generate profits. There is significant scope for the private sector to drive innovations that could reduce undernutrition, and, more speculatively, there may be scope for the private sector to act as a financier. Underpinning all these efforts must lie open discussions of the objectives, roles, and expectations of all parties along with potential conflicts of interest; an open space or platform where issues and challenges can be discussed and addressed; incentives for the private sector to take on pro-nutrition roles; strong, transparent, and well-enforced monitoring processes; and serious, independent evaluations of these activities.

Keywords: public private partnerships; undernutrition; advanced purchased commitments; development impact bond

ABBREVIATIONS AND ACRONYMS

AIFO	Association of Cooking Oil Industries (West Africa)
APC	Advanced Purchase Commitments
ATNI	Access to Nutrition Index
BASF	Badische Anilin- und Soda-Fabrik
BRAC	Bangladesh Rural Advancement Committee
COI	conflict of interest
CLM	La Cellule de Lutte contre La Malnutrition
DAWASA	Dar es Salaam Water and Sewarage Authority
DfID	Department for International Development
DIB	development impact bond
FAO	Food and Agriculture Organization of the United Nations
FFI	Food Fortification Initiative
FNIH	Foundation for the United States National Institutes of Health
FWA	Fortify West Africa
FIPAG	Fundo de Investimento e Patrimonio de Abastecimento de Agua
GAIN	Global Alliance for Improved Nutrition
GIZ	Deutsche Gesellschaft fur Internationale Zusammenarbeit
GDF	Grameen Danone Foods
GSO	Global Social Observatory
IBFAN	International Baby Food Action Network
ICMBMS	International Code of Marketing of Breast-Milk Substitutes
ILSI	International Life Sciences Institute
IOM	Institute of Medicine
NFFA	National Food Fortification Alliance (Tanzania)
NGO	nongovernmental organization
PPP	public-private partnership
RUTF	ready to use therapeutic foods
SAFO	Strategic Alliance for the Fortification of Oil and Other Staple Foods
SBN	SUN (Scaling Up Nutrition) Business Network
SIB	social impact bond
SUN	Scaling Up Nutrition
UEMOA	West African Economic and Monetary Union
USAID	United States Agency for International Development
WASH	water, sanitation and hygiene
WAZ	weight-for-Age Z score
WRA	women of reproductive age
WHO	World Health Organization

1. INTRODUCTION

We won't solve this [malnutrition] by just the private sector improving crops and improving markets, we won't do it just through government programmes; it is both these things and others beside. It is a shared responsibility.

-David Cameron at the launch of the SUN Business Network, December 10, 2012

... particularly for the Public-Private forms of partnership ... we need to reflect about what kinds of accountability will create an "enabling environment" with both regulations and incentives for the private sector to behave better.

-Etienne du Vachat, facilitator of the Food and Agriculture Organization of the United Nations (FAO) online Global Forum on Food Security and Nutrition, October 7, 2013

In recent years, political commitment to reducing undernutrition has strengthened globally. Nutrition features prominently on development agendas, in prime ministerial speeches, in international development discourse, and in the media. The multisectorality of nutrition is better recognized, along with the corresponding need for engagement by multiple actors in different sectors and at different levels. Markets are increasingly important as sources of nutrition-relevant goods and services for all income groups, while malnutrition also remains a problem for all income groups.

Reductions in undernutrition have both intrinsic and instrumental value: intrinsic because healthy growth in young children is a desirable outcome in its own right; instrumental because improved nutrition from conception through 24 months conveys myriad lifelong benefits (Black et al. 2013; Hoddinott et al. 2013). While there have been a number of important initiatives to fund investments in reducing undernutrition, these are insufficient given the need. Black et al. (2013) estimate that undernutrition in all its forms (fetal growth restriction, stunting, wasting, and deficiencies of vitamin A and zinc along with suboptimum breastfeeding) accounted for 3.1 million child deaths in 2011, 45 percent of the total.

The increasing attention to undernutrition has thrown a spotlight on the issue of private-sector engagement in nutrition-relevant actions, and the relationships between public- and private-sector actors. The recently established SUN Business Network is one reflection of this change in interest (SBN, 2015).

There are several reasons why the issue of private-sector engagement in nutrition has become more prominent. Intersectoral and public-private partnerships have been identified as useful mechanisms for addressing the nutrition challenges that face society. In theory, partnerships can achieve synergistic outcomes that amount to more than what can be achieved by individual partners working on their own—the whole being greater than the sum of its parts, and the benefits of the achievement outweighing the costs. Private companies are increasingly looking to the "base of the pyramid" (that is, the poorest quintile) to seed new markets, and some have also come to realize the importance of public health and nutrition goals for their own objectives (Prahalad 2010; Segre et al. 2013). Alongside multinational food and pharmaceutical companies, medium- and small-scale agrifood businesses and private health networks now have a significant presence in nutrition-relevant markets (Dangour, Diaz, and Sullivan 2012). New philanthropies for nutrition continue to emerge and expand (McGregor et al. 2012), along with logistics companies, information and communications technology businesses, and mHealth (health services using the new mobile technologies) initiatives (Free et al. 2013; Gillespie et al. 2013).

Looming over new initiatives that engage the private sector, such as the SUN Business Network and organizations such as the Global Alliance for Improved Nutrition (GAIN), is a deeply suspicious nutrition sector. Private-sector engagement in nutrition-relevant actions (especially nutrition-specific interventions targeting young children) is an extraordinarily divisive issue within international and national policy discourse. The web appendix of Gillespie et al. (2013) includes a report of an online consultation in December 2012 that engaged 75 key stakeholders from different organizations (government, academia, civil society, public-private partnerships) in six SUN countries—Bangladesh, Nepal, Indonesia, Ethiopia, Nigeria, and Kenya—that account for 20 percent of the world's stunted under-

five children. Of 146 discussion items that were raised in the four days addressing "challenges and constraints," 56 (38 percent) concerned issues of politics and governance. While concern related to private-sector engagement with nutrition came only third, respondents were most polarized on this topic. At best, many saw private-sector engagement as essential but requiring strong regulation; a minority were deeply suspicious of private-sector motivations.

This deep suspicion is rooted in continued violations of the International Code of Marketing of Breast-Milk Substitutes (ICMBMS) (Save the Children 2013). Passed overwhelmingly (118 countries voting in favor, 1 against) by the World Health Assembly in 1981, the code aims to protect and promote breastfeeding and to restrict and/or prohibit the marketing of breast milk substitutes (WHO 1981). In 2013 alone, the International Baby Food Action Network (IBFAN) reported violations of the code—ranging from labeling, product promotion, and advertising to the bribing of health workers—by 26 companies in a 237-page report (IBFAN 2014). Suspicion is accentuated by the aggressive marketing by manufacturers of ultraprocessed foods and beverages (Hawkes 2006; Moodie et al. 2013) and well-documented examples of selected firms distorting or attempting to influence research on nutrition (Bes-Rastrollo, Schultze, and Martinez-Gonzalez 2013; O'Connor 2015). A final source of antagonism toward the private sector in general and public-private partnerships (PPPs) in particular derives from a perception that companies are trying to get a seat at the policymaking table and gain political influence to serve commercial objectives. Schuftan and Greiner (2013) write, "We see no way in which SUN can prevent companies from using their public relations and their access to policy-making to damage the funding, support and protection of sustainable food cultures and optimal infant and young child feeding. It is only a matter of time before companies begin using the entry point SUN allows them to gain improper access to parents while pretending that they are only interested in 'promoting breastfeeding'" (23).

Consequently, as illustrated by the quotations that open this paper, discussions surrounding PPPs in nutrition are characterized by optimism by some, mistrust by many, and confusion by all. Optimism, because the private sector is seen as a source of expertise, technical resources, and new funding for nutrition. Mistrust, because many civil society and government actors profoundly mistrust the private sector, as discussed. Confusion, because the terms "nutrition" and "PPPs" are rarely precisely defined in debates over the role of PPPs, leading to discussions that are vacuous or overcharged but rarely informative because, as the 2008 and 2013 *Lancet* undernutrition series noted, there is a dearth of evidence documenting impact and effectiveness (Bryce et al. 2008; Gillespie et al. 2013).

It is within this context that we examine the role of the private sector in reducing undernutrition in developing countries. In some discussions, nutrition is simply equated with the production of food. In others, there is a focus on food systems and the incentives to ensure the development and sale of foods that are healthy. In this paper, our focus is on undernutrition and the possible role that the private sector can play in its amelioration—specifically, the role that PPPs might play in accelerating the reduction of undernutrition in children. We have three objectives: to bring some structure to the discussion of private-sector engagement in nutrition by clarifying different models of engagement, to review and summarize the evidence base on PPPs for the reduction of undernutrition, and to outline some potential ways forward.

We pursue these objectives within the context of the conceptual framework laid out in the *Lancet* undernutrition series (Black et al. 2013), which in turn built upon the original United Nations Children's Fund (UNICEF) conceptual framework (UNICEF 1990). Black et al. see the means to optimal child nutrition as the outcome of three elements: child feeding behaviors (breastfeeding, nutrient-rich foods, and eating routine), feeding and caregiving practices and parental stimulation, and low burden of infectious diseases. Components of these are amenable to direct (or nutrition-specific) interventions: the provision of dietary supplements (for mothers, for children suffering from acute undernutrition, and supplements to address micronutrient deficiencies), access to health services, the provision of water and sanitation, and the provision of knowledge regarding optimal childcare practices (Bhutta et al. 2013). These components are the focus of our study.[1]

[1] Note that we exclude from further consideration the wider issue of the relationship between the private and public sectors

The paper is organized as follows. We begin with a discussion of what is meant by PPPs, identifying the different ways in which this term is used and briefly reviewing some of the conceptual issues associated with implementing these partnerships. We then provide an overview of the evidence base on PPPs, which we complement with case study examples of how PPPs have been used in the provision of micronutrients, complementary foods, water and sanitation, and knowledge regarding optimal childcare practices. We then discuss the potential role of PPPs in facilitating innovations and their role in financing the reduction of undernutrition through different approaches. We discuss how PPPs could move forward and then summarize.

in the provision of foods for a healthy diet. There are important and contentious issues here, but many of these (for example, the provision of foods in localities where overweight is the dominant concern) detract from our focus on whether and how public-private partnerships can play a meaningful role in reducing undernutrition in young children in developing countries.

2. PUBLIC-PRIVATE PARTNERSHIPS FOR UNDERNUTRITION: SCOPE, CONCEPTS, AND GENERAL ISSUES

Confusion surrounding PPPs begins at the definitional level. The notion of "partnership" seems to encompass a whole mélange of interactions involving a range of different activities, from education campaigns to joint research activities, and a range of processes and structures for interaction. For example, the World Health Organization (WHO 2011) gives the following definition: "A collaboration between public- and private-sector actors within diverse arrangements that vary according to participants, legal status, governance, management, policy setting, contributions and operational roles to achieve specific outcomes." Yet, as Hawkes and Buse (2011) suggest, there is an important distinction between interactions characterized by "shared decision-making power among partners" and those characterized simply by "participation" from both sectors. Adding to the confusion is the conflation of PPPs with standard models of procurement. In these approaches, a public-sector entity issues a tender that contains a set of detailed technical specifications—for example, a micronutrient formulated in a certain way to be provided in a certain quantity, delivered to a certain place by a certain date. In these arrangements, the entities involved in the provision of interventions that ameliorate children's nutritional status fall into three well-defined groups: financiers, providers, and beneficiaries (Hoddinott 2002). Financiers fund interventions; providers implement. The vast literature on PPPs that exists outside nutrition makes clear that standard models of procurement are *not* what is meant by PPPs, but it also contains a bewildering number of definitions of a PPP.[2]

We propose distinguishing between two types of partnership arrangements: noncontractual and contractual. In noncontractual PPPs, representatives from the public and private sectors coalesce around a set of shared goals (Relave and Deich 2007). Partners contribute time, money, expertise, or other resources to the partnership, and partners share decisionmaking and management responsibilities. But there is no legally binding contract between partners, and the partnership can be dissolved at any time.

Contractual PPPs are characterized, as the name suggests, by a formal contract between public- and private-sector entities. They are further characterized by an objective of advancing a public goal (such as the reduction of chronic undernutrition); long-term partnership arrangements; often, but not always, a bundling of activities;[3] and a blurring of lines between financier and implementer and, concomitant with this, a shifting of risk from the public to the private sector.

