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EXPLORING CROSS-SECTOR LINKAGES BETWEEN POPULATION, HEALTH, ENVIRONMENT, NUTRITION AND FOOD SECURITY: A Review of Best Practices and Lessons Learned

Authors: Janet Edmond, Kimberly Holbrook, Alice Macharia, Jimmiel Mandima, and Nathalie Simoneau

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AFRICAN WILDLIFE FOUNDATION
CONSERVATION INTERNATIONAL
the Jane Goodall Institute
The Nature Conservancy
WCS
WORLD RESOURCES INSTITUTE
WWF

AFRICA BIODIVERSITY COLLABORATIVE GROUP

COVER PHOTO: © The Nature Conservancy / Ami Vitale
CAPTION: The Nature Conservancy's Agriculture Officer Clement Mabula teaches a group of farmers sustainable agriculture methods in Mgambo, Tanzania

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Africa Biodiversity Collaborative Group

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II. ACRONYMS

ABCG	Africa Biodiversity Collaborative Group
AWF	African Wildlife Foundation
CI	Conservation International
DRC	Democratic Republic of Congo
FANTA	Food and Nutrition Technical Assistance
FAO	Food and Agriculture Organization
FP/RH	Family planning and reproductive health
GDA	Global Development Alliance
JGI	the Jane Goodall Institute
NGO	Non-governmental organization
PAI	Population Action International
PHE	Population, Health and Environment
PRB	Population Reference Bureau
TNC	The Nature Conservancy
USAID	United States Agency for International Development
WASH	Water, Sanitation and Hygiene
WCS	Wildlife Conservation Society
WRI	World Resources Institute
WWF	World Wildlife Fund

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IV. ACKNOWLEDGMENTS

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1. EXECUTIVE SUMMARY

Children from the village Katumbi, Tanzania. Credit: © Ami Vitale, TNC

In rural communities throughout sub-Saharan Africa, men, women and their children are facing increasing pressures on natural resources such as soil and fresh water. The populations in many African countries are expected to double in the next 30 years despite significant investments by African governments in voluntary family planning. In order to meet increasing demand for food, farmers will expand cultivation of land through subsistence agriculture to feed themselves.

Today more than eighty percent of global deforestation is caused by agriculture. To meet increasing demand for food (including meat) caused by population growth and overconsumption, annual world agricultural production will need to increase by 60 to 70 percent by 2050 (FAO 2009). This pressure threatens the critical habitat for plants and animals and ecosystem services, such as pollinators and water resources that people depend upon for crop production and soil fertility. Without these vital natural resources, agricultural production could suffer and induce insecure food conditions in vulnerable communities.

Recognizing these important linkages and complex relationships between agricultural production, deforestation, food security, nutrition and water, Africa Biodiversity Collaborative Group (ABCG) members conducted a literature review to document best practices for integrating nutrition and food security interventions into existing Population, Health and Environment (PHE) projects. This will help PHE practitioners improve ecosystem health and conservation outcomes in tandem with improved

human health—including family planning and reproductive health—for communities living in and around areas of key biodiversity. In addition, this literature review may be useful to inform organizations working on integrated approaches in places not considered as key biodiversity areas where resource management, development and health issues are addressed.

Using the lessons in the literature review, ABCG member organizations[1] explore the interrelationships and interdependencies between population, health and the environment, combining actions to reduce deforestation, while improving food and nutrition security and conserving watersheds. Throughout these activities, the participation and integration of women and marginalized populations, such as the poor and youth in decision-making processes, is particularly important in relation to health and ecosystem services, and will be a key component of piloting and promoting best practices around PHE activities. The resulting information will contribute further to our understanding of a PHE approach, including how the integration of sustainable agricultural production, food security, and nutrition influences the PHE sectors.

Through desktop review and key informant interviews, the PHE task group has determined there is a lack of PHE projects which have measured and systematically monitored the impact of nutrition and food security components on biodiversity and health outcomes. Therefore, there are only a limited set of projects or studies from which best practices can be drawn to help PHE project practitioners strengthen food security, nutrition and agriculture outcomes. These best practices include:

- Incorporate explicit nutrition objectives and indicators into the design of the project to seek synergies with economic, social and environmental objectives.
- Assess the context at the local level to design appropriate activities that address local priorities, including food resources, seasonality of food production, access to productive resources such as land, market opportunities, gender dynamics and roles, etc.
- Incorporate WASH into nutrition and food security programming to enhance outcomes of the nutrition programs and to build a more comprehensive program to improve health.
- When designing PHE programs, including nutrition-sensitive agriculture and food security interventions, it is critical to gain in-depth understanding of the gender roles, relations and dynamics, as well as an understanding of access, use and decision-making around resources for both women and men.
- To develop locally-relevant and gender-balanced agriculture, food and nutrition security interventions (with other sectors), while also recognizing and respecting the local knowledge of both women and men and those from the poorest and most marginalized groups who are the most dependent on natural resources for their survival.

[1] The ABCG is supported by the USAID to advance understanding of critical biodiversity conservation challenges and their solutions in sub-Saharan Africa. ABCG is hosted by the Wildlife Conservation Society (WCS), in coalition with the African Wildlife Foundation (AWF), Conservation International (CI), the Jane Goodall Institute (JGI), The Nature Conservancy (TNC), World Resources Institute (WRI) and World Wildlife Fund (WWF).

