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**Helen Keller**  
INTERNATIONAL

# LEADING INNOVATION AND IMPACT

in Nutrition-Sensitive Agriculture in Africa





## WHY LINK NUTRITION AND AGRICULTURE?

Despite major progress in combatting global hunger and a general increase in food availability over the past century, nutrition challenges remain. Annually, maternal undernutrition contributes to 800,000 neonatal deaths and 3.1 million child deaths are related to stunting, wasting, and micronutrient deficiencies.<sup>1</sup> About one third of the global population suffers from micronutrient deficiency, one billion are chronically undernourished, and one quarter of global children are stunted.<sup>2</sup> These deficiencies have negative ramifications that persist across generations, hindering attainment of full human potential and social and economic development.

Meeting this challenge requires collaborative multi-sectoral programming, with agriculture being a key area for intervention.<sup>3</sup> Nutrition-sensitive agriculture (NSA) programs seek to improve nutritional status by strengthening agricultural systems to deliver more appropriate and nutritious foods to those who need them. By improving production and consumption of high-quality foods, diet quality and diversity can be improved. Agricultural interventions can change the nature of the food system and may have advantages in terms of sustainability, cost effectiveness, and cultural acceptability. They can address multiple micronutrient deficiencies simultaneously and help reduce vulnerability to economic/political instability, with side benefits in the form of increased household income, women's empowerment, and environmental resilience.





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HKI'S LEADERSHIP ROLE  
IN NUTRITION-SENSITIVE AGRICULTURE





Helen Keller International (HKI) has long been a leader in NSA programming, beginning with a small pilot project in Bangladesh in 1988. Programs have since been implemented across East and South-east Asia as well as in six African countries, reaching approximately 7 million beneficiaries to date. HKI's programs recognize that pathways from agriculture to improved nutrition are diverse, including increased production and income leading to improved consumption of nutrient-rich foods, improvements in knowledge leading to better nutrition, hygiene and healthcare practices, and women's empowerment leading to more say in decisions related to agricultural production and nutrition.<sup>4,5</sup> Our programs provide women with training in and inputs for diversified homestead food production. They are delivered in partnership with existing government structures, such as the local Ministry of Agriculture, as well as non-governmental actors and community volunteers. This training improves production knowledge and practices, which lead to increases in the quality and quantity of vegetable and animal production by women and ultimately to improved household dietary intake and

nutritional status. In most settings women also gain control over more household assets and a larger role in decision-making, thereby helping to transform gender relations. Increases in production also enable women to sell the surplus, improving income and enhancing women's status in the household thanks to their increased contributions to livelihoods. Health workers and community volunteers are trained in globally-recognized optimal practices and techniques to catalyze behavior change; through them, families learn about the advantages of good nutrition and participate in support groups to encourage one another to adopt them.

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Programs target the families of young children, with a focus placed on women—but also an understanding that men play an essential role in child nutrition and that behavior change requires their active involvement, as well. Our model is community-oriented, beginning with the creation of a 'village model farm',

which is a demonstration, training, and input-distribution center for groups of women and is often built on land donated by village leaders. Women then receive training on best practices in agriculture and nutrition, which they share with others in the community through peer-to-peer outreach. Often, resources and training are provided for improved poultry, fish or other small animal production. As we believe strongly in local ownership, participants are expected to share costs or contribute some of their own resources to the project's efforts. To increase sustainability, partnership with local organizations and government extension

services, including their capacity building, are central to our approach: to date, HKI has collaborated with over 250 different

NGOs and governmental organizations worldwide on NSA projects. In addition to working on the supply side, we aim to increase demand for nutrient-rich crops and animal-source foods through behavior change communication, including interactive cooking demonstrations.