Why do governments consider PPPs attractive in other sectors? A working example is helpful here. Suppose, as part of a series of water, sanitation, and hygiene initiatives, a government wishes to increase access to clean water in an urban locality. Under a standard procurement model, a government body issues a tender for the construction of a set of water points to be built according to a specified set of technical criteria. Firms submit bids for this work. Conditional on meeting technical and financial criteria (for example, demonstrating that the firm has the financial capacity to implement the project), the lowest bidder is awarded the contract. After the contract is signed and the work completed, the newly constructed water infrastructure is transferred to another organization, say, a state-run water utility, which then takes responsibility for operation, maintenance, and collecting user fees. The problem, of course, is that once the contract is signed, the firm constructing the water infrastructure (the implementer) has an incentive to do so as inexpensively as possible in order to maximize profits. If everything the firm did was observable and verifiable—that is to say, at relatively low cost, the government body could ensure that every aspect

[2] The literature on PPPs is vast. Perhaps most closely related to issues discussed here is work on PPPs in the hralth sector. Reviews of these include Center for Global Development (2009), European Commission (2008), Ezezika et al. (2013) and Reich (2002). A recent study by Kraak et al. (2012) looks at the benefits and risks of PPPs in the context of the double burden of malnutrition.

[3] From Iossa and Martimort (2008): "A PPP typically involves the bundling of the design, building, finance, and operation of the project, which are contracted out to a consortium of private firms. The consortium includes a construction company and a facility-management company and is responsible for all aspects of services. The DBFO model ('Design', 'Build' 'Finance' and 'Operate'), the BOT model ('Build', 'Operate' and 'Transfer') or the BOO ('Build', 'Own' and 'Operate') all account for bundling of building and operation albeit with differences in degrees" (3).

of design and construction could be checked—this would not be an issue, but in practice the implementer takes many actions that cannot be observed by the financier or that, while observable, are too costly to verify. This problem may adversely affect the quality of the infrastructure built. At best, this means increased future costs of operations and maintenance; at worst, the water infrastructure never operates properly.

Consider, as an alternative, the following formal PPP arrangement. The private-sector firm that is selected funds the construction of the infrastructure using its own resources. It designs and builds the infrastructure in accordance with the design principles set out in the tendering documents. Then the firm operates and maintains the infrastructure once it is complete. The payments the firm receives, say, in the form of an initial grant plus user fees, cover the costs of construction, operation, and maintenance. Under this design-build-finance-operate arrangement, the private-sector firm has a stronger incentive to build the infrastructure to a higher level of quality; if it does not, it will face higher maintenance and operational costs in the future. Note too that the implementing firm has an incentive to complete construction on time; delays in completion mean delays in receiving fees for operating the infrastructure.

What could go wrong? Fundamentally, what makes formal PPPs difficult is contractual incompleteness. This incompleteness can arise for a number of reasons. One is the difficulty in setting out in advance *all* possible contingencies that may arise over the lifetime of the contract. Under a contractual PPP, the private-sector firm bears all the risks of something going wrong. To the extent that firms build this into their cost estimates, this increases costs relative to traditional procurement.

A second difficulty arises from an inability to commit. A stylized version of this problem goes like this. Two entities (call them firm A and government B) wish to work together for their mutual benefit. To do so, A must make an investment that it is irreversible. Once A has done so, however, B can renege on any initial agreement; it might do so because such an action would increase the benefits to B. Knowing this, in a noncontractual PPP, firm A will not make any initial investment. In a contractual PPP, firm A is compelled to undertake this action but because of the presence of this threat, A will skimp on quality, thus undoing the original gains from bundling the building and operational contracts. In economics, this is referred to as the hold-up problem (Holmström and Roberts 1998).

3. EVIDENCE ON THE EFFECTIVENESS OF PUBLIC-PRIVATE PARTNERSHIPS IN ADDRESSING UNDERNUTRITION

We attempted to undertake a comprehensive review of literature assessing the impact of PPPs on undernutrition. We generated a list of PPP case studies using academic search engines such as Google Scholar and university academic catalogs. The search terms used included "private-public partnerships AND nutrition," "PPPs AND nutrition," "private sector AND nutrition," and "public-private partnerships AND health." We also trawled through a wide array of gray literature, such as annual reports, company briefs, organizational websites, newspaper articles, and business case studies. In these latter cases, we searched the bibliographies and references cited in an effort to identify the original references used, in the hopes of finding high-quality evidence on impact, defined as peer-reviewed or independently conducted studies. In cases where only marketing or public-relations-focused content could be found, the case study was eliminated. In cases where impact studies had been conducted but their independence could not be verified, the case study was retained in order to obtain a full picture of the state of evidence.

Table 3.1 lists the studies we uncovered using this method. It describes the nature of each partnership and its objectives, the members of the partnership, and key findings. The studies are listed thematically: micronutrients (fortification), micronutrients (supplementation), behavior change communication (handwashing, exclusive breastfeeding), improved complementary foods, and provision of water. The appendix provides additional details.

Table 3.1 contains descriptions of 21 studies, suggesting a relatively rich body of case studies and evidence. But consistent with findings from the two *Lancet* series on undernutrition (Bryce et al. 2008; Gillespie et al. 2013), we find that this evidence base is weak.[4] In reviewing potential case studies, we found that we needed to be careful to weed out cases that appeared to be little more than company public relations so as to focus only on examples with documented impact. This narrowed the field considerably, because although there are many non-peer-reviewed "capsule stories" in glossy company brochures (especially on fortification), there is not much at all in the way of independently generated evidence of impact of PPPs on reducing child undernutrition. Further, many of the studies listed above are descriptive rather than analytic; few consider counterfactuals. The result of all this is that the evidence base is too weak and too fractured to support the use of quantitative meta-evaluation techniques to assess the impact of PPPs. Instead, we extract some illustrative examples—including those relating to micronutrient deficiencies, access to complementary foods, optimal care practices, and water and sanitation—that illustrate the potentialities and pitfalls of PPPs.

[4] This is not just the case for nutrition. For health, a systematic review found few studies providing evidence on the impact of private-sector interventions derived from PPPs on quality and/or utilization of care by the poor (Patouillard et al. 2007).

Table 3.1 Summary of nutrition-related public-private partnerships

Intervention	Major Partners	Description	Key Findings
Fortified Soy Sauce in China (Chen et al. 2005) (GAIN 2013) (GAIN and World Bank 2008a)	• Chinese Ministry of Health • China Condiment Association	Aim: To develop and roll out fortification technology for low-cost soy sauce Approach: Government training and certification for qualified manufacturers	• 20 companies certified and 60 million people reached • 31%–41% decrease in anemia in women and young children after one year • 0.3 increase in young children weight-for-age z-score • Lack of consumer demand led leading manufacturer to drop out
Fortified Soy Powder in China (Sun et al. 2011) (Wang et al. 2009) (Wang et al. 2007)	• Chinese Center for Disease Control • Capital Institute of Pediatrics • Biomate Foodstuff Company	Aim: To market fortified soy powder nationally Approach: Partnership to formulate and market product using behavior change communication	• National standard for fortified complementary food supplements created • Buying product was associated with 87% less chance of anemia
Fortified Cooking Oil (SAFO) (Gradl 2012)	• German Agency for International Cooperation (Deutsche Gesellschaft für Internationale Zusammenarbeit, GIZ) • BASF • Government of Tanzania	Aim: To reduce malnutrition by strengthening policies and value chains for fortified cooking oil Approach: A formal partnership agreement to provide policy guidance and build up the capacity of local food producers to fortify oil	• As of 2012, the project will have begun producing and distributing fortified oil to 30 million people (more recent data not available)
Fortifying Wheat Flour and Vegetable Oil in Senegal (GAIN 2015) (SBN, Scaling Up Nutrition Business Network 2015)	• Government of Senegal • Global Alliance for Improved Nutrition (GAIN) • La Cellule de Lutte contre la Malnutrition (CLM) • Flour and oil producers	Aim: To reduce malnutrition by mass producing and distributing vitamin A–fortified vegetable oil and iron- and folic acid–fortified wheat flour Approach: Capacity building for flour millers, oil producers, and government bodies on fortification	• 96% of flour samples contained added iron; 97% of oil samples contained vitamin A • 85% and 73% of women of reproductive age consume fortified flour and oil, respectively • 66% and 72% of women of reproductive age get at least 10% of their daily iron and vitamin A requirements from fortified flour and oil, respectively • The project aims to reach 9.3 million people, including 3.2 million high-risk individuals
Fortified Fish Sauce in Vietnam (van Thuy et al. 2005) (ILSI 2015)	• International Life Sciences Institute (ILSI) Center for Health Promotion • National Institute of Nutrition • Ministries of Health and Fishery • CatHai fish sauce company • Akzo chemical company	Aim: To introduce iron-fortified fish sauce to Vietnamese consumers Approach: Partnership to formulate and market product	• Decrease in anemia by 21 percentage points after 18 months • Increases in hemoglobin concentration • 575,000 people with access to product

Table 3.1 Continued

Intervention	Major Partners	Description	Key Findings
Fortify West Africa (Sablah et al. 2011)	• West African Ministries of Health • Domestic food industries • Food importers	Aim: Ensure 70% coverage of vitamin A–fortified cooking oil and 70% coverage of wheat flour fortified with iron, zinc, folic acid and B vitamins Approach: Noncontractual partnership to develop national standards and directives on mandatory fortification, build capacity to implement fortification in the region, develop and implement social marketing campaigns on branding fortified foods, and monitor program implementation	• As of late 2011, approximately 55 million people in West Africa were consuming fortified wheat, and the same number were consuming fortified vegetable oil
Cooking Oil Fortification in West Africa (GAIN and World Bank 2008b) (Sablah et al. 2011) (USAID. United States Agency for International Development 2014)	• Helen Keller International • Micronutrient Initiative • AIFO (Professional Association of Cooking Oil Industries) • UEMOA (West African Economic and Monetary Union) • Various financial partners	Aim: To promote fortification-friendly policies in West Africa to high-level policy bodies Approach: Noncontractual partnership promoting mandatory fortification of specific food products, including cooking oil and wheat	• 10 West African countries have mandatory legislation on cooking oil fortification • 3 countries have launched fortified foods • 12 million children in the region have access to fortified oil
Food Fortification Initiative (Food Fortification Initiative 2015)	• Nearly 100 public and private partners	Aim: To provide technical support for global fortification efforts Approach: Provision of technical resources to millers, and advice and assistance on quality assurance, quality control, and monitoring and evaluation to governments	• 82 countries have legislation to mandate fortification of at least one industrially milled cereal grain (no causality established)
Micronutrient Powder Distribution (Rah et al. 2012) (SBN. Scaling Up Nutrition Business Network n.d.)	• World Food Programme • DSM	Aim: To distribute micronutrient powder on a large scale in several countries Approach: Development of micronutrient powders, coordination of distribution of powders alongside food aid, and social marketing campaigns	Significant results after 5–26 months of intervention: • Bangladesh: 16 percentage point decrease in child anemia; • Nepal: 16 percentage point decrease in stunting; 17 percentage point decrease in diarrhea • Kenya: 5 percentage point decrease in stunting • 15 million people reached annually

Table 3.1 Continued

Intervention	Major Partners	Description	Key Findings
Micronutrient Powder Distribution (Angdembe 2012) (GAIN. Global Alliance for Improved Nutrition. 2014a) (IFPRI 2013)	• GAIN • BRAC • Renata Ltd.	Aim: To locally produce and distribute vitamin and mineral powder to infants 6 to 24 months old, helping to reduce anemia Approach: Production, marketing, and distribution of product using community health workers	• 34 million sachets produced annually and distributed to 61 districts • When coupled with complementary feeding, exclusive breastfeeding increased by 34 percentage points and timely complementary feeding rose by 40 percentage points
IFA Supplementation in the Philippines (Angeles-Agdeppa et al. 2005) (Paulino et al 2005)	• Philippine Department of Health • United Laboratories	Aim: To address anemia in women of reproductive age and adolescent girls through weekly iron and folic acid supplementation and nutrition education Approach: Provision of iron supplements and social mobilization campaign	• Serum ferritin and hematocrit increased significantly after one year • Hemoglobin showed minimal changes • Women were willing to purchase iron supplements within the right environment
Public-Private Partnership for Handwashing with Soap (Cogswell et al. 2008) (WSP 2010)	• Water and Sanitation Program • Senegal Ministry of Health • Two private media firms	Aim: To improve the handwashing with soap practices of 500,000 women and children through a pilot Senegal program Approach: A media campaign focusing on radio, television, billboards, educational events, and small-group discussions	• In 2008, the pilot program ended and the partnership focused on global knowledge sharing and advocacy activities
Handwashing in Guatemala (Saadé, Bateman, and Bendahmane 2001)	• United States Agency for International Development (USAID) • United Nations Children's Fund (UNICEF) • Nongovernmental organizations • Soap companies • Health and education ministries	Aim: To increase the prevalence of good handwashing techniques Approach: Collaboration agreements with private-sector firms (soap companies) and a social marketing campaign	• Improvement in handwashing behavior in Guatemala • Reduction of 4.5 percentage points in diarrhea prevalence over four years (though no control group) • Participation waned after implementation began, however
Breastfeeding Media Campaign (Alayón et al. 2013) (Alive & Thrive 2015) (SBN Scaling Up Nutrition Business Network 2013)	• Alive & Thrive • FHI 360 • Various private marketing firms • USAID	Aim: To promote exclusive breastfeeding messages Approach: Mass media campaign using concept development, advertising, and media placement by private firms	• By 2014, the program was expected to reach 157,000 female staff in 70 locations in 10 provinces • In 2010–2014, exclusive breastfeeding rates increased from 19% to 58% in intervention areas, which received a mass media campaign in addition to two other interventions (social franchises and counseling)