2. INTRODUCTION TO PHE AND FOOD SECURITY

According to the Population Reference Bureau (PRB), the world's population is expected to increase from 7.4 billion in 2016 to 9.8 billion in 2050 (PRB 2016). Despite significant investments in improving access to voluntary family planning across sub-Saharan Africa, the African continental population is expected to double in the next 30 years. Nearly 240 million people in sub-Saharan Africa lack adequate food for a healthy and active life, and record food prices and drought are pushing more people into poverty and hunger (Bremner 2012). Furthermore, population growth, changing and unsustainable resource utilization patterns, poverty, and the imbalance of power relationships and inequity are important drivers of biodiversity loss (ABCG 2015).

While there are many robust studies of the complex interplay between human population, health and the environment, there are few studies that examine the links between PHE and nutrition and food security. In 2014, ABCG convened a sub-group focused on PHE as part of the Global Health and Biodiversity Conservation Task Group. Among the group's aims was conducting a literature review to identify lessons and best practices of past and current PHE projects or programs that have integrated nutrition and food security as part of their multi-sectoral approach. In conducting this review, the PHE Task group hoped to identify gaps in the design, implementation, and monitoring and evaluation systems of PHE projects that have integrated nutrition and food security. This learning would allow us to avoid those gaps as we implement planned pilot projects in Southeast Cameroon and Western Tanzania as part of ABCG's ongoing work under the Global Health and Biodiversity Conservation theme.

PHE projects work to improve the health conditions of local communities in remote areas through activities such as providing clean water and improved sanitation, improving food security and nutrition, and increasing access to healthcare for women and children (Oglethorpe et al. 2008). According to the USAID Integrated PHE programming manual (D'Agnes et al. 2007), PHE projects integrate across various sectors and allow organizations to address the root causes of the problems in the area which they are working. By addressing the root causes, PHE projects take a close look at the interconnected nature of human interactions with water, forests and soil ecosystems upon which humans depend.

> "Even if people use family planning to have healthier children, unless they are able to grow nutritionally good food, their family's health won't improve" – community comment on positive benefits of integration (Patterson 2011)

While much of Africa's population growth will occur in urban areas, the communities in rural areas will continue to depend on nature for their livelihoods. Threats to biodiversity in these areas include over-harvesting of timber and fish, deforestation from conversion of natural areas into farms and industrial production sites, and habitat fragmentation by roads and dams (USAID 2012).

Today more than eighty percent of global deforestation is caused by agriculture. To meet increasing demand caused by population growth for food (including meat), and overconsumption, annual world agricultural production will need to increase by 60 to 70 percent by 2050 (FAO 2009).

> Approximately two billion of the world's seven billion people are food insecure.

Today, 30 million children (one in five) in sub-Saharan Africa are underweight—5.5 million more than 20 years ago (Bremner 2012). The recent paradigm shift toward implementing integrated landscape management approaches is continuously bringing to the forefront issues of integrating Population, Health and Gender into a landscape approach where livelihood issues now deliberately include health, education, and women's empowerment in addition to the usual economic development and livelihood improvement focus (Thaxton 2016).

According to the Food and Agricultural Organization (FAO), food security is defined as "a situation that exists when all people at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preference for an active and healthy life" (CI 2012, see Box 1).

BOX 1 | THE FOUR PILLARS OF FOOD SECURITY

1. Availability of sufficient quantities of food of appropriate quality, supplied through domestic production or imports;
2. Access by individuals to adequate resources for acquiring foods for a nutritious diet;
3. Utilization of food through adequate diet, clean water sanitation and health care to reach a nutritional well-being where all physiological needs are met; and
4. Stability, because to be food secure, a population or household or individual must have access to adequate food at all times.

Smallholder producers contribute a significant amount of the world's food - 50 percent of global agricultural production and as much as 90 percent in Africa. Women farmers are especially important as they produce 60-80 percent of the food in most developing countries and are the main producers of the world's staple crops such as rice, wheat and maize (CI 2012). However, women often lack land and/or land tenure rights and do not have access to credit and agricultural extension services. Multi-sector investments in women and girls are critical to increasing food production and reducing hunger. Almost two of every three people in sub-Saharan Africa live in a rural area, relying principally on small-scale agriculture for their livelihood. Improving agriculture on small farms is critical to reducing hunger (Bremner 2012).

The dimensions of challenges to population, health and the environment go beyond food security, even extending to include Water, Sanitation and Hygiene (WASH). In rural areas across Africa, water access and availability are closely linked to agricultural production and food security. Access to safe drinking water and basic sanitation is fundamental to sustainable development and human health. Progress on water in the past 25 years has brought 91 percent of the world's population access to piped water close to home (the definition of improved access), up from 76 percent in 1990. Of those remaining without improved access, nearly half are in sub-Saharan Africa (PRB 2016). At the nexus of Water, Sanitation and Hygiene and food security lies nutrition. The use of safe water, sanitation facilities and good hygiene practices can positively affect nutritional outcomes by addressing both immediate and underlying

causes of malnutrition (USAID 2015). The USAID Multi-Sectoral Nutrition Strategy emphasizes the relevance of integrating the WASH and nutrition sectors to enhance outcomes of nutrition programs and to build more comprehensive programs to improve health. Additionally, WASH is an essential component of freshwater ecosystem conservation, and if treated as an integral part of a PHE program, it may lead to greater positive impact on human and ecosystem health.