## ADVANCING NUTRITION-SENSITIVE AGRICULTURE IN AFRICA

HKI's experience with NSA in Africa began under a USAID-funded program in Burkina Faso (2009-2012), which reached over 1,500 women in the impoverished Eastern region with inputs and training on gardening, poultry-rearing, and nutrition education. As a result of the project, women's annual agricultural production increased across a variety of crops, including vitamin A-rich foods such as orange-fleshed sweet potato

(OFSP), and women's ownership of agricultural assets and small animals also increased.<sup>6</sup> Participating women were more knowledgeable about a number of optimal child nutrition practices and were more likely to report applying them, such as giving their children iron-rich foods and a diverse diet. Moreover, the program reduced wasting, anemia, and diarrhea among targeted children.<sup>7</sup> Simultaneously, HKI implemented an Irish Aid-funded project

in Tanzania's Lake District, which reached 1,200 people in Sengerema and Ukerewe districts, Mwanza Region. The project resulted in a more than fourfold increase in the proportion of households involved in production of vegetables and fruits, and the number of vegetable varieties grown by participating households also increased over fourfold, including local vegetables like African nightshade. In addition, sales of vegetables increased considerably, and two-thirds of participating households confirmed that their



income had grown as compared to before the project, mostly due to greater involvement in vegetable and poultry enterprises. This newfound income was generally used to purchase food items, such as fish, meat, and eggs, thus further increasing household food security. Consumption of home-produced vegetables and fruits also increased, as did the percentage of children receiving a minimum acceptable diet.

With this success, HKI was eager to test different models of the NSA approach, tailored to specific agro-ecological, nutritional, and operational challenges. The Global Affairs Canada-funded Creating Homestead Agriculture for Nutrition and Gender Equity (CHANGE) project (2013-2016), implemented in Burkina Faso, Côte d'Ivoire, Senegal, and Tanzania, offered a perfect opportunity to do so. CHANGE sought to improve the nutritional status of women and children and added to prior approaches a stronger focus on water, sanitation, and hygiene (WASH), aiming to improve handwashing practices and reduce exposure to disease-causing contamination, thereby contributing to improved health and nutrition. CHANGE reached over 8,500 direct participants and many more indirect beneficiaries. The project successfully built capacity of communities to produce nutrient-rich crops and raise small animals to improve home consumption of nutritious foods. It also increased the capacity of community agents and extension workers to deliver technical assistance on nutrition, horticulture and poultry, and improved community workers' skills to counsel households on nutrition and WASH through group sessions, home visits, and mass events. As seen before, the amount of nutrient-rich crops produced by beneficiary women increased considerably, as did the production of poultry and eggs. Important nutrition and WASH practices, including exclusive breastfeeding, children's and women's dietary diversity, and handwashing all improved. Moreover, project interventions led to reductions in anemia and wasting among young children. Women's control over assets improved, and modest improvements were seen in joint decision-making by women and men on household tasks related to agriculture, nutrition, and child care.

HKI also contributed to NSA as part of the USAID-funded SPRING consortium (2012-2017). In Senegal, nutrition was integrated into existing value chains and markets, and reinforced by

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the health sector. The project placed a strong focus on local capacity building and behavior change communication, reaching almost 44,000 people with information about agriculture and nutrition through community radio programs and training over 600 people on NSA approaches. In Sierra Leone, SPRING sought to use rigorous formative research methods to explore household decision-making around the consumption of two nutrient-rich products, pumpkin and fish, crafting new communication tools and analyzing opportunities for marketing these products across the value chain.

HKI has also focused on promoting the production and consumption of certain key nutrient-rich crops, particularly Vitamin A-rich OFSP, as a means to combat Vitamin A deficiency and food insecurity in Africa. HKI was a partner in the Reaching End Users (2006-2009) and Reaching Agents of Change (2011-2014) projects, which worked across several African countries to increase supply and demand of OFSP through increased investment, enhanced communications, and greater institutional capacity. With funding from the Margaret A Cargill Foundation, HKI worked to promote local production, marketing, and consumption of OFSP in Burkina Faso and Mozambique, reaching about 30,000 people with agricultural training, input provision, nutrition counseling, and OFSP promotional activities. The project created a sustainable supply of OFSP for household production by training farmers as vine multipliers for their communities. It also partnered with schools and parent-teacher organizations to foster greater supply and demand.