Table 3.1 Continued

Intervention	Major Partners	Description	Key Findings
Bhavishya Alliance in India (Bhagwat et al 2014) (Maurrasse 2013)	• Synergos Institute • UNICEF • Unilever • Various other partners	Aim: To launch pilot nutrition and health projects and then scale them up pending positive results Approach: Drawing on each partner's area of expertise (e.g., Unilever for behavior change communication, Ogilvy for advertising)	• One sample project, a behavioral change in handwashing program, reached 30,000 people in 214 villages • Partnership dissolved in 2012
MAMA Health Technology in Bangladesh (CHMI. Center for Health Market Innovations. 2014) (MAMA. Mobile Alliance for Maternal Action. 2014) (SBN. Scaling Up Nutrition Business Network. 2013)	• Dnet • Ministry of Health and Family Welfare	Aim: To use technology to deliver health information to women and their families Approach: A voice and SMS service that delivers health messages to pregnant women and new mothers twice a week	• Higher percentages of subscribers adopted antenatal care visits, facility-based births, and exclusive breastfeeding, versus the national average • 1.2 million mothers reached
Fortified Yogurt in Bangladesh (Bapat 2011) (Danone Communities 2011) (Ghalib et al 2009) (Rodrigues et al. 2012)	• Grameen Bank • Danone • Local dairy farmers • BASF SE • CAPEX • GAIN • CARE	Aim: To produce and distribute low-cost fortified yogurt in Bangladesh and provide income to local saleswomen Approach: Decentralized acquisition of milk from local farmers and other inputs from private actors; distribution of below-market-priced yogurt through Grameen saleswomen and retail outlets	• Lack of consumer demand and cold-storage capacity led to declining sales • Yogurt sales were redirected to solely retail channels, and distribution was expanded to urban areas
Lipid-Based Nutrient Supplements in Tanzania (Claeyssens et al. 2012) (Maestre 2014)	• Nutriset • Power Foods • Industrial Revelation Foundation • Tanzania Food and Nutrition Centre • USAID	Aim: To sell a locally produced lipid-based nutrient supplement for infants aged 6–12 months Approach: Production of supplement by local private manufacturers with distribution by nongovernmental organizations	• Consumers are willing to pay for the product if it is affordable and there are no other major competitors • Private producer has doubled sales since beginning operations
Nutritious Street Foods in Indonesia (Byiers and Seravesi 2013) (New York Times. 2011)	• Mercy Corps • Royal DSM • Rabobank Foundation	Aim: To sell micronutrient-rich street foods to children under five years living in slums Approach: A franchise model that uses cooking centers and vending carts to produce and distribute foods	• The project has yet to show clear results

Table 3.1 Continued

Intervention	Major Partners	Description	Key Findings
Bean Flour Porridge (Hawkes et al. 2011) (Mazur et al. 2012) (Kilimo Trust 2012)	• Iowa State University • National Crops Resources Research Institute • Nutreal Ltd. • Makerere University	Aim: To improve the incomes of bean producers and increase the nutritional value gained by rural and urban consumers Approach: Development and provision of improved beans, extension, and market information to farmers, and introduction of bean-based flours for consumer use	• As of 2012, 850 households received improved bean varieties • A bean-based composite porridge can supply 84% and 97% of estimated energy requirements for male and female children 2–3 years of age, respectively, double that of porridge from millet or maize
PPPs for Drinking Water (Qizilbash 2011)	• Maputo regulatory agency • FIPAG (Fundo de Investimento e Património do Abastecimento de Água) • DAWASA (Dar es Salaam Water and Sewerage Authority)	Aim: To revitalize the operation of water supplies in Maputo Approach: Transfer of increasing level of responsibility for water management from regulatory body to private operators, with ownership remaining public	• Rise in user fees, but increase in quality of delivery • Water infrastructure was eventually found to be in too bad of shape to make private management profitable, and the PPP collapsed

Source: Compiled by authors.

Addressing Micronutrient Deficiencies

While micronutrient deficiencies are widespread in the developing world, they are most pernicious in Africa, with prevalences of vitamin A and zinc deficiencies and iron-deficiency anemia being 41 percent, 23 percent, and 20 percent, respectively, in children under the age of five (Black et al. 2013). Three case studies illustrate how PPPs are being used to address these problems.

The Food Fortification Initiative (FFI) is an example of a long-standing noncontractual PPP (Food Fortification Initiative 2015). The FFI, originally called the Flour Fortification Initiative, provides technical support for fortification. While much of the organization's initial work focused on providing technical resources to support millers (for example, guidance on best practices for premix), its work subsequently expanded to include providing advice and assistance on quality assurance and quality control as well as technical support to governments that wish to monitor fortification programs. Operational since 2002, the FFI receives funding from both private and public sources; contributors are listed on the FFI website. To avoid conflicts of interest, premix suppliers are permitted to provide only limited financial contributions and are not represented on the FFI management team.

The key benefit of a PPP such as the FFI is that it helps individual firms lower the fixed costs associated with fortification—specifically, those associated with learning what fortificants to use, how to use them, and how to ensure quality. This has public benefits to the extent that it accelerates the fortification of staple foods. It has private benefits for millers and, speculatively, for some of the private-sector firms, in terms of good publicity and possibly new business opportunities. These mutual benefits may explain why this PPP has been so long lasting. But with a budget of only $2 million per year, the FFI operates on a relatively small scale, which limits its reach.

The Fortify West Africa (FWA) initiative is a second example of a noncontractual PPP that appears to have been successful. FWA had two specific goals: ensure 70 percent coverage of vitamin A–fortified cooking oil and 70 percent coverage of wheat flour fortified with iron, zinc, folic acid, and B vitamins. The description in the next paragraph is adapted from Sablah, Klopp, Steinberg, and Baker (2011).

FWA activities began in 2000 with diagnostic work identifying foods that were both suitable for fortification and widely consumed, and on the extent to which these would need to be fortified. Gradually, national alliances were established. Membership in these alliances typically included government ministries of health, commerce, industry, and finance; United Nations agencies; nongovernmental organizations (NGOs); domestic food industries; food importers; local research organizations; and the media.[5] These partnerships had four functions: develop national standards and directives on mandatory fortification of cooking oil and wheat flour; build the capacity of large-scale cooking oil and wheat flour milling industries to implement fortification in the region and build the capacity of regulatory agencies to monitor compliance; develop and implement social marketing campaigns on branding fortified foods; and monitor program implementation, public-sector enforcement of standards, and effective quality assurance systems. As of late 2011, approximately 55 million people in West Africa were consuming fortified wheat, and the same number were consuming fortified vegetable oil.

In looking at this case study, it is striking how much time was required before meaningful scale-up occurred. Exploratory work started in 2000. While some initiatives began around 2003, substantial implementation did not take place for another four years. Much of this time was consumed by the laborious process of obtaining agreement from national governments both in principle and in terms of substance—for example, establishing regulatory regimes for food fortification and enforcement of standards. National and regional private-sector firms were enthusiastic. Fortification represented new, profitable opportunities to sell a higher-value commodity. Regulations regarding fortification create both a trade barrier, effectively excluding importing firms that do not meet regional and national standards, and an additional barrier to new firms entering the processed food market and thus give incumbent firms more

[5] Later, regional organizations were created as coordinating bodies—for example, to ensure that national food fortification regulations did not create trade barriers and to provide opportunities for mutual learning.

market power. Foreign firms that assisted in this process, for example, providing premix and technical assistance, were also supportive, as this created a new market for their products. But despite these benefits, private-sector firms would not make investments in new equipment or staff training until regulations were promulgated, technical standards agreed upon, and enforcement systems put in place. This is a good example of how PPPs must address the hold-up problem described earlier. Until governments acted, any private-sector investment could be rendered unprofitable if fortification was not made mandatory.

A third example comes from Tanzania and efforts to fortify vegetable oil with vitamin A. The account below is drawn from Gradl (2012). The government of Tanzania had committed itself to a food fortification strategy in conjunction with the private sector in 2002, and a National Food Fortification Alliance (NFFA) was established the following year. Between 2003 and 2007, however, slow progress was made on implementation. In 2008, a PPP called SAFO—the Strategic Alliance for the Fortification of Oil and Other Staple Foods—entered Tanzania through participation in meetings with the NFFA. SAFO is a partnership between a private-sector firm (BASF) and the German Agency for International Cooperation (Deutsche Gesellschaft für Internationale Zusammenarbeit, GIZ). This partnership is governed by an agreement that specifies objectives, targets, and a time frame—in this case, reaching more than 100 million people with fortified staple foods by 2012. Unlike a standard procurement contract, both the public and private sectors are financiers, with BASF contributing €1.5 million.[6] SAFO chose to work in Tanzania because micronutrient deficiency was widespread, NFFA was already in place, GIZ had several active health-related interventions, the market for the intervention was relatively large, and BASF already had business operations there with a local partner.

An additional four years passed before cooking oil was fortified with vitamin A. During this time, there were discussions and eventually action on which foods would be fortified (initially sugar was also considered, but local sugar manufacturers were reluctant to participate and so only vegetable oil was chosen), technical issues associated with the level of fortification and how this would be implemented, labeling, standard setting, and testing. Additional public-sector funds were provided by the World Bank to accelerate the process of setting technical standards and by the UK's Department for International Development (DFID) and GAIN to develop social marketing initiatives for these fortified products. BASF provided materials such as testing kits but did not participate in discussions surrounding labeling or standard setting, though Gradl notes that the firm was seen as the "supplier of choice" (2012, 18) of vitamin A to the local companies that were now selling fortified vegetable oil. The perspective of the two largest firms, which collectively account for 80 percent of all vegetable oils sold in Tanzania, is noteworthy.

Thanks to the awareness-raising efforts of SAFO, companies now see the business case for fortification. In particular, the advice of BASF as an experienced corporate partner convinced oil companies that fortification would make good business sense. Even though the higher cost will not be passed on to consumers via the price, both main oil producers supported the new regulation and the process toward it. Without regulation in place, they did not see themselves in a position to start fortifying standard cooking oil individually, or to get the whole industry, including smaller producers, on board. Without awareness-raising consumers did not understand the value of fortification and were not prepared to pay any extra for it. Thanks to the regulation, and the social marketing campaigns that will support its implementation, companies can now start fortifying their products, benefitting from an official standard, including a label, and public enforcement mechanisms. … Although they were hesitant in the beginning, cooking oil company representatives have come to appreciate the value of vitamin A fortification for their customers. Vijay Raghavan, CEO of East Coast Oils and Fats Ltd., saw standardized fortification as a competitive advantage when moving into neighboring markets, such as Zambia or Rwanda, where producers were not yet supplying fortified oil. The new label would help the company market this value proposition under a trustworthy legal framework. (Gradl 2012, 20)

[6] Based on current figures, this represents approximately 0.002 percent of annual revenues (BASF 2014).

Improving Access to Complementary Foods: Fortified Yogurt in Bangladesh

Poor-quality complementary foods, monotonous and lacking in caloric density, contribute to growth failure (Black et al. 2013). An attempt to address this issue in Bangladesh involved a joint venture, Grameen Danone Foods Ltd. (GDF), between a large multinational food and beverage firm, Danone, and the Grameen Bank. Beginning in 2006, this partnership revolved around the development and marketing of a fortified yoghurt called Shokti Doi, which was rich in protein and calcium (Garrette and Karnani 2010). The yogurt, developed by nutrition experts at GAIN and Danone, was initially distributed solely in rural areas by Grameen saleswomen (Bapat 2011). Grameen Danone owns some assets, such as the plant, brand, and product formula, while the acquisition of raw materials relies on partners such as local dairy farmers, BASF SE for nutrients, CAPEX for packaging materials, GAIN for social marketing, and CARE for salespeople (Danone Communities 2011). Initially, the venture intended to cover its costs but not make profits or generate revenues that would sustain payouts or dividends to either Danone or Grameen. Accordingly, the yoghurt was priced at a level below the cost of production (Garrette and Karnani 2010). The long-term goal was, by 2020, to create 50 dairy factories. While not a PPP in the strictest sense of the term (Grameen is an NGO, not a public-sector entity), this joint venture had all the characteristics of a contractual PPP: there was a formal contractual arrangement between entities that shared a common objective, long-term partnership arrangements, and a bundling of activities.