A central part of the PHE approach is to address gender issues and women's empowerment. Women are the main household caretakers, with responsibility for the day to day nutrition and food security status of the family. They are also major players in the food production process, hence are very important stakeholders and must be included in this approach. If biodiversity conservation efforts seek to change how land and natural resources are governed and managed, we have the potential to contribute to opening a wide array of opportunities for them to improve their own quality of life. Our proposals are formulated on the basis of a sound understanding of the roles that women, disadvantaged groups, the disabled, and other groups who experience social exclusion play—as well as the roles they could play if conditions changed to allow them to do so. They would make greater contributions to the well-being of their families and communities. In the process, we create a much broader constituency for the kinds of changes we seek to make, create conditions for better governance and management, and improve the odds of our success in introducing sustainable changes in land use on a sufficiently large scale to address the critical threats to biodiversity. One component of the pilot projects is to highlight the role of gender in conservation, biodiversity, and/or environment programs in order to showcase that ignoring gender could lead to detrimental impacts.

In its 2012 policy statement, USAID emphasized gender equality and female empowerment as, "core development objectives, fundamental for the realization of human rights and key to effective and sustainable development outcomes." Gender is an especially important element in the design of sustainable conservation strategies, because women play critical land and resource management roles, which typically are unrecognized or, at least, undervalued. Women, minorities and disadvantaged groups are a critical part of local conservation constituencies and need to be incorporated in every place where conservation organizations work if our efforts are to be sustainable. Thus, integrating gender is a vital part of the literature review and pilot projects.

The very basis of a PHE-integrated approach helps communities and households become more resilient to climate change as their food security, nutrition, health, general well-being and the management and protection of their natural resources are taken into account, making them more apt to respond and be self-sufficient in the face of natural disasters and climate change-related challenges.

"Women often play critical land and resource management roles, which are typically unrecognized, or at least, undervalued" – USAID 2016

At the same time, the potential for scaling up voluntary family planning programs to address population growth and food security is significant according to a 2016 Population Reference Bureau report (Husain et al. 2016). According to recent analyses, if all unmet need for family planning were met (between 2005 and 2050 in 99 developing countries) the total population in those 99 countries in 2050 would be

400 million lower than the United Nations' population projection (6.3 billion versus 6.7 billion people), reducing the rate of increase of demand for food. Particularly in Africa, reaching a total fertility rate of 2.1 in 2050 would reduce the size of the projected gap between the region's demand for food and crops produced by approximately 25 percent (Husain et al 2016).

Background on ABCG's Biodiversity Conservation Project Phase II

From 2015-2018, ABCG partners are focusing on four key issues that strongly influence the effectiveness of biodiversity conservation efforts: a) land and resource tenure rights, b) land use management, c) understanding the impacts of change processes operating at a global scale on biodiversity, and d) understanding the linkages between global health and biodiversity. In order to achieve the last objective, the Population, Health and Environment task team aims to promote the links and synergies between vital ecosystem services and human health and well-being by integrating the principles of population, maternal health, sustainable approaches to agricultural production (to reduce deforestation and improve production), food security, nutrition, and Water, Sanitation and Hygiene (ABCG 2014.) As part of the PHE task, two pilot projects using integrated approaches will be carried out. The first project, in Southeastern Cameroon, seeks to improve biodiversity conservation and human well-being by implementing and promoting effective approaches that integrate biodiversity conservation with actions that contribute to improving health and nutrition. A second project in Western Tanzania is testing the Model Household approach, which integrates new food security components into the ongoing and successful Tuungane PHE project. The expected outcomes are to: 1) build multi-sectoral partnerships to ensure biodiversity conservation and human well-being outcomes are achieved in tandem, 2) strengthen the evidence base, for USAID and others, of successful examples that integrate biodiversity conservation and development, and 3) incorporate the PHE approach into conservation, development, and health planning.

BOX 2 | ABOUT THE AFRICA BIODIVERSITY COLLABORATIVE GROUP

ABCG's Vision

ABCG's vision is of an African continent where natural resources and biodiversity are securely conserved in balance with sustained human livelihoods.

ABCG's Mission

ABCG's mission is to tackle complex and changing conservation challenges by catalyzing and strengthening collaboration, and bringing the best resources from across a continuum of conservation organizations to effectively and efficiently work toward this vision of Africa.

ABCG's Objectives

- Promote networking, awareness, information sharing and experience among U.S. conservation non-governmental organizations working in Africa
- Encourage information exchange and idea sharing with African partners
- Identify and analyze critical and/or emerging conservation issues in Africa as priorities for both future NGO action and donor support
- Synthesize collective lessons from field activities and share them with a broader multi-sector community in the United States and Africa

Over the past 17 years, ABCG members CI, JGI, TNC, WWF and WCS have implemented USAID-supported PHE projects in several Sub-Saharan African countries including the Democratic Republic of Congo (DRC), Cameroon, Mozambique, Kenya, Madagascar, the Philippines, Tanzania, Uganda and Zambia. ABCG members also participate in PHE community of practice, taking advantage of ongoing synergies and overlap among the member organizations. Further, several ABCG members integrate food security and sustainable agricultural practices into ongoing efforts to improve livelihoods and biodiversity conservation.

Counseling session by a community health volunteer in Kalinzi Village, north of Gombe National Park in western Tanzania. Credit: © Shawn Sweeney, the Jane Goodall Institute

BOX 3 | WHAT IS POPULATION, HEALTH, AND ENVIRONMENT?

PHE approaches address the complex connection between humans, their health and their environment. The key objective of these efforts is to simultaneously improve access to health services, especially family planning and reproductive health (FP/RH) services and information, while helping communities manage their natural resources in ways that improve their health and livelihoods and conserve the critical ecosystems upon which they depend.