## RESEARCH IMPACT

HKI also works to improve knowledge on the impacts of NSA programs. The International Food Policy Research Institute (IFPRI) collaborated with HKI to implement a cluster-randomized controlled trial evaluating the impact of the Burkina Faso program; this included four operations research studies to examine aspects of delivery and pathways to outcomes and impact. The findings of these evaluations<sup>7</sup> added greatly to global knowledge on the impacts of such programs and identified gaps to be reinforced, which informed approaches applied under CHANGE. To further contribute to the evidence base, CHANGE tested different enhancements across and within countries. In Cote d'Ivoire and Senegal, the focus was placed on pilot-testing an interactive gender-transformative curriculum, Nurturing Connections, to lead mothers, fathers and elders to reexamine the roles of women and men in society. The International Center for Research on Women evaluated this component, representing one of the first rigorous impact evaluations of such an approach. In Burkina Faso and Tanzania, implementation and research were designed to examine impact on nutrition outcomes. Both also sought to test the addition of nutrition-specific interventions: lipid-based nutrient supplements to improve growth in young children in Burkina Faso and daily micronutrient powders to reduce anemia and iron deficiency among young children in Tanzania. The results of these studies (forthcoming) will add considerably to understanding the interaction between nutrition-sensitive and nutrition-specific programs.





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## FUTURE DIRECTIONS

HKI's experience has convinced us of the complexity of the pathways from agriculture to nutrition and that improved food access and nutrition knowledge and practices are only part of a much larger puzzle. HKI's work on NSA in Africa continues to expand and innovate, contributing to the evidence base on best practices. We are currently involved in efforts to use agriculture and nutrition to improve development outcomes in conflict-ridden areas in Mali, test new ways to support community-led gender-norms transformation within agriculture in Mozambique, and integrate nutrition with improved agricultural production and value-chain development in Senegal.

There are a number of new directions in which HKI hopes to take its work in NSA. Across sub-Saharan Africa, the reach of household and community NSA programs could be extended through better development of market value chains or integration with food fortification programs in harmony with local food systems and food environments. NSA programs can also be expanded through greater focus on processing and storage, including reduction of aflatoxin contamination. 'One health' approaches can be tested and integrated to help mitigate the potential sanitation problems introduced through increased poultry rearing. There is a need for novel designs that serve the

needs of the poorest of the poor, including those in urban areas, and transformation of gender norms must be a cornerstone of NSA programs.

Given agriculture's central role in livelihoods and sustainable land management, it is essential to consider how NSA programs can be designed to mitigate and adapt to climate change and enhance resilience, such as through greater focus on the use of agricultural biodiversity. Innovative approaches to water management can be tested to simultaneously alleviate agricultural pressures on water systems and enhance uptake of WASH practices. Adolescents and youth, the food producers and consumers of tomorrow, can be empowered to act as innovation leaders in NSA. It is also crucial to explore new ways of working, such as through expanded private-sector partnerships and more systematic integration of agricultural concerns into the nutrition sector and vice versa. Ensuring that agriculture plays an essential role in improving nutrition in Africa will require the collaboration of a diverse set of actors across sectors, organizations, and countries. Building on our extensive experience in driving such changes, HKI is eager to take a lead role in this process.




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- 1 Z. Bhutta et al. (2013). Evidence-based interventions for improvement of maternal and child nutrition. *Lancet* 382, 452.
  - 2 <http://www.wfp.org/hunger/stats>
  - 3 M. Ruel, et al. (2013). Nutrition-sensitive interventions and programmes. *Lancet* 382, 536.
  - 4 D. K. Olney et al. (2013). Using program impact pathways to understand and improve program delivery, utilization, and potential for impact of HKI's Homestead Food Production Program in Cambodia. *Food & Nutrition Bulletin* 34, 169
  - 5 Herforth, A, Harris J. (2014). Understanding and Applying Primary Pathways and Principles. Brief #1. Improving Nutrition through Agriculture Technical Brief Series. Arlington, VA: USAID/ SPRING Project.
  - 6 van den Bold, M., et al. (2015). Can Integrated Agriculture-Nutrition Programmes Change Gender Norms on Land and Asset Ownership? Evidence from Burkina Faso. *Journal of Development Studies*, 51(9), 1155-1174.
  - 7 Olney, D. K., et al. (2016). A 2-Year Integrated Agriculture and Nutrition Program Targeted to Mothers of Young Children in Burkina Faso Reduces Underweight among Mothers and Increases Their Empowerment. *J Nutr*, 146(5), 1109-1117.; Olney, D. K., et al. (2015). A 2-year integrated agriculture and nutrition and health behavior change communication program targeted to women in Burkina Faso reduces anemia, wasting, and diarrhea in children 3-12.9 months of age at baseline. *J Nutr*, 145(6), 1317-1324.

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