The joint venture lost a considerable amount of money—more than $600,000—in its first two years of operation (Garrette and Karnani 2010), largely because of low demand for the product by the poor rural households to whom the product was initially marketed. Subsequently, the saleswoman program was cut, the yogurt was distributed solely through retail outlets, and distribution was expanded to more urban areas, with product prices increased by 60 percent in order to subsidize sales in rural areas.

Providing Knowledge Regarding Optimal Childcare Practices

Providing mothers with knowledge regarding optimal childcare practices—including optimal breastfeeding, the introduction of complementary foods, and hygiene and sanitation—is an important component of efforts to reduce chronic undernutrition. Within this context, an interesting example is a noncontractual PPP designed to improve the frequency of correct handwashing in Costa Rica, El Salvador, and Guatemala. The description below is based on Saadé, Bateman, and Bendahmane (2001).

This PPP operated over a four-year period. It began with a series of inception activities undertaken by an NGO with funding from a bilateral donor. This effort focused on identifying the nature of the problem (hand soap was widely available but handwashing technique was poor), assessing which firms that produced and distributed soap might be amenable to a partnership arrangement, and reaching out to those firms. After a meeting with potential firms, those interested in continuing signed a memorandum of understanding. "Unlike a formal contract," explain Saadé, Bateman, and Bendahmane, "the memorandum provided general guidelines and allowed flexibility for individual implementation. Asking competing companies to agree to collaborate when they were used to working alone (and when several of them were quite open about preferring to work alone) was a sensitive matter, raising fears about confidentiality and proprietary information. The agreement had to allow each company to define the specific terms of its own participation" (2001, 18). Under the memorandum of understanding, private-sector firms provided input into the development of a series of social marketing activities, with the bilateral donor acting as financier. These activities were implemented by a firm not connected to any of the soap manufacturers.

In some ways, this appears to have been a successful partnership. For example, in Guatemala handwashing behavior improved. It was estimated that diarrheal prevalence decreased by 4.5 percentage points, though the absence of a control group means that this estimate is speculative. For every dollar contributed by the donor, private-sector firms contributed an additional $1.55 in promotional activities. Private-sector firms gained through increased soap sales, though the firms were not willing to share these figures with other partnership participants that included their competitors.

However, there are good reasons to be cautious about the success of this initiative. Saadé, Bateman, and Bendahmane (2001) note that participation in the initiative fell off precipitously as implementation began. They posit a number of reasons for this—lack of time, lack of interest in sharing information about the campaign with competitors, changes in personnel, and loss of momentum due to delays—but once the social marketing campaign began, there was arguably no obvious incentive for the private-sector firms to continue with the partnership. There is at best limited evidence that this partnership was sustainable in the absence of external funding. Under this initiative, all interested soap producers were invited to join in the interest of equity and expanding the scope of the social marketing campaign. However, not all the producers were happy with this arrangement, and a number later claimed that they participated only "defensively," for fear of being left out. Saadé, Bateman, and Bendahmane speculate that an exclusive agreement with one company might have prompted a greater effort.

Providing Water and Sanitation

Access to safe water and proper sanitation has an important role to play in reducing undernutrition; on the latter, see, for example, Spears (2013). While the impact on nutrition is less direct, it is instructive to see what role PPPs could play in improving access to water and sanitation.[7]

Qizilbash (2011) provides two case studies of contractual PPPs aimed at improving access to drinking water in urban areas. One of these, in Mozambique, appears to have been successful, while the other, in Tanzania, collapsed after two years. In Mozambique, a PPP arrangement was put in place to revitalize the operation of water supplies in the capital city, Maputo. Public-sector functions were delegated to two bodies, a regulatory agency and a body called FIPAG (Fundo de Investimento e Património do Abastecimento de Água) that took ownership of existing infrastructure. Initially, the private-sector consortium was responsible for a limited set of activities, but over time more responsibilities and resources were transferred to it. There was an agreed process for regular contract review. The PPP has been perceived to be a success. Although user fees have risen, so too has quality of delivery, as measured, for example, by the elimination of interruptions to supply. In Tanzania, a lease contract was signed with a private operator for operations, maintenance, and billing. Ownership of the infrastructure remained with a public-sector entity called DAWASA (Dar es Salaam Water and Sewerage Authority). After the contract was put in place, the private operator discovered that the water infrastructure was in much worse shape than had been assumed, making the existing contract unprofitable. DAWASA was unwilling to renegotiate the contract and the PPP collapsed.

[7] There is a large literature on PPPs for infrastructure in both developed and developing countries. UNESCAP (2011) and World Bank (2012) provide detailed discussions of these.

4. PUBLIC-PRIVATE PARTNERSHIPS AND INNOVATIONS TO REDUCE UNDERNUTRITION

The case studies described above involve PPPs based on existing knowledge and products for which there is a body of evidence that links them to reductions in undernutrition in children. Is there scope for PPPs to promote innovation around existing products or the development of new ones? Mechanisms to encourage innovation fall into two broad categories: push and pull. There are no PPPs that exist to promote innovation in the development of products or services that would reduce undernutrition, but there are innovations in related fields that are instructive.

Examples of push mechanisms include direct funding such as research grants and tax credits for research and development. A push approach is well suited for basic research aimed at producing nonpatentable basic knowledge (Mueller-Langer 2011) or, in the language of economics, information that is non-excludable. It is well understood that private firms will underinvest in the production of this knowledge because once it exists, other firms can use this information without incurring the research costs needed to generate it. A push approach overcomes this problem. However, push mechanisms are vulnerable to problems resulting from asymmetric information, both moral hazard and adverse selection.[8] A PPP push mechanism that addresses these concerns is the Biomarkers Consortium operated by the Foundation for the National Institutes of Health (FNIH). The consortium includes representatives from the public sector (research, public health), NGOs, advocacy groups, and the private sector (IOM 2012). The purpose of the Biomarkers Consortium is to identify, develop, and validate biomarkers for use in new drug development, preventive medicine, and medical diagnostics. Financial contributions are a requirement for membership, with the level of required funding depending on organization type. Over a two-year period of consultation and negotiation, the Biomarkers Consortium established protocols for the selection and awarding of grants and contracts, intellectual property rights, and publications (IOM 2012). The consortium serves to accelerate the development of biomarkers by overcoming the financing problem as well as problems related to asymmetric information. Consortium members benefit through access to the expertise of the full consortium, while the existence of detailed policies and procedures, as well as the presence of NGO and advocacy groups, protects the public sector against accusations of favoritism or conflict of interest (COI).

An example of a pull mechanism borrows from approaches used to encourage the development of new vaccines, advanced purchased commitments (APCs). Under an APC, sponsors commit—prior to product development—to purchase at a prespecified price and quantity a product that meets prespecified technical criteria. Glennerster, Kremer, and Williams (2006) stress that the sponsors must be perceived to be credible both financially and legally, that is, they have the resources to purchase the specified quantities and they must be willing to sign a binding contract. Once the prespecified quantity has been purchased, suppliers selling additional quantities must agree to do so at the same or lower prespecified price or be willing to license production by others for a pre-agreed fee.

APCs are attractive to both the private and public sector. For the private sector, the existence of a binding commitment reduces two significant sources of uncertainty: whether the public sector will actually purchase a new product if it is developed and whether it will do so at a price that will make research, development, and production profitable. Absent such a commitment, the hold-up problem described above looms large. In particular, once a firm has incurred the costs associated with developing this new product, governments would have a strong incentive to purchase this product at a much lower price than they may have initially indicated. Suspecting this, the firm may not invest in these innovations. The legally binding commitment overcomes this problem. For the public sector, payments are results-

[8] Moral hazard problems arise because administrators cannot perfectly monitor research activities. Once researchers are funded, they may have an incentive to direct their activities toward unrelated but more rewarding projects. Adverse selection occurs because grants are made on the basis of an evaluation of potential product delivery and not the actual development of a product. As Mueller-Langer (2011) comments, researchers have better information about the probability of success of a research program than do grant administrators. Consequently, they may overestimate the probability of success in order to obtain funding.

based. If the private-sector firms cannot deliver products that meet these technical specifications, no orders are placed and they do not get paid. In this sense, risk is transferred from the public to the private sector.

APC pull-type mechanisms work best for innovations where the basic product exists but it is too costly or where relatively minor modifications are needed to make the product suitable. In these instances, it is possible for the public sector to set out precise product specifications and to construct reasonable estimates of the price it is willing to pay for these products. Ready to use therapeutic foods (RUTFs) may well be a candidate for an APC; product specifications exist, as does pricing data. RUTFs account for approximately 48 percent of the cost of the Bhutta et al. (2013) package of interventions, and so innovations that reduce the cost of producing and delivering these products would have significant resource benefits. Further, Komrska (2012) notes that despite the increased demand for these products, their prices have not fallen; this suggests that existing procurement models for RUTFs are not generating sufficient pressure for firms to innovate. One of the largest drivers of the cost of RUTFs is the packaging (Komrska 2012, 47), and this would seem to be an aspect of the product for which innovation would be possible. It is also worth noting that local firms which might seek to enter into the production of RUTFs often lack the working capital needed to do so (Isogai, 2012); an APC could be used as part of the collateral needed by local financial institutions.

Where more basic research is required, APC approaches are less well suited. As Mueller-Langer (2011) notes, in these cases it is difficult to set the right guaranteed purchasing price in advance because research and development expenses are difficult to estimate. If the price is set too low, the APC will not stimulate research and development. If the price is set too high, this may lead to suboptimally high levels of research efforts by competing firms.

5. THE PRIVATE SECTOR AS FINANCIER

In standard procurement models for nutrition-related investments, the public sector acts as financier. It enters into contracts with private and not-for-profit entities that implement interventions. More recently, there has been interest in the development of social or development impact bonds (SIBs or DIBs); see Haddad (2014) for an example. Unlike the PPPs described above, the private sector is much more heavily involved as a financier with DIBs. A DIB has five principal characteristics (Center for Global Development 2013, 22):

- Project financing is provided by investors who assume risk for project performance.
- An outcomes funder pays for predefined results after they are achieved.
- Financial returns to investors are tied to the achievement of social outcomes.
- Outcomes funders do not specify interventions, only outcomes. Investors work directly with implementers.
- Outcomes are independently verified before payment is made.

DIBs offer several advantages. Most important is that private-sector financiers have a powerful incentive to ensure that interventions actually work. If they do not, they do not get paid.9 Unlike standard procurement contracts, which emphasize the provision of inputs, the public sector no longer specifies what should be done, only what the results should be. Thus, there is a transfer of risk from the public to the private sector. At the same time, there is an incentive for the investors to encourage innovation and to monitor implementers.

The Center for Global Development (2014) provides introductory notes on how a DIB could be structured for interventions that reduce child and maternal undernutrition. A key point that emerges from the discussion is that the return investors expect is a function of how long it takes for interventions to yield effects and the relationship between the effort of the implementer and the outcome to be achieved. Both considerations suggest that DIBs focusing on micronutrient deficiencies are better candidates than those focused on stunting. The latter takes time to address, and many of the actions required to improve chronic undernutrition are those taken by mothers and not directly by implementers.

[9] There can be variants on this—for example, scaled payments associated with meeting a set of targets.

6. MOVING FORWARD (OR NOT) WITH PUBLIC-PRIVATE PARTNERSHIPS FOR REDUCING UNDERNUTRITION

In 2014–2015, the Global Social Observatory (GSO) convened a collective process of defining interests and potential conflicts of interest relating to private-sector involvement in the reduction of undernutrition within the SUN movement (GSO 2015). In the context of SUN, the private or secondary interests of any participating individual should not supersede the primary purpose of establishing synergy between organizations for the common goal of promoting improved nutrition. If they do, it is possible that this will constitute a COI. Similarly, if any organization (of any type, not just private sector) participating in the movement pursues organizational interests that may be at variance with the collective goal of promoting improved nutrition, the organization may have a COI. Strikingly, while the 2015 Independent Comprehensive Evaluation (ICE) of SUN suggests that this exercise had been useful, it was blunt in its assessment that the process "has not solved the multiple COI [conflict of interest] challenges facing the movement.[10]

In light of the case study evidence provided in Section 3, this is not surprising. A theme running through these case studies is that PPPs for nutrition are sustainable only when they are profitable or where they convey some other competitive advantage to private-sector firms. For this reason, any future PPP—either contractual or noncontractual—should begin with recognition that the interests of the public and private sectors will never be perfectly aligned. Rather than attempting to solve all COI ex ante, a better approach may be to focus on assessing the benefits, risks, and costs of a partnership. In assessing whether the benefits of a potential private-sector partnership that will advance the goal of reducing undernutrition outweigh the risks of such an engagement, there are two critical "engagement decisions" (Kraak et al. 2011):[11]

> *Compatibilities*: Does due diligence show that past and current actions of the prospective partners are sufficiently compatible with the goal of reducing undernutrition?
>
> *Contracting*: Can an appropriate PPP be formalized (a memorandum of understanding, legal contract) in a way that specifies objectives, outcomes, duration, conflicts of interest (and processes for resolving these), and the monitoring and evaluation of the partnership?