Within the global PHE community, there are many different definitions of PHE. Five of the most common definitions follow:

- **USAID:** As the primary donor of PHE initiatives since 2002, USAID defines PHE approaches as projects that promote "population, health and environment interventions that are conceptually linked and operationally coordinated at the field level." This means that organizations and partners are not working in silos, or on activities that are unrelated to each other. The USAID definition assumes an underlying relationship among partners and stakeholders across health and environment sectors and implies a close working relationship at the very basic project level.
- **Population Action International (PAI):** Within a community or a group of communities, PHE programs combine aspects of natural resource conservation or environmental work with the provision of reproductive health services, always including, but not limited to, family planning (Engelman 1998, Vogel and Engelman 1999).
- **World Wildlife Fund:** In their 2008 manual, *Healthy People, Healthy Ecosystems: A Manual on Integrating Health and Family Planning into Conservation Projects,* WWF defines PHE approaches as "Projects that integrate health and/or family planning and conservation elements, seeking synergistic successes and greater outcomes than if they were implemented in isolation." This approach to development recognizes the interconnectedness between people and their environment, and supports multi-sectoral collaboration and coordination (Oglethorpe *et al.* 2008).
- **PHE Consortium Ethiopia:** This PHE Consortium developed its own PHE definition. "Population, Health and Environment interventions in Ethiopia are a holistic, participatory and proactive development approach whereby issues of environment, health and population are addressed in an integrated manner for improved livelihoods and sustainable well-being of people and ecosystems."
- **Population Reference Bureau**: "An integrated PHE approach to development recognizes the interconnections between people and their environment and supports cross-sectoral collaboration and coordination."

There is no one PHE definition or approach, but practitioners agree on and develop their projects according to certain common principles. In the past, conservation organizations have recognized the need to reach out to communities in areas of high biodiversity, where communities do not have access to dependable health care services such as FP/RH. Organizations implementing FP/RH interventions have also recognized the need to reach the "last mile"—rural populations in biodiverse areas who don't have access to government health and family planning services—as a means of increasing equity for reproductive health services.

Objective of the Literature Review

The purpose of the literature review is to document best practices for integrating nutrition and food security interventions into existing PHE projects. Our objective is to use integrated approaches to inform organizations that seek to improve ecosystem health and conservation outcomes in tandem with improved human health, including family planning and reproductive health for communities living in and around areas of key biodiversity. This may also be useful for work in low biodiverse areas where resource management, development and health issues need to be addressed. The target audience for the product includes ABCG members, USAID, PHE practitioners in the field and relevant policymakers in sub-Saharan Africa. Several evaluations and assessments have shown that projects that integrate reproductive health and family planning services, maternal and child health, and natural resource management can improve human health and biodiversity conservation outcomes. PHE projects have often included activities to foster community design and implementation of Water, Sanitation and Hygiene infrastructure such as wells, latrines and handwashing practices. Through improved agricultural practices that help improve biodiversity conservation, many projects have also attempted to reach some food security goals with vegetable gardens, small-scale livestock production and alternative nature-based enterprises to increase household income.

Youth trained on sexual and reproductive health, demonstration of using of condom near Lake Tanganyika, Tanzania. Credit: © Nelson Mmari, TNC

The lessons from the literature review will inform the work of participating ABCG member organizations implementing new pilot activities and also help encourage ongoing PHE activities to explore the interrelationships and interdependencies between Population, Health and the Environment, the combination of actions to reduce deforestation and conserve freshwater resources—including watersheds, and the improvement of food and nutrition security. Throughout these activities, the participation and integration of women and marginalized populations, such as the poor and youth, in decision-making processes is particularly important in relation to health and ecosystem services. This will be a key component of piloting and promoting best practices around PHE activities. The resulting information will contribute further to our understanding of the PHE approach, including how the integration of sustainable agricultural production, food security and nutrition influences the PHE sectors.

3. METHODS USED FOR REVIEW

The review was done by members of the ABCG PHE task team whose organizations have worked on projects that integrate health and biodiversity, particularly looking at the intersection of freshwater conservation and WASH in sub-Saharan Africa. During earlier phases of ABCG project initiatives, these members have produced a series of products aimed at increasing awareness and understanding of how health, conservation and development practitioners in Sub-Saharan Africa can meet improved human health and conservation outcomes. Those resources complement this literature review and the pilots to be conducted.

The literature review began with an analysis of existing PHE-integrated approaches to identify best practices and promising approaches in this field through desk review and interviews with PHE practitioners and experts in the field. About 60 articles from approximately 5 PHE projects that included a food security or nutrition component and potential links to conservation were reviewed. At the beginning of the literature review process, the task team established criteria for identifying gray and peer-reviewed references to be included in the review. Examples include program reports, training manuals, technical briefs, policy briefs, journal articles, webinars and videos. The team identified a set of keyword searches (such as population, health and environment or PHE, food security, agriculture, nutrition, malnutrition, livelihoods). Documents and reports reviewed were produced in 2006 or later (none over 10 years old.)

Sensitization of women and men on good child nutrition practices and clinical signs of malnutrition in Lobéké, Cameroon. Credit: Olivier Njounan, WWF

The task team used multiple methods to identify and extract relevant documents, such as key informant interviews, bibliography searches, and searches within the Knowledge for Health PHE Toolkit (2016). Key informant interviews with experienced PHE practitioners helped the task team to identify approximately 60 resources, several of these coming from an estimated 5 PHE projects.