"Compatibilities" speaks to both the suspicions of many in the nutrition sector regarding the private sector and the observation that there will never be complete alignment of public- and private-sector objectives. Absent satisfaction on this decision point, successful PPPs are simply not possible. Research on health partnerships shows that trust is a predictor of synergy and success (Jones and Barry 2011). Trust matters because it addresses the problems of contractual incompleteness and commitment described in Section 2. If past or current actions are perceived to be insufficiently compatible, it is unlikely that there will be sufficient trust to build or sustain a PPP because the monitoring of the PPP will become too onerous for either the public or private sector; the pressure on the public sector from NGOs and other monitors to disengage will be high; or because, recognizing this pressure, private-sector firms will be unwilling to enter into the PPP (the hold-up problem described earlier).

[10] The ICE went on to note that "it has helped more people to understand what they are. Although it has provided more voice for opponents of private sector engagement, it has also laid the foundations for systems that can be used to peel away prejudice and establish objectively what COI, if any, might be associated with any specific business involvement. At least as important, it has helped many more SUN participants to realize how real the COI potential is in the other SUN networks and stakeholder categories. However, if SUN's COI efforts end in 2015, there will be few sustainable results. So far, all that has been achieved (itself a significant result) is greater awareness of the diversity of COI challenges that can arise, and of the range and strength of feeling that COI generates—potentially sabotaging the prospects of multi-stakeholder efforts to scale up nutrition. Some SUN stakeholders have also realized that there could be well-structured, transparent ways of identifying and addressing COI. Longer-term work will be needed for the seeds that have been planted to germinate."

[11] This approach is derived from the benefit/risk decisionmaking pathway tool suggested by Kraak et al. (2011). It is based on their examination of the interactions of 15 transnational food, beverage, and fast-food or quick-serve restaurant companies with UN System organizations, government agencies, and NGOs to address global nutrition challenges.

The challenge to satisfying the compatibility decision point lies in operationalizing the notion of "sufficiently compatible" and identifying the weight that should be attached to past actions. Take, for example, the Access to Nutrition Index (ATNI). This is a benchmarking tool used to assess the nutrition-related commitments, practices, and global performance of food and beverage manufacturers. A certain score on an index such as this might seem enough to meet the "sufficiently compatible" decision point. But in the 2013 ATNI, on a 10-point scale the majority of companies scored below 3. The top three companies (Danone, Unilever, and Nestlé) scored between 6 and 7, and these scores were driven largely by current *declarations* of nutrition strategy and governance and not on product formulation, accessibility, and marketing or past actions. Within each of these areas, the level of implementation lagged behind the company's stated commitments. The ATNI is limited by its scoring on the basis of written policies and statements rather than on independent monitoring of actions on the ground (Haddad, 2013; IBFAN 2014).

"Contracting" speaks to the issue of governance—how the rules of the game are set, monitored, and enforced (Gillespie et al. 2013). Here too there are formidable obstacles to overcome. But there are also some instructive case studies, such as the FFI and the NIH Biomarkers Consortium, on which future PPPs can be modeled. At their heart is careful attention to process, transparency, and, in the case of the NIH Biomarkers Consortium, the presence of independent monitors. Much of the antagonism toward the private sector and PPPs derives from a perception that companies are trying to get a seat at the policymaking table and gain political influence to serve commercial objectives, and these mechanisms are a means of addressing this reality.

7. SUMMARY

Our paper has three objectives: to bring some structure to the discussion of private-sector engagement in nutrition by clarifying different models of engagement, to review and summarize the evidence base on public-private partnerships for the reduction of undernutrition, and to outline some potential ways forward. Here we highlight our key findings.

First, while there would appear to be a large body of evidence on this topic, closer examination shows that there are few independent, rigorous assessments of the impact of commercial-sector engagement in nutrition. Considerable caution is therefore warranted when assessing either commendations or criticisms of PPPs in nutrition. While there are some instructive case studies, there is simply not the evidence base to support broad statements. More and better evidence needs to be generated.

Second, progress in this area requires that the private sector recognize that past and current actions by some firms have created an environment of mistrust. It also requires that the public sector accept that sustainable PPPs are those that permit private firms to generate profits. And it requires recognition that PPPs that involve multiple firms can be problematic either because this forces competitors to (at least notionally) collaborate or because it creates the potential for these firms to lock out firms that are not members of the partnership. The challenges associated with the Central American handwashing case study and with vegetable oil fortification illustrate these issues. All these issues take time to resolve. In the case studies we examined, it was also clear that successful PPPs take time to get off the ground. No case study reported on here took less than two years to establish.

Lest this all sound too negative, this review has shown that the spectrum of actions to reduce undernutrition and the spectrum of actions in which the private sector is actively involved are both wide, and they overlap significantly. From a nutrition perspective, PPPs are best placed to operate where the benefits (to nutrition) are highest; where public-sector solutions are not readily available, effective, or sustainable; and where there is least risk (to nutrition). In particular, we see significant scope for the use of the private sector in driving innovations that could reduce undernutrition, and there are both push and pull mechanisms that could be adapted to achieve these innovations (Section 4). More speculatively, there may be scope for the private sector to act as a financier for investments to improve children's nutritional status. Underpinning all these efforts must lie open discussions of the objectives, roles, and expectations of all parties along with potential conflicts of interest; an open space or platform where issues and challenges can be discussed and addressed; incentives for the private sector to take on pro-nutrition roles; strong, transparent, and well-enforced monitoring processes; and serious, independent evaluations of these activities.

APPENDIX: CASE STUDIES OF UNDERNUTRITION-RELATED PUBLIC-PRIVATE PARTNERSHIPS IN DEVELOPING COUNTRIES

This appendix provides additional details on the case studies of public-private partnerships (PPPs) aimed at reducing undernutrition in developing countries. They are listed by theme: micronutrients (fortification), micronutrients (supplementation), behavior change communication (handwashing, exclusive breastfeeding), improved complementary foods, and provision of water. For each case study, we provide information on the location of the PPP, the activity undertaken, the type of partnership, a summary of the PPP, and references.

Study #: 1

Title: Fortified Soy Sauce in China
Country/region: China
Activity: Micronutrient fortification (soy sauce)
Type of partnership: Noncontractual

References:

Chen, J., X. Zhao, X. Zhang, S. Yin, J. Piao, J. Huo, B. Yu, N. Qu, Q. Lu, S. Wang, and C. Chen. 2005. "Studies on the Effectiveness of NaFeEDTA-Fortified Soy Sauce in Controlling Iron Deficiency: A Population-Based Intervention Trial." *Food and Nutrition Bulletin* 26 (2): 177–189. www.ncbi.nlm.nih.gov/pubmed/16060219.

GAIN (Global Alliance for Improved Nutrition). 2013. *China Soy Sauce Fortification Project*. Geneva: GAIN. http://2013.gainhealth.addison.com/project/china-soy-sauce-fortification-project.html.

GAIN and World Bank. 2008a. *Two Wheels Turning: Partnership in China's Soy Sauce Fortification Program*. Business Innovation to Combat Malnutrition Case Study Series. Geneva and Washington, DC: GAIN and World Bank. http://siteresources.worldbank.org/CGCSRLP/Resources/2asoysaucecase.pdf.

Description:

In 2002 the government of China approved soy sauce as a target food for fortification and placed pressure on the private soy industry to accelerate its fortification efforts. Consequently, the Chinese Ministry of Health partnered with the China Condiment Association to develop the technology. The program represented the first time that private producers, distributors, and retailers in China had collaborated in implementing a public health program. The ministry provided the iron fortification formula, training on manufacturing, and technical support, while the China Condiment Association absorbed other costs, monitored the quality of production, and pledged to keep the product price low (compared to regular soy sauce). Interested soy sauce manufacturers submitted applications to the ministry for approval, and the ministry in turn trained them on food safety and the technology (GAIN and World Bank 2008a).

Although the ministry certified 20 companies and reached 60 million people, the leading soy manufacturer dropped out of the program due to low sales (related to an inadequate marketing effort) and rural disinterest in the product. A randomized, placebo-controlled effectiveness trial study showed a decrease in the prevalence of anemia in women aged 19–30 (41 percentage points after one year versus 4 percentage points for the control groups), children 3–6 years of age (31–35 percentage points), and other age groups. The growth of the children improved as well, with a 0.3 increase in z-scores of weight for age (compared to 0.1 for the control). The effects became statistically significant after six months of intervention and were maintained throughout (Chen et al. 2005). Data collected from 21 health clinics showed that anemia in women and children dropped by one-third following the fortification of soy sauce, though causality cannot be established (GAIN 2013).

Study #: 2

Title: Fortified Soy Powder in China
Country/region: China
Activity: Micronutrient fortification (soy powder)
Type of partnership: Contractual

References:

Sun, J., Y. Dai, S. Zhang, J. Huang, Z. Yang, J. Huo, and C. Chen. 2011. "Implementation of a Programme to Market a Complementary Food Supplement (Ying Yang Bao) and Impacts on Anaemia and Feeding Practices in Shanxi, China." *Maternal and Child Nutrition* 7 (S3): 96–111. http://onlinelibrary.wiley.com/doi/10.1111/j.1740-8709.2011.00353.x/full.

Wang, Y. Y., C. M. Chen, F. Z. Wang, M. Jia, and K. A. Wang. 2009. "Effects of Nutrient Fortified Complementary Food Supplements on Anemia of Infants and Young Children in Poor Rural of Gansu." Biomedical and Environmental Sciences 22: 194–200. www.ncbi.nlm.nih.gov/pubmed/19725461.

Wang, Y., C. Chen, F. Wang, and K. Wang. 2007. "Effects of Nutrient Fortified Complementary Food Supplements on Growth of Infants and Young Children in Poor Rural Area in Gansu Province." Wei Sheng Yan Jiu 36: 78–81. www.ncbi.nlm.nih.gov/pubmed/17424857.

Description:

In 2008, the Food Fortification Office (FFO) of the Chinese Center for Disease Control (China CDC), the Capital Institute of Pediatrics (CIP), and QingDao Biomate Foodstuff Company (Biomate) partnered to market Ying Bao (YYB), a full-fat soy powder mixed with micronutrient powders. The partnership was funded by a grant from the Global Alliance for Improved Nutrition (GAIN). YYB had previously undergone effectiveness testing, which showed that it reduced the prevalence of anemia by 45 percent in six months and improved child weight and length (Wang et al. 2009; Wang et al. 2007). China CDC was in charge of overall project management and product formulation; CIP conducted baseline and endline surveys, as well as behavior change communication for health workers and the public; and Biomate produced and distributed YYB (Sun et al. 2011). The duration of the project was eight months. The formulation of the product, and its need to be registered as a food product, prompted the Chinese Ministry of Health to create a national standard for fortified complementary food supplements, since the category had not previously existed (Sun et al. 2011).

An endline survey showed that 60 percent of caregivers knew about YYB and 14 percent of them had purchased it, reaching 800 children. The prevalence of anemia among children was lower at endline (28.8 percent) than at baseline (36.2 percent) ($p = .098$). Buying YYB was associated with 87 percent less chance of anemia than when not purchasing YYB ($p = .009$). There was no association between awareness of YYB and anemia (Sun et al. 2011). Assessing the effect of the behavior change communication activities, the study found that the rate of early initiation of breastfeeding increased significantly, from 8.6 percent at baseline to 16.8 percent at endline. The prevalence of meeting minimal dietary diversity also increased significantly, from 58 to 74 percent for breastfed children and from 28 to 54 percent for nonbreastfed children. The prevalence of consuming iron-rich food increased significantly, from 19 to 57 percent ($p < .05$) (Sun et al. 2011).

Study #: 3

Title: Fortified Cooking Oil (SAFO)
Country/region: Tanzania
Activity: Micronutrient fortification (cooking oil)
Type of partnership: Noncontractual

Reference:

Gradl, C. 2012. *Building a Strategic Alliance for the Fortification of Oil and Other Staple Foods: A Case Study*. Cambridge, MA, US: The CSR Initiative at the Harvard Kennedy School. www.food-fortification.com/files/pdf/SAFO%20Case%20v4LR.pdf.