4. FINDINGS FROM THE REVIEW AND DISCUSSION

A key cause of malnutrition is lack of food security, but even if food security is good, malnutrition can result from other causes. These include inappropriate feeding and care practices, poor sanitation and hygiene (which often result in diarrheal diseases and intestinal parasites), other diseases, and poor access to health services and a healthy environment (Oglethorpe *et al*. 2008). In the WWF *Healthy People, Healthy Ecosystems* manual, Oglethorpe *et al*. found that improved nutrition for women and children was an integral part of many PHE health projects. Activities include promotion of exclusive breastfeeding and proper introduction of complementary feeding for infants, ensuring adequate protein and energy in the diet, promotion of micronutrients (Vitamin A, iron, iodine and zinc) and demonstration of sound cooking practices (Oglethorpe et al. 2008). In addition, promotion of vegetable gardening, conservation agriculture and agroforestry with organic composting can improve soil fertility, increase production per hectare, and produce a wider variety of foods (Oglethorpe et al. 2008). Promotion and adoption of improved agricultural techniques, such as mulching, crop rotation, diversification, and conservation tillage, can contribute to reduction in deforestation and lead to a decrease in unsustainable agricultural practices.

A 2015 review by the FANTA II- Food and Nutrition Technical Assistance project (FANTA 2016) of programs that integrate family planning with food security and nutrition similarly found much variation in the indicators reported for nutrition and food security (Borwankar and Amieva 2015). The failure of PHE projects to employ standard indicators to measure improvements in nutrition does not mean, however, that projects did not contribute to improvements in food security and nutrition. Rather, it suggests an opportunity to improve project measurement (Yavinsky et al. 2015). The most common livelihoods activities in PHE projects focus on modifying existing livelihoods to reduce harmful impacts on the environment, including promoting sustainable fishing and agricultural techniques. Similar to projects including livelihoods initiatives, PHE projects also range in their measurement and reporting of food security impacts, such as rice production and fisheries.

Ashura Katunka cooks with her daughter on an energy-saving stove in Mgambo, Tanzania. Credit: © Ami Vitale, TNC

BOX 4 | SELECT EXAMPLES OF PAST FOOD SECURITY PROJECTS

Some examples of PHE projects and sites that have attempted to address food security include:

- Lem Ethiopia addresses the interlinked problems of population pressure, poverty, poor health, unsustainable resource uses, climate change vulnerability and natural resources management through integrated development projects in the three Woredas or districts. According to a 2011 article, food security improved through the introduction of new varieties of fruit trees and new agriculture and livestock technologies. More than 3,000 Enset (*Ensete ventricosum*), a high-nutrition root crop also known as a 'false banana', and 600 apple seedlings have been distributed to 66 target households. On average, women's income has increased by more than five percent and is expected to increase further over the next few years (Techane 2011).

- A Global Development Alliance (GDA) PHE project was implemented from late 2008 to 2011 by WWF in DRC, and funded by a partnership between USAID and Johnson & Johnson. This PHE project included food security and nutrition interventions, particularly in remote communities living in buffer zones of the Salonga National Park in the DRC project site (1 of 3 sites for this GDA), as part of the health services strengthening approach. This project also included interventions, integrated messaging and activities relating to FP/RH, Water, Sanitation and Hygiene, and natural resources management. The most successful results related to the empowerment of women through the development of mothers' groups and knowledge gained on best practices relating to health, nutrition and FP, and improved access to clean drinking water, which led to the decrease in cases of diarrheal diseases in the project area (Honzak and Simoneau 2011).

- The Health of the People and Environment-Lake Victoria Basin (HOPE-LVB) Project in Kenya and Uganda aims to reduce threats to biodiversity conservation, enhance the capacity of local communities to manage natural resources, and improve sexual and reproductive health outcomes. More than 80 percent of people living in the HOPE-LVB target communities rely on fishing and agriculture for daily subsistence. Yet the communities also face declining land productivity, soil degradation, and livestock and crop diseases (Pathfinder International 2015.) In response to these challenges, HOPE-LVB works with communities on livelihood interventions including tree nurseries, selling goods and sustainable gardening of vegetables around the home (Yavinsky et al. 2015). These interventions help address food security concerns as part of the integrated PHE approach.

According to the PRB EVIDENCE report (Yavinsky et al. 2015), while nutrition and food security may have been intended outcomes from PHE projects, there is limited evidence that these projects have successfully met their goals due to insufficient monitoring and evaluation frameworks. Two recent reports point to some limited results on nutrition and food security. In 2015, the USAID-funded Evidence Project produced a report that presented the existing research and results from projects that integrate family planning with environment, livelihoods, natural-resource management, and other non-health

development sectors. The report looked at both published and gray literature on current and past integrated projects and the experiences of implementers to generate a summary of the state of knowledge on integrated family planning and environment projects. The report concludes that no PHE projects in the review reported directly on nutrition outcomes but instead measured livelihood-related aspects such as increased agricultural productivity and fish catch (Yavinsky et al. 2015). Box 4 is a synopsis of a selected, successful PHE project implemented in Madagascar in the 2005-2009 period where some good lessons on the value of integration were learned.

Household latrine constructed by community members with technical support from WWF health scouts, in Lobéké, Cameroon. Credit: Olivier Njounan, WWF

BOX 5 | MADAGASCAR EXAMPLE OF PHE AND FOOD SECURITY, NUTRITION, AND AGRICULTURE INTEGRATION

The biodiversity-rich island nation of Madagascar has a rich history of implementing PHE programs in support of the National Environmental Action Plan, a platform for sustainable biodiversity conservation and development. Since the 1990s, the Government of Madagascar, donors such as USAID, NGOs, and communities have implemented community-based projects that combine family planning and/or health interventions with environment and rural development activities (Mogelgaard and Patterson 2006.) Many of these integrated projects were located around the national system of protected areas which included high biodiversity habitats.