Description:

In 2002, the government of Tanzania committed itself to a food fortification strategy in partnership with the private sector; the following year, the National Food Fortification Alliance (NFFA) was established. After a loss of momentum, fortification efforts were reinvigorated in 2008 by the German Agency for International Cooperation (Deutsche Gesellschaft für Internationale Zusammenarbeit, GIZ) and chemical company BASF, which entered into a formal partnership agreement to establish the Strategic Alliance for the Fortification of Oil and Other Staple Foods (SAFO). GIZ advises the public sector on malnutrition policies, while BASF builds up the technical capacity and strategic business skills of staple food producers. After a process that involved discussions on which foods should be fortified and how to implement, label, standardize, test, and market fortified products, fortification of cooking oil with vitamin A was made mandatory through legislation in 2011. From 2012, the project began producing and distributing fortified oil to 30 million people (Gradl 2012).

Study #: 4

Title: Fortifying Wheat Flour and Vegetable Oil in Senegal
Country/region: Senegal
Activity: Micronutrient fortification (wheat flour, cooking oil)
Type of partnership: Contractual and noncontractual

Reference:

GAIN Knowledge Center. 2015. "Wheat Flour and Oil Fortification in Senegal." www.gainhealth.org/knowledge-centre/project/wheat-flour-oil-fortification-senegal/.

SBN (Scaling Up Nutrition Business Network). Case studies website. 2015. http://sunbusinessnetwork.org/casestudies/.

Description:

In the 2000s, Senegal embarked on a five-year project to mass produce vitamin A–fortified vegetable oil and iron- and folic acid–fortified wheat flour. In 2006, the government established a National Fortification Alliance. In 2010, the Global Alliance for Improved Nutrition (GAIN) contracted la Cellule de Lutte contre la Malnutrition (CLM) to be the lead agency in fortification, as mandated by national legislation. GAIN provides financial and technical assistance to CLM to train flour millers, oil producers, and government bodies on fortification. Private companies pay for and procure the inputs and participate in the National Fortification Alliance. A mass social marketing campaign promotes nutrition awareness and encourages consumption among the general population (SBN, 2015; GAIN Knowledge Center 2015).

A survey conducted in 2013 found that 96 percent of the flour samples from Senegal contained added iron and 97 percent of the oil samples contained vitamin A. It is reported that 85 percent of women of reproductive age are consuming fortifiable flour, while 73 percent of these women are consuming fortifiable oil. Sixty-six percent and 72 percent of these women get at least 10 percent of their daily iron and vitamin A requirements, respectively, from fortified flour and oil (GAIN 2014b). The project aims to reach 9.3 million people, including 3.2 million high-risk individuals (SBN, 2015; GAIN Knowledge Center 2015).

Study #: 5

Title: Fortified Fish Sauce in Vietnam
Country/region: Vietnam
Activity: Micronutrient fortification (fish sauce)
Type of partnership: Noncontractual

Reference:

van Thuy, P., J. Berger, Y. Nakanishi, N. C. Khan, S. Lynch, and P. Dixon. 2005. "The Use of NaFeEDTA-Fortified Fish Sauce Is an Effective Tool for Controlling Iron Deficiency in Women of Childbearing Age in Rural Vietnam." *Journal of Nutrition* 135 (11): 2596–2601. www.ncbi.nlm.nih.gov/pubmed/16251617.

ILSI (International Life Sciences Institute), Center for Health Promotion. 2015. "Project IDEA." www.ilsijapan.org/English/ILSIJapan/COM/CHP_IDEA.php.

Description:

In 1997, Project IDEA (Improve Iron Deficiency Anemia) was initiated by the International Life Sciences Institute (ILSI) Center for Health Promotion, in partnership with the National Institute of Nutrition in Vietnam; the Ministry of Health; the Ministry of Fishery; CatHai Service-Processive Sea Product Company, a fish sauce manufacturer; and Akzo Novel Function Chemicals, a private chemical company. The aim of the project was to introduce iron-fortified fish sauce to Vietnamese consumers. Initial feasibility studies, storage and stability tests, and an efficacy study were conducted from 1997 to 2000 (ILSI 2015).

A randomized double-blind effectiveness study was conducted. The results showed significant increases in hemoglobin concentration ($p = .039$), compared to no changes in the control group, and a decrease in the prevalence of anemia from 24.7 to 4 percent following daily consumption of iron-fortified fish sauce for 18 months, compared to no significant changes for the control group (van Thuy et al. 2005). In 2005, the sauce was launched nationally, with ten large fish-sauce factories producing it over five years. At the close of the program, 575,000 people had access to iron-fortified fish sauce (ILSI 2015).

Study #: 6

Title: Fortify West Africa
Country/region: West Africa
Activity: Micronutrient fortification (cooking oil, wheat flour)
Type of partnership: Noncontractual

Reference:

Sablah, M., J. Klopp, D. Steinberg, and S. Baker. 2011. "Public-Private Partnerships Drive One Solution to Vitamin and Mineral Deficiencies: 'Fortify West Africa.'" *SCN News* 39. www.unscn.org/files/Publications/SCN_News/SCNNEWS39_10.01_low_def.pdf.

Description:

The Fortify West Africa (FWA) initiative is a noncontractual PPP. It has two specific goals: ensure 70 percent coverage of vitamin A–fortified cooking oil and 70 percent coverage of wheat flour fortified with iron, zinc, folic acid, and B vitamins. FWA activities began in 2000 with diagnostic work identifying foods that were both suitable for fortification and widely consumed, and determining the extent to which these would need to be fortified. Gradually, national alliances were established. Membership in these alliances typically included government ministries of health, commerce, industry, and finance; United Nations agencies; nongovernmental organizations; domestic food industries; food importers; local research organizations; and the media.12 These partnerships had four functions: develop national standards and directives on mandatory fortification of cooking oil and wheat flour; build the capacity of large-scale cooking oil and wheat flour milling industries to implement fortification in the region and the capacity of regulatory agencies to monitor compliance; develop and implement social marketing campaigns on branding fortified foods; and monitor program implementation, public sector enforcement of standards, and effective quality assurance systems. As of late 2011, approximately 55 million people in West Africa were consuming fortified wheat, and the same number were consuming fortified vegetable oil.

[12] Later, regional organizations were created as coordinating bodies, for example, to ensure that national food fortification regulations did not create trade barriers and to provide opportunities for mutual learning.

Study #: 7

Title: Cooking Oil Fortification in West Africa
Country/region: West Africa
Activity: Micronutrient fortification (cooking oil)
Type of partnership: Noncontractual

References:

GAIN and World Bank. 2008b. *Faire Tache d'Huile: Cooking Oil Fortification in West Africa*. Business Innovation to Combat Malnutrition Case Study Series. Geneva and Washington, DC: GAIN and World Bank. http://siteresources.worldbank.org/CGCSRLP/Resources/1Fairetachedhuilecase.pdf.

Sablah, M., J. Klopp, D. Steinberg, and S. Baker. 2011. "Public-Private Partnerships Drive One Solution to Vitamin and Mineral Deficiencies: 'Fortify West Africa.'" *SCN News* 39. www.unscn.org/files/Publications/SCN_News/SCNNEWS39_10.01_low_def.pdf.

USAID (United States Agency for International Development). 2014. "Partnership for Sustainable Food Fortification in West Africa (Fortify West Africa) Fact Sheet." Washington, DC: USAID. www.usaid.gov/west-africa-regional/fact-sheets/partnership-sustainable-food-fortification-west-africa-fortify-west.

Description:

In 2000–2001, Helen Keller International (HKI) and Micronutrient Initiative undertook studies on which industries in West Africa would be conducive to fortification. On the policy end, the Professional Association of Cooking Oil Industries (AIFO) of the West African Economic and Monetary Union (UEMOA) was challenged by the UEMOA's decision to adopt World Trade Organization import duties, which flooded the market with cheap oil from foreign competitors. Needing a way to preserve the regional oil industry, AIFO pushed for fortification of all oil produced in UEMOA countries. HKI drew up a memorandum of understanding with the UEMOA on the mandatory fortification of specific food products, focused on cooking oil and wheat flour. UEMOA coordinated among member states to set mandatory regional standards for oil fortification. The West Africa Health Organization (WAHO) is working on getting a resolution on mandatory fortification passed through the General Assembly of Health Ministers of the Economic Community of West African States (ECOWAS) countries. Currently, West African states are in various stages of fortification (for example, ten ECOWAS countries have mandatory legislation for fortifying cooking oil, three countries have launched fortified foods, and none have done monitoring and evaluation or impact evaluation) (USAID 2014). The projected population under 5 years of age with access to fortified oil for 2013 was 12 million for UEMOA countries and 23 million in non-UEMOA countries. The financial partners for the effort include USAID, Dell Foundation, the government of Taiwan, the Global Alliance for Improved Nutrition (GAIN), and Micronutrient Initiative (Sablah et al. 2011; GAIN and World Bank 2008b). An estimated 72 percent of the total population of ECOWAS has access to vitamin A–fortified cooking oil (USAID 2014).

Study #: 8

Title: Food Fortification Initiative
Country/region: Developing countries
Activity: Micronutrient fortification (flour)
Type of partnership: Noncontractual

Reference:

Food Fortification Initiative. 2015. "About Us." Accessed March 3, 2015. www.ffinetwork.org/about/index.html.

Description:

The Food Fortification Initiative (FFI), originally called the Flour Fortification Initiative, provides technical support for fortification. While much of the organization's initial work focused on providing technical resources to support millers (for example, guidance on best practices for premix), its work subsequently expanded to include providing advice and assistance on quality assurance and quality control as well as technical support to governments that wish to monitor fortification programs. Operational since 2002, the FFI receives funding from both private and public sources; contributors are listed on the FFI website. To avoid conflicts of interest, premix suppliers are permitted to provide only limited financial contributions and are not represented on the FFI management team.

The key benefit of a PPP such as the FFI is that it helps individual firms lower the fixed costs associated with fortification—specifically, those associated with learning what fortificants to use, how to use them, and how to ensure quality. This has public benefits to the extent that it accelerates the fortification of staple foods. It has private benefits for millers and, speculatively, for some of the private-sector firms, in terms of good publicity and possibly new business opportunities. These mutual benefits may explain why this PPP has been so long lasting. But with a budget of only $2 million per year, the FFI operates on a relatively small scale, which limits its reach.

Study #: 9

Title: Micronutrient Powder Distribution
Country/region: Bangladesh, Kenya, Nepal
Activity: Distribution of micronutrient supplements (powders)
Type of partnership: Noncontractual and contractual

Reference:

Rah, J. H., S. de Pee, K. Kraemer, G. Steiger, M. W. Bloem, P. Spiegel, C. Wilkinson, and O. Bilukha. 2012. "Program Experience with Micronutrient Powders and Current Evidence." *Journal of Nutrition* 142: 191S–196S. www.ncbi.nlm.nih.gov/pubmed/22131547.

SBN (Scaling Up Nutrition Business Network). n.d. "DSM and WFP: Improving Nutrition of 15 Million People Each Year." http://sunbusinessnetwork.org/casestudy/dsm-and-wfp-working-to-improve-the-nutrition-of-15-million-people-each-year/.

Description:

In 2007, the World Food Programme (WFP) and DSM partnered on the Improving Nutrition, Improving Lives program, a large-scale micronutrient powder distribution program under way in several countries. DSM provides WFP with technical and scientific expertise and financial assistance in developing new and improved nutritious products, alongside making food aid deliveries and conducting social marketing campaigns.

Various evaluations of the impact of the program in refugee camps and in emergency contexts were undertaken in Bangladesh, Nepal, and Kenya after 5–26 months of intervention. In Bangladesh, anemia prevalence among participating children decreased from 64 to 48 percent ($p < .001$), while prevalence rates in Nepal and Kenya remained mostly constant. Stunting decreased from 39 to 23 percent in Nepal ($p < .05$). In some parts of Bangladesh, there was no significant reduction in stunting, but in other parts stunting was reported to be lower among children with a high compliance rate (consumption of more than 75 percent of the powder packets) versus those with low compliance (40 percent versus 52 percent, $p < .05$). In Kenya, stunting was reduced from 12 to 7 percent ($p < .05$). In Nepal, the incidence of diarrhea episodes among children declined significantly, from 30 to 13 percent. The data did not show a significant reduction in diarrhea in Bangladesh, and data were not available for Kenya (Rah et al. 2012). Among lactating mothers in the intervention area, the prevalence rates of thinness and anemia were lower among those who consumed at least 75 percent of the sachets than among those who consumed less than 75 percent of the sachets (Rah et al. 2011). The partnership has reached 15 million people annually (SBN, n.d.).

Study #: 10

Title: Micronutrient Powder Distribution
Country/region: Bangladesh
Activity: Distribution of micronutrient supplements (multiple micronutrient powders)
Type of partnership: Contractual

Reference:

Angdembe, M. R. 2012. "Adherence to Micronutrient Powder (Sprinkles) among Children Aged 6–59 Months in Rural Bangladesh." Master's of Public Health thesis, BRAC University, Dhaka, Bangladesh.

GAIN (Global Alliance for Improved Nutrition). 2014a. *A Child's Daily Nutrition within a Small Sachet*. Geneva: GAIN. www.gainhealth.org/wp-content/uploads/2014/04/63.-Case-Story.-A-childs-daily-nutrition-within-a-small-sachet.-Micronutrient-Powders-in-Bangladesh..pdf.

IFPRI (International Food Policy Research Institute). 2013. *Alive & Thrive Preliminary Process Evaluation Report*. Dhaka, Bangladesh: IFPRI.

Description:

The Global Alliance for Improved Nutrition (GAIN), BRAC, and Renata Ltd., a human and animal health products company in Bangladesh, partnered to build up production of and demand for Pushtikona, a locally adapted micronutrient powder (MNP) product targeted at infants 6 to 24 months. Renata produces, markets, and distributes the powder and GAIN provides funding for health worker training. BRAC markets and distributes the product through its network of 80,000 community health workers in 84,000 villages in Bangladesh using behavior change communication: each health worker sells the micronutrient packets to families and earns a portion of the proceeds from the basket of products she sells. Currently, BRAC delivers 1.3 million sachets of powder monthly. In 2013, Renata produced 34 million sachets of MNP, 43 percent of which were distributed through BRAC's network. As of 2014, BRAC was distributing sachets in 61 districts, or 463 subdistricts, through its community health workers (IFPRI 2013). The business model is expected to become profitable in three to five years and reach 7 million infants 6 to 24 months (GAIN 2014a).

The intervention has been supplemented with a complementary feeding intervention, implemented by Alive & Thrive, in 50 subdistricts. A process evaluation of these "intensive intervention" areas found that the rate of exclusive breastfeeding of children under 6 months in these areas increased from 49 to 83 percent, rates of timely complementary feeding rose from 46 to 86 percent, and 62 percent of children aged 6–23 months received a diverse diet. The MNP knowledge and purchasing patterns of mothers were better in areas with intensive interventions as compared to MNP-only areas (IFPRI 2013). A small evaluation found that 70 percent of children aged 6–59 months used the powder product, as measured by the consumption of one sachet per day in the past 60 days (Angdembe 2012).

Study #: 11

Title: IFA Supplementation in the Philippines
Country/region: Philippines
Activity: Distribution of micronutrient supplements (iron and folic acid)
Type of partnership: Noncontractual

Reference:

Angeles-Agdeppa, I., L. S. Paulino, A. C. Ramos, U. M. Etorma, T. Cavalli-Sforza, and S. Milani. 2005. "Government-Industry Partnership in Weekly Iron–Folic Acid Supplementation for Women of Reproductive Age in the Philippines: Impact on Iron Status." *Nutrition Review* 63 (12 Pt 2): S115–125. www.ncbi.nlm.nih.gov/pubmed/16466087.

Paulino, L. S., I. Angeles-Agdeppa, U. M. M. Etorma, A. C. Ramos, and T. Cavalli-Sforza. 2005. "Weekly Iron–Folic Acid Supplementation to Improve Iron Status and Prevent Pregnancy Anemia in Filipino Women of Reproductive Age: The Philippine Experience through Government and Private Partnership." *Nutrition Reviews* 63: S109–S115. http://onlinelibrary.wiley.com/doi/10.1111/j.1753-4887.2005.tb00156.x/abstract.

Description:

In the Philippines, the Department of Health collaborated with the United Laboratories of the Philippines, the largest privately owned local pharmaceutical company in the country, to introduce a social marketing framework and mobilization campaign for weekly iron and folic acid supplementation, targeted at women of reproductive age and adolescent girls in school (Paulino et al. 2005). The project aimed to not only address the iron status of women of reproductive age but also assess the effectiveness of the approach in improving knowledge, attitudes, and practices.

An evaluation showed that compliance with supplementation was highest with weekly supplementation, and serum ferritin and hematocrit increased significantly after one year, while hemoglobin showed minimal changes (Angeles-Agdeppa et al. 2005). Another evaluation showed that by providing adequate information about iron deficiency to health workers and women, and making supplements affordable, women were willing to purchase iron supplements (Paulino et al. 2005).

Study #: 12

Title: Public-Private Partnership for Handwashing with Soap
Country/region: Senegal
Activity: Behavior change communication (handwashing)
Type of partnership: Contractual

Reference:

Cogswell, L., and A. Diouf. 2008. *Enabling Environment Assessment and Baseline for Scaling Up Handwashing Programs: Senegal*. WSP Report 72179. Washington, DC: World Bank. www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2012/08/30/000333037_20120830011803/Rendered/PDF/721790WSP0Box30BLIC00EEHW0Senegal01.pdf.

WSP (Water and Sanitation Program). 2010. *Senegal: A Handwashing Behavior Change Journey*. Washington, DC: WSP.

Description:

In 2003, the Public-Private Partnership for Handwashing with Soap (PPPHW) was created in Senegal with technical assistance from the Water and Sanitation Program, a multidonor partnership that is part of the World Bank's Water Global Practice. Housed initially within the Senegal Ministry of Health, the PPPHW's main objective was to catalyze and coordinate multisectoral involvement in the promotion of handwashing with soap through a media campaign. It was conceived as a pilot program of the Global Public-Private Partnership for Handwashing to collect lessons from Senegal, as well as two other countries, Ghana and Peru. In 2003, a market analysis, baseline observational studies, and behavioral trials were carried out to establish buying power, willingness to use and to pay, and baseline handwashing practices (Cogswell and Diouf 2008). The project undertook a competitive bid process to procure the services of two separate firms: one to design the communications concept and produce the materials, and another to develop the media plan and purchase radio and television time and billboard space. Campaign activities included nationally aired television and radio spots, entertainment and education events in marketplaces and schools, and small-group discussions conducted with women's associations. The final objective was to improve the handwashing with soap practices of over 500,000 mothers and children (WSP 2010). Two hundred communication activities were undertaken through the program, but no evaluation was completed (Cogswell and Diouf 2008). The results from this pilot program led to the establishment or improvement of national-level partnerships in 12 additional countries from 2002 to 2007 (WSP 2010). With the pilot programs completed, in 2008 the global partnership began focusing on global knowledge sharing and advocacy activities, such as Global Handwashing Day (WSP 2010).

Study #: 13

Title: Handwashing in Guatemala
Country/region: Guatemala
Activity: Behavior change communication (handwashing)
Type of partnership: Contractual

Reference:

Saadé, S., M. Bateman, and D. Bendahmane. 2001. *The Story of a Successful Public-Private Partnership in Central America: Handwashing for Diarrheal Disease Prevention.* Arlington, VA, US: Basic Support for Child Survival Project (BASICS II), Environmental Health Project, United Nations Children's Fund, United States Agency for International Development, and World Bank.

Description:

This PPP took place over a four-year period. It began with a series of inception activities undertaken by a nongovernmental organization with funding from a bilateral donor. These activities focused on identifying the nature of the problem (hand soap was widely available but handwashing technique was poor), assessing which firms that produced and distributed soap might be amenable to a partnership arrangement, and reaching out to those firms. After a meeting with potential firms, those interested in continuing signed a memorandum of understanding. "Unlike a formal contract," explain Saadé, Bateman, and Bendahmane, "the memorandum provided general guidelines and allowed flexibility for individual implementation. Asking competing companies to agree to collaborate when they were used to working alone (and when several of them were quite open about preferring to work alone) was a sensitive matter, raising fears about confidentiality and proprietary information" (2001, 18). Under the memorandum of understanding, private-sector firms provided input into the development of a series of social marketing activities, with the bilateral donor acting as financier. These activities were implemented by a firm not connected to any of the soap manufacturers.

In some ways, this appears to have been a successful partnership. For example, in Guatemala handwashing behavior improved. It was estimated that diarrheal prevalence decreased by 4.5 percentage points, though the absence of a control group means that this estimate is speculative. For every dollar contributed by the donor, private-sector firms contributed an additional $1.55 in promotional activities. Private-sector firms gained through increased soap sales, though the firms were not willing to share these figures with other partnership participants that included their competitors. However, Saadé, Bateman, and Bendahmane (2001) note that participation in the initiative fell off precipitously as implementation began. They posit a number of reasons for this—lack of time, lack of interest in sharing information about the campaign with competitors, changes in personnel, and loss of momentum due to delay—but once the social marketing campaign began there was arguably no obvious incentive for the private-sector firms to continue with the partnership. There is at best limited evidence that this partnership was sustainable in the absence of external funding. Under this initiative, all interested soap producers were invited to join in the interest of equity and expanding the scope of the social marketing campaign. However, not all the producers were happy with this arrangement, and a number later claimed that they participated only "defensively," for fear of being left out. Saadé, Bateman, and Bendahmane speculate that an exclusive agreement with one company might have prompted a greater effort.

Study #: 14

Title: Breastfeeding Media Campaign
Country/region: Vietnam
Activity: Behavior change communication (exclusive breastfeeding)
Type of partnership: Contractual

Reference:

Alayón, S., D. Naugle, A. Jimerson, J. Lamarre-Vincent, N. Tuan, N. Hajeebhoy, N. Giang, and C. Baume. 2013. Using Behavioral Theory to Evaluate the Impact of Mass Media on Breastfeeding Practices in Viet Nam: Evaluation Plan and Baseline Findings. Washington, DC: Alive & Thrive. www.aliveandthrive.org/sites/default/files/Viet%20Nam%20Report%202013-08-05.pdf.

Alive & Thrive. 2015. "Alive & Thrive Reports Dramatic Improvements in Nutrition Practices in Viet Nam." Press release, December 9. http://aliveandthrive.org/alive-thrive-initiative-shows-dramatic-impact-on-exclusive-breastfeeding-rates-and-other-key-infant-and-young-child-feeding-practices-in-viet-nam/.

SBN (Scaling Up Nutrition Business Network). 2013. "Business Network." http://scalingupnutrition.org/about/the-global-movement/business-network.

Description:

In Vietnam, Alive & Thrive, a nonprofit initiative funded by the United States Agency for International Development (USAID) and managed by FHI 360, worked with a number of private firms to put together a mass media campaign around exclusive breastfeeding. Partners included Humanitas and Indochina Research for marketing research, Ogilvy & Mather for concept development and production, MAXUS Vietnam for media placement, and GMMB (Alayón et al. 2013). The program was expected to reach 70 locations in ten provinces by the end of 2014, with 70 breastfeeding rooms set up, 80 orientation sessions conducted, and 157,000 female staff reached (SBN, 2013).

From 2010 to 2014, exclusive breastfeeding rates increased from 19 percent to 58 percent—nearly tripling in intervention areas, which received the mass media campaign in addition to two other interventions (social franchises and counseling) (Alive & Thrive 2015).

Study #: 15

Title: Bhavishya Alliance in India
Country/region: India
Activity: Behavior change communication (complementary feeding, handwashing)
Type of partnership: Contractual

References:

Bhagwat, I., S. Sandosham, and V. Ramani. 2014. "Bhavishya Alliance: A Multisectoral Initiative to Address Undernutrition in Maharashtra." Presentation at the Together for Nutrition 2014 conference, New Delhi, India, October 29–30. http://poshan.ifpri.info/files/2014/11/3_Ishaprasad-Bhagwat.pdf.

Maurrasse, D. 2013. *Strategic Public Private Partnerships: Innovation and Development*. Northampton, MA, US: Edward Elgar Publishing.

Description:

The Bhavishya Alliance was originally created in 2006 as the Partnership for Child Nutrition by Synergos Institute, the United Nations Children's Fund (UNICEF), and Unilever. Additional partners included the Tata Foundation, ICICI Bank, HDFC Bank, and various government units and nongovernmental organizations. The alliance facilitated cooperation among partners for 11 pilot projects to be implemented in Maharashtra, India, 4 of which were expanded after positive evaluation results. One of the alliance's projects used Unilever's behavior change expertise to change complementary feeding behaviors among first-time mothers. The project focused on key communication messages, developed by UNICEF and Hindustan Unilever Limited, with the help of advertising specialists from Ogilvy. Other examples include Project Health Lokshakti, a food diversification program, and a behavioral change in handwashing program launched by Hindustan Unilever and Ogilvy, which reached 30,000 people in 214 villages (Maurrasse 2013). The alliance was dissolved in 2012 due to lack of staff continuity and the absence of an institutional mechanism for scaling up the pilot programs (Bhagwat, Sandosham, and Ramani 2014).

Study #: 16

Title: MAMA Health Technology in Bangladesh
Country/region: Bangladesh
Activity: Behavior change communication (antenatal care and exclusive breastfeeding)
Type of partnership: Contractual

References:

CHMI (Center for Health Market Innovations). 2014. "Aponjon." http://healthmarketinnovations.org/program/aponjon.