As the PHE approach evolved over 15 to 20 years, donor-funded projects supporting national family planning goals expanded into rural areas in order to more rapidly achieve national health objectives (Robson 2014.) Large-scale PHE projects carried out between 1999 and 2006 demonstrated the added value benefits (above and beyond those of single-sector interventions, including the added value for health that a food security focus which allows for greater engagement with men and adolescent boys on family planning and other health issues compared to approaches that focus only on family planning (Robson 2014.) The opportunities to integrate PHE and nutrition, agriculture and food security are critical in this country, where many families lack food access year-round.

Due to the unconstitutional change in government in 2009, many bilateral aid agencies suspended support for assistance, including integrated PHE programs. With the 2013 election, some support has returned and many PHE implementers are eager to continue to promote these approaches. In June 2014, marine conservation organization Blue Ventures and national NGO Voahary Salama hosted a meeting to reconvene the Madagascar PHE Network in collaboration with the Ministry of Environment, Ecology and Forests and the Minister of Public Health. At this event, 35 representatives from NGOs, donors and policymaking institutions identified opportunities to strengthen the PHE approach in Madagascar to ensure sustainable biodiversity conservation (Robson 2014.)

One example of a successful PHE initiative that included food security, agriculture and nutrition is the Ecoregional Initiative in Fianarantsoa from 2005-2009. In this province, one of Madagascar's poorest and most populated, the communities have limited access to water, health services and livelihood options for long-term security. The health of children is particularly concerning, with infant mortality rates, child anemia, stunting and wasting all slightly higher than national average (Mogelgaard and Patterson 2006.) Building on 15 years of experience implementing cross-sectoral programs in the area, USAID Madagascar created the Fianarantsoa Ecoregional Alliance Initiative in 2004 to support integrated interventions in natural resource management, public health, economic development and good governance.

Employing the Champion Commune approach, communities in the area set goals for improvements in one of these areas, implemented interventions, and tracked progress toward the goals and celebrated accomplishments toward goals. With support of SanteNet/Chemonics International Inc. project partners delivered family planning and maternal and child health services, and worked with rural farmer associations to improve potable water and hygiene and grow foods rich in Vitamin A and protein. Farmer groups also delivered messages about alternative agricultural production to slash-and-burn practices and built community capacity to plan commune-led development more sustainably (Patterson 2011). In the first year of implementation, project partners reached 81 communes covering a population of more than 1.15 million men and women and more than 390,000 children. Vitamin A supplementation for children rose from 60 to 100 percent in the last six months of that year (Patterson 2011.)

Investments in women's agriculture, education and health are critical to improving food security in sub-Saharan Africa. Improving access to family planning is a critical piece of fulfilling future food needs, and food security and nutrition advocates must add their voices to support investments in women, girls and voluntary family planning as essential complements to agriculture and food policy solutions (Bremner 2012). These linkages are highlighted by Naik and Smith 2015, who show evidence suggesting family planning can have a significant influence on achieving key nutrition outcomes and who emphasize the need for strengthening FP services and integrating FP strategies into multi-sectoral development policies and implementation plans. Ultimately, women's access to voluntary family planning informs their decisions on the number of and timing of children and have far ranging impacts on food security (availability, access, utilization/consumption, and stability) and nutrition of their children and families (Smith and Smith 2015).

Food security and nutrition advocates must add their voices to support investments in women, girls and voluntary family planning as essential complements to agriculture and food policy solutions.

Given the challenges facing health, development and conservation practitioners in sub-Saharan Africa on these issues, there are some existing opportunities to better integrate these issues. One such opportunity is the USAID Multi-Sectoral Strategy on Nutrition 2014-2025, which addresses both direct and underlying causes of malnutrition. It focuses on linking humanitarian assistance with development programming and helps build resilience to shocks in vulnerable communities (USAID 2014). The strategy seeks to decrease chronic malnourishment by 10 percent measured through stunting. In 2011, under-nutrition contributed to over 3.1 million (45 percent of) deaths of children under five years of age worldwide (World Food Programme 2016). In order to improve nutrition to save lives, the strategy promotes interventions to build resilience, increase economic productivity and advance development. The strategy emphasizes the interrelated links between nutrition, health, water, and resilience and promotes integrated programming to leverage existing efforts to strengthen nutrition programming. It also has a strong focus on gender and vulnerable populations including children in their first 1,000 days of life.

BOX 6 | RECOMMENDED INTERVENTIONS

Recommended interventions that are most relevant to this literature review and pilot project approach:

- Preventive zinc supplementation
- Promotion of breastfeeding
- Appropriate complementary feeding
- Maternal balanced energy protein supplementation
- Maternal multiple micronutrient supplementation
- Vitamin A supplementation

According to the strategy, timely nutrition-specific interventions at critical points in the lifecycle can have a dramatic impact on reducing malnutrition globally if taken to scale in high-burden countries. If scaled to 90 percent coverage, it is estimated that 10 evidence-based, nutrition-specific interventions could reduce stunting by 20 percent and severe wasting by 60 percent (USAID, 2014). Some of these nutrition-specific interventions that are most relevant to this literature review are mentioned in Box 6 above.

In addition, effective prevention and management of infectious diseases can also decrease the harmful effects of illness on nutritional status. Nutrition-specific interventions alone will not eliminate undernutrition; however, in combination with nutrition-sensitive interventions, there is enormous potential to enhance the effectiveness of nutrition investments worldwide.

Emerging evidence from around the globe (USAID 2014) shows opportunities for nutrition impact with a broader number of nutrition-sensitive recommendations, including:

The Mambele Women's Association creating their new pineapple plantation in Lobéké, Cameroon. Credit: WWF

- Family planning: healthy timing and spacing of pregnancy
- Water, Sanitation and Hygiene (WASH)
- Nutrition-sensitive agriculture
- Food safety and food processing
- Early childhood care and development
- Girls' and women's education
- Economic strengthening, livelihoods, and social protection

5. LESSONS LEARNED

The desk review found that lessons learned on nutrition and food security impacts in PHE projects were very limited because these aspects were not explicitly monitored in the projects reviewed. Through key informant interviews, the PHE task group has determined several best practices that can help PHE project practitioners strengthen food security, nutrition and agriculture outcomes. These include:

- Incorporate explicit nutrition objectives and indicators into the design of the project to seek synergies with economic, social and environmental objectives.
- Assess the context at the local level to design appropriate activities that address local priorities, including food resources, seasonality of food production, access to productive resources such as land, market opportunities, gender dynamics and roles, etc.
- Incorporate WASH into nutrition and food security programming to enhance outcomes of the nutrition programs and build a more comprehensive program to improve health.
- When designing PHE programs, including nutrition-sensitive agriculture and food security interventions, it is critical to gain in-depth understanding of the gender roles, relations and dynamics, as well as an understanding of access, use and decision-making around resources for both women and men.
- To develop locally-relevant and gender balanced agriculture, food and nutrition security interventions (with other sectors), recognize and respect the local knowledge from both women and men and from the poorest and most marginalized groups who are the most dependent on natural resources for their survival.

At the same time, the following generic overarching lessons from the PHE projects and from other projects and studies promoting an integrated approach were extracted from the resources collected for this literature review. These include:

PHE-specific lessons learned:

- The short implementation timeframe of many PHE projects is not sufficient to allow for adequate learning about PHE principles, design of robust projects, successful implementation of interventions, or quality reporting of significant results.
- Projects in this area are characterized by low investments in monitoring and evaluation, while few or under-developed human resources tended to limit ability to secure future or longer-term funding for PHE projects.
- There is continued lack of documentation with regard to the benefits of PHE integration. Projects should specifically document the benefits to fill this data gap.

- There is a need for more systematic measurement of outcomes related to women's empowerment and support for conservation.
- There is a need for baseline data collection along with periodic measurements to illustrate trends and changes attributable to PHE (for internal use on what the impact is, as well as raising funds).
- More research to find out if PHE programs offer any additional FP benefits that FP-only programs do not would be beneficial.

Population-specific lessons learned:

- Limited evidence base for impacts on population indicators such as parity, total fertility and population growth suggests a gap between project communication and framing and the existing evidence base.
- Enhanced communication of family planning impacts to demonstrate how FP interventions can be successful as part of integrated programs.
- Decision-makers, planners, and funders concerned with climate change adaptation and food security should evaluate population growth and fertility trends as well as consider family planning as a potential climate change adaptation strategy, according to the MEASURE Evaluation 2012 study on family planning and agriculture in climate change.

Emiliana Ezekiel Kaboya uses a tippy tap at her home in Nkongwa near Lake Tanganyika, Tanzania. Credit: © Ami Vitale, TNC

6. RECOMMENDATIONS

To achieve sustainable agriculture, nutrition, and food security impacts, there is a need to:

- Incorporate explicit nutrition objectives and indicators into the design of the project to seek synergies with economic, social and environmental objectives (FAO 2015) in order to determine on health and conservation outcomes.
- Assess the context at the local level to design appropriate activities to address local priorities, including food resources, seasonality of food production, access to productive resources such as land, market opportunities, gender dynamics and roles, etc.
- Incorporate WASH into nutrition and food security programming to enhance outcomes of the nutrition programs and to build a more comprehensive program to improve health.

To achieve gender and social inclusion, it is critical to:

- Gain an in-depth understanding of the gender roles, relations and dynamics, as well as an understanding of access, use and decision-making around resources for both women and men.
- Recognize and respect the local knowledge of both women and men and those from the poorest and most marginalized groups who are the most dependent on natural resources for their survival.

Feasibility work on well rehabilitation in Lobéké, Cameroon. Credit: WWF

7. CONCLUSIONS

There are very complicated, interconnected issues surrounding the links between PHE, food security, nutrition and resilience. Broad-based, comprehensive initiatives ideally involve the private sector, markets and other economic factors. For this literature review for the ABCG PHE task, we recommend that pilot sites, at a minimum, do the following:

1. Design and implement culturally appropriate and context-specific nutrition activities that meet community needs and leverage existing government and civil society programs, such as the USAID Feed the Future initiative where applicable[2], and USAID-supported health activities;
2. Implement interventions that include a simple set of indicators to measure progress on nutrition activities that are disaggregated by sex and age, while understanding that food security indicators are longer term in nature and may not be able to show impact in a short period of time.

[2] The Feed the Future model is proving itself in country after country, increasing incomes for smallholder farmers and contributing to notable drops in poverty and childhood stunting in many of the places where it works. Feed the Future is supporting local capacity to increase food security, agriculture-led economic growth and good nutrition. In FY2015 alone, Feed the Future investments in Africa helped more than 3.6 million farmers gain access to new tools or technologies such as high-yielding seeds, fertilizer application tools, soil conservation and water management practices (USAID 2016.)

8. REFERENCES

Africa Biodiversity Collaborative Group (ABCG). August 2015. ABCG II: Hosting and Management Services, 2015-2018. Washington, DC: WCS Proposal to USAID.

ABCG. May 2014. Global Health Working Group Strategy for ABCG II Proposal 2014. Washington, DC: WCS.

BALANCED Project. August 2013. PHE Field Implementation: A Simple PHE Resource Guide/Compendium for Implementers. Narragansett, RI: University of Rhode Island Coastal Resources Center.

Borwankar, R. and Amieva, S. 2015. Desk Review of Programs Integrating Family Planning with Food Security and Nutrition. Washington, DC: FHI 360/FANTA.

Bremner, J. February 2012. Population and Food Security: Africa's Challenge. Washington, DC: PRB.

Conservation International (CI). June 2012. The Nature of Food Security: Conservation International's Strategy to Demonstrate and Secure the Role of Nature in Assuring Sustainable, Resilient Food Production and Harvest. Arlington, VA: CI.

D'Agnes, L. and Margoluis, C. October 2007. Integrating Population, Health and Environment (PHE) Projects: A Programming Manual. CDM International Inc: Washington, DC.

Engelman, R. 1998. Plan and Conserve: A Source Book on Linking Population and Environment Services in Communities. Washington, DC: PAI.

FANTA II. March 31, 2016. Integrating Family Planning and Food Security: Lessons from the Population, Health, and Environment (PHE) Community. Webinar located at http://www.fantaproject.org/news-and-events/integrating-family-planning-and-food-security-lessons-population-health-and. Washington, DC: FHI 360.

Food and Agriculture Organization (FAO). 2015. Key Recommendations for Improving Nutrition through Agriculture and Food systems. Accessed December 13, 2016 at http://www.fao.org/3/a-i4922e.pdf.

FAO. 2009. High Level Expert Forum - How to Feed the World in 2050: Global Agriculture towards 2050. Rome, Italy: FAO.

Honzak, C. and Simoneau, N. 2011. Learning Brief Number 2: Women's Empowerment for Conservation through the Population-Health-Environment Approach. Washington, DC: WWF.

Husain, I., Patierno, K., Zosa-Feranil, I., and Smith, R. 2016. Fostering Economic Growth, Equity, and Resilience in Sub-Saharan Africa: The Role of Family Planning. Washington, DC: PRB.
MEASURE Evaluation. March 2012. Improving Access to Family Planning can promote food security in a changing climate. Study summary: Modeling climate change, food security and population growth. Chapel Hill, NC: MEASURE Evaluation.

Naik, R. and R. Smith. 2015. *Impacts of Family Planning on Nutrition*. Washington, DC: Futures Group, Health Policy Project.

Oglethorpe, J. Honzak, C. and Margoluis, C.2008. Healthy People, Healthy Ecosystems: A Manual on Integrating Health and Family Planning into Conservation Projects. Washington, DC: WWF.

Pathfinder International. June 2015. Sustaining Health, Rights, and the Environment in the Lake Victoria Basin: Technical Brief. Waterton, MA: Pathfinder International.

Population, Health and Environment (PHE) Toolkit. 2016. Knowledge for Health website accessed at https://www.k4health.org/toolkits/phe.

Population Reference Bureau (PRB). 2016. World Population Data with a Special Focus on Human Needs and Sustainable Resources. Washington, DC: PRB.

Smith, E. and R. Smith. 2015. *Impacts of Family Planning on Food Security*. Washington, DC: Futures Group, Health Policy Project.

Thaxton M. May 2016. Enriching the integrated landscape management framework: Integrating Population, Health and Gender into a landscape approach. *Presentation at a UNEA Conference, May 2016.* Unpublished. www.ecoagriculture.org.

Techane, M.W. June 2011. Ethiopia's PHE Spotlight: The Environment and Development Society of Ethiopia (LEM Ethiopia). In Torell, E. and Robadue Jr., D. Eds. June 2011 Population, Health, Environment and Livelihoods: BALANCED Newsletter. Narragansett, RI: Coastal Resources Center, University of Rhode Island.

US Agency for International Development (USAID). 2016. Feed the Future in Africa: FY2015 Progress. https://feedthefuture.gov/sites/default/files/resource/files/Feed%20the%20Future%20Progress%20in%20Africa%202016_0.pdf.

USAID. January 2015. WASH and Nutrition: Water and Development Strategy - Implementation Brief. Washington, DC: USAID.

USAID. May 2014. USAID Multi-Sectoral Nutrition Strategy 2014-2025. Washington, DC: USAID.

USAID. 2012. Biodiversity Conservation and Forestry Programs: FY12 Results and Funding. Washington, DC: USAID.

Vogel, C.G. and Engelman, R. 1999. Forging the Link: Emerging Accounts of Population and Environment Work in Communities. Washington, DC: PAI.

World Food Programme. 2016. Hunger Statistics. https://www.wfp.org/hunger/stats. Accessed December 21, 2016.

Yavinsky, R. W., Lamere, C., Patterson, K.P. and Bremner, J. June 2015. The Impact of Population, Health, and Environment Projects: A Synthesis of Evidence, Working Paper. Washington, DC: Population Council, The Evidence Project.

Mogelgaard, K. and Patterson, K.P. November 2006. Linking Population, Health and Environment in Fianarantsoa Province in Madagascar. Washington, DC: PRB.

Patterson, K.P. March 2011. Champion Commune: A PHE+ Approach in Fianarantsoa Province, Madagascar. Presentation at Woodrow Wilson International Center for Scholars (WWIC). Washington, DC: WWIC.

Robson, L. 2014. The history of PHE in Madagascar: looking back over the last 25 years and forward to the next chapter. London, U.K.: Blue Ventures for the Madagascar PHE Network.