MAMA (Mobile Alliance for Maternal Action). 2014. "MAMA Bangladesh." www.mobilemamaalliance.org/mama-bangladesh.

SBN (Scaling Up Nutrition Business Network). 2013. "Business Network." http://scalingupnutrition.org/about/the-global-movement/business-network.

Description:

MAMA (Mobile Alliance for Maternal Action) is a PPP that delivers health information via mobile phone to mothers and families, approximately 1.2 million of whom live in Bangladesh. The Bangladesh program Aponjon is a voice and SMS service that delivers twice-weekly health messages to pregnant women and new mothers and their families. Aponjon was launched in 2012 by Dnet, a Bangladeshi social enterprise, in partnership with the government's Ministry of Health and Family Welfare. It charges 2 taka (2.5 US cents) per message and provides the service free of charge to 20 percent of subscribers. In 2012, Aponjon launched nationwide service, increasing its subscribers from 1,800 in 2011 to 60,000 in 2013 (CHMI 2014. As of 2014, it had reached 1.2 million mothers and families and trained 3,000 community agents who help subscribers sign up for the service (MAMA 2014). A 2012 (non-independent) survey found that higher percentages of MAMA subscribers in Bangladesh reported adopting antenatal care visits, facility-based births, and exclusive breastfeeding compared to national averages (SBN, 2013).

Study #: 17

Title: Fortified Yogurt in Bangladesh
Country/region: Bangladesh
Activity: Improved complementary foods
Type of partnership: Contractual

Reference:

Bapat, P. 2011. "Failure or Success Waiting to Happen? The Case of Grameen Danone." The Hunger and Undernutrition Blog, June 6. www.hunger-undernutrition.org/blog/2011/06/failure-or-success-waiting-to-happen-the-case-of-grameen-danone.html.

Danone Communities. 2011. *Grameen Danone Foods Ltd: Fortified Yoghurt for the Poor*. Paris: Danone Communities. www.danonecommunities.com/sites/default/files/humberg_2011_i_poverty_reduction_through_social_business_i_chapter_7_i_grameen_danone_case_study.pdf.

Ghalib, A., F. Hossain, and T. Arun. 2009. "Social Responsibility, Business Strategy and Development: The Case of Grameen-Danone Foods Limited." *Australasian Accounting Business and Finance Journal* 3 (4). http://ro.uow.edu.au/cgi/viewcontent.cgi?article=1061&context=aabfj.

Rodrigues, J., and G. A. Baker. 2012. "Grameen Danone Foods Limited (GDF)." International Food and Agribusiness Management Review 15 (1). Available at: https://www.ifama.org/publications/journal/vol15/cmsdocs/20110053_Formatted.pdf.

Description:

Grameen Danone Foods Ltd. (GDF) was founded by Grameen Bank and Danone in 2006 as a joint venture to address malnutrition in rural Bangladesh through Shokti Doi, a fortified yogurt (Ghalib, Hossain and Arun, 2009; Rodrigues and Baker, 2012). The yogurt, developed by nutrition experts at the Global Alliance for Improving Nutrition (GAIN) and Danone, was offered at a below-market price and distributed solely in rural areas by Grameen saleswomen (Bapat 2011). Grameen Danone owns some assets, such as the plant, brand, and product formula, while the acquisition of raw materials relies on partners such as local dairy farmers, BASF SE for nutrients, CAPEX for packaging materials, GAIN for social marketing, and CARE for salespeople (Danone Communities 2011). The vision of GDF was to create 50 dairy factories by 2020. The model relied on local farmers who received a fixed price for milk upon delivery to collection centers, whereas previously Danone had used a centralized model that acquired milk from a few large dairy farms and processed it in a centralized production facility.

Despite being recognized as an innovative partnership combining the strengths of the private sector and the nonprofit sector, GDF has posted growing losses, mostly due to lack of demand by consumers (Danone Communities 2011). Yogurt is considered a luxury item by poor households, whose members prefer to make it at home (Bapat 2011). Lack of cold storage facilities and high milk prices were also factors. Additionally, the Grameen saleswomen treated yogurt sales as supplemental rather than core income. Subsequently, the saleswoman program was cut, the yogurt was distributed solely through retail outlets, and distribution was expanded to more urban areas at a higher price in order to subsidize the rural prices. Product prices were increased by 60 percent, suggesting that the partnership may eventually lead to a fully commercial scale-up, with the factory operating at full capacity and a fleet of refrigerated trucks delivering the yogurt nationally.

Study #: 18

Title: Lipid-Based Nutrient Supplements in Tanzania
Country/region: Tanzania
Activity: Improved complementary foods
Type of partnership: Contractual

References:

Claeyssens, V., O. Taha, S. Jungjohann, and L. Richardson. 2012. "Social Marketing in Public-Private Partnerships as a Tool for Scaling Up Nutrition: A Case Study from Tanzania." *SCN News* 29. www.nutriset.fr/Downloads/UNSCN-Publication-Nutriset-Social-marketing-in-Public-private-partnerships-as-a-tool-for-scalling-up-nutrition-case-study-from-Tanzania.pdf.

Maestre, M., E. Robinson, J. Humphrey, and S. Henson. 2014. *The Role of Businesses in Providing Nutrient-Rich Foods for the Poor: A Case Study in Tanzania*. IDS Evidence Report 52. Brighton, UK: Institute of Development Studies. www.cmamforum.org/Pool/Resources/Role-of-businesses-providing-nutrient-rich-foods-for-poor-Tanzania.pdf.

Description:

Nutriset's product Evol'Nutributter is a patented lipid-based nutrient supplement for infants aged 6–12 months. Nutriset's usual business model is to offer a usage agreement to any company or organization not based in the United States or Europe to manufacture, market, and distribute the product. In Tanzania, Nutriset also partnered with Power Foods, a local Tanzanian food producer; the nongovernmental organization (NGO) Industrial Revelation Foundation; and the Tanzania Food and Nutrition Centre, a semi-autonomous government institution, to produce a local version of Evol'Nutributter. Power Foods signed a franchise agreement with Nutriset, the patent holder, to produce the supplement to order (entirely an export-based operation) through contracts with the United Nations Children's Fund (UNICEF) and other donor and relief organizations. Power Foods imports all the raw materials in order to comply with international and UNICEF food standards (Maestre et al. 2014). NGOs distribute the product, complemented by the retail sector for maximum coverage. A PESTEL (political, economic, social, technological, legal, and environmental) analysis, alongside a qualitative study of consumer perceptions of branding and marketing of the product and a field investigation of taste, usability, and packaging, was undertaken in 2010. Since starting production, Power Foods has doubled its sales. The program was to be funded through institutional grants until its break-even point, projected for three years after launch (Claeysens et al. 2012).

Study #: 19

Title: Nutritious Street Foods in Indonesia
Country/region: Indonesia
Activity: Improved complementary foods
Type of partnership: Contractual

Reference:

Byiers, B., and S. Seravesi. 2013. *The Enriching Business of Nutrition. Market-Based Partnerships and Regional Approaches to Nutrition: What Role for CAADP?* ECDPM Discussion Paper 149. Maastricht, the Netherlands: European Centre for Development Policy Management. http://ecdpm.org/wp-content/uploads/2013/10/DP-149-Partnerships-Regional-Approaches-Nutrition-Role-CAADP-2013.pdf.

New York Times. 2011. "In 'Food Deserts,' Oases of Nutrition." May 23. http://opinionator.blogs.nytimes.com/2011/05/23/in-food-deserts-oases-of-nutrition/?_r=0.

Description:

The KeBAL Street Project is a partnership between Mercy Corps, an international nongovernmental organization; Royal DSM; and Rabobank Foundation. The project is based on a franchise business model, aiming to use two central cooking centers and vending carts to sell nutritious foods, such as porridge and fruit jellies, that contain micronutrients. Mercy Corps started the project as a limited liability company with a $120,000 donation. The project's target is urban slum children under 5 years of age. DSM provides the micronutrients, promotion, and branding activities; Rabobank assists with business management; and Mercy Corps leads operations, especially in identifying the street vendors and target clients. The menus are developed by nutritionists, and the street carts have educational messages on diet diversity and handwashing, with jugs of water and soap made available (Byiers and Seravesi 2013). The project is not yet commercially viable (projected revenue will be $2 million a year, feeding 6,000 children) but was aiming to own 21 cooking centers and have 10 more owned by franchisees by 2013 (*New York Times* 2011).

Study #: 20

Title: Bean Flour Porridge
Country/region: Uganda
Activity: Improved complementary foods
Type of partnership: Contractual

References:

Hawkes, C., and M. T. Ruel. 2011. "Value Chains for Nutrition." Paper presented at the IFPRI 2020 international conference Leveraging Agriculture for Improving Nutrition and Health, New Delhi, India, February 10–12. www.ifpri.org/sites/default/files/publications/2020anhconfpaper04.pdf.

Kilimo Trust. 2012. *Development of Inclusive Markets in Agriculture and Trade (DIMAT): Value Chain Analysis of the Bean Sub-sector in Uganda*. Kampala, Uganda: Kilimo Trust. www.undp.org/content/dam/uganda/docs/UNDP%20Uganda_PovRed%20-%20Beans%20Value%20Chain%20Report%202013.pdf.

Mazur, R., D. Nakimbugwe, M. Ugen, H. K. Musoke, and H. Vasanthakaalam. 2012. "Enhancing Nutritional Value and Marketability of Beans through Research and Strengthening Key Value Chain Stakeholders in Uganda and Rwanda." Presentation at the Dry Grain Pulses CRSP Global PI Meeting, Kigali, Rwanda, February 14. http://legumelab.msu.edu/uploads/files/ISU-1_Mazur_nutritionalvalue_marketability.pdf.

Description:

Although beans are a nutritious and important food and cash crop in Uganda, the industry has faced serious challenges that include production constraints, poor harvest-handling techniques, and a declining demand from consumers (Mazur et al. 2012). Iowa State University and local partners collaborated in the Kamuli District of Uganda under the United States Agency for International Development (USAID)-funded Dry Grain Pulse Collaborative Research Support Program to address constraints all along the value chain, improving the incomes of producers and increasing the nutritional value gained by rural and urban consumers. New improved bean varieties, developed by the National Crops Resources Research Institute (NaCRRI) in Uganda, were introduced, and farmers were trained on best production, processing, nutrition retention, business, and pest management practices by NaCRRI and a local nongovernmental organization. Weekly public market price boards and cell phone messages disseminated price information to farmers. In partnership with private company Nutreal Ltd., Makerere University introduced bean-based composite flours for use in both porridge and sauces, in order to promote consumer interest (Hawkes and Ruel 2011).

Increased production led to greater availability of improved beans, while demand-stimulating activities resulted in improved acceptance by consumers. Providing regular market information to farmers also helped overcome market access constraints. A bean-based composite porridge can supply 84 percent and 97 percent of estimated energy requirements for male and female children, respectively, 2–3 years of age, double that of porridge from millet or maize (Mazur et al. 2012). As of 2012, 850 households had received improved bean varieties (Mazur et al. 2012). Nutreal receives 48 percent of the final price paid by the consumer, though production of processed bean products remains low due to limited consumer demand (Kilimo Trust 2012).

Study #: 21

Title: PPPs for Drinking Water
Country/region: Mozambique, Tanzania
Activity: Provision of clean water
Type of partnership: Contractual

Reference:

Qizilbash, A. 2011. "Public-Private Partnerships and the Value of the Process: The Case of Sub-Saharan Africa." *International Public Management Review* 12 (2): 38–54.

Description:

Qizilbash provides two case studies of contractual PPPs aimed at improving access to drinking water in urban areas. One of these, in Mozambique, appears to have been successful, while the other, in Tanzania, collapsed after two years. In Mozambique, a PPP arrangement was put in place to revitalize the operation of water supplies in the capital city, Maputo. Public-sector functions were delegated to two bodies, a regulatory agency and a body called FIPAG (Fundo de Investimento e Património do Abastecimento de Água) that took ownership of existing infrastructure. Initially, the private-sector consortium was responsible for a limited set of activities, but over time more responsibilities and resources were transferred to it. There was an agreed process for regular contract review. The PPP has been perceived to be a success. Although user fees have risen, so too has quality of delivery, as measured, for example, by the elimination of interruptions to supply. In Tanzania, a lease contract was signed with a private operator for operations, maintenance, and billing. Ownership of the infrastructure remained with a public-sector entity called DAWASA (Dar es Salaam Water and Sewerage Authority). After the contract was put in place, the private operator discovered that the water infrastructure was in much worse shape than had been assumed, making the existing contract unprofitable. DAWASA was unwilling to renegotiate the contract and the PPP collapsed.